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SOCIAL SUSTAINABILITY DISCLOSURE AND ENGAGEMENT OF LOCAL COMMUNITIES BY NORTH AMERICAN CLASS I RAILWAYS

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Dedication

In honour of my parents, Elaine and Kemrick, who sacrificed everything for their daughters; and my bookends, Michelle, Sherelle, and Joshuelle, who make it all worthwhile. I have leaned on your love and strength so many times, and you inspire me with every breath to fulfill my dreams.

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My sincerest gratitude goes to my parents who left the comfort of their island paradise so that their girls could have a good education and help to make our world a more beautiful place to live—first with love, service, and integrity. They are responsible for modelling just what a “local community” could be when they welcomed international students, and strangers into our home over more than 50 years in Canada after leaving Trinidad & Tobago. They have been my true definition of “heroes.”

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Abstract

This study explores the nature of relationships between North American Class I railways (NACI) and local communities (LCs). The objectives of the research include the following: 1) assessing the extent and quality of sustainability disclosure by NACI; 2) determining the techniques of stakeholder engagement, with a focus on infrastructure projects; and 3) highlighting better practices from other countries and industries.

The scope of the investigations spans the 10-year period following the global financial crisis, as civil society and investors increased their expectations for non-financial sustainability reporting. In responding to this charge of information asymmetry and justice within balanced NACI-LC relationships, the implication for this work from the strategic management perspective involves examination of firm-specific sustainability behaviours within a multiple case study methodology; while a complementary economic sociologist approach looks at industry-wide trends or aspects of institutionalism that are pervasive within the railways of North America.

This exploratory study used only documents found in the public domain, such as: sustainability/CSR/corporate responsibility reports, subject matter expert reports, rating agencies' databases, industry association documents, government reports, company web pages regarding sustainability activities, and other company documents, such as financial reports and securities commissions documents.

Findings both consistent and divergent with academic and grey literature point to the inadequacy of NACI sustainability reports for several reasons. The following key findings were revealed through the analysis: 1) asymmetry between what is reported to local communities and actual performance on investigated variables of social sustainability; 2) the complexity of understanding the NACI-LC relationship from sustainability reports; 3) the future challenges inherent in building the capacity needed to develop sustainable communities and resilient infrastructure in achieving the Sustainable Development Goals,

2030; and 4) the difficulty of determining the efficacy of novel approaches and techniques of stakeholder engagement to advance sustainability. Better practices are drawn from global standards and guidelines as interpreted by three Eurasian networks. Suggestions are made as to how to improve both the quality of relationship with NACI stakeholders and reporting with an emphasis that they be projectized. Future research ideas and recommendations for practitioners and decision-makers are also provided.

Keywords: social sustainability, quality disclosure, stakeholder engagement, strategic management, stakeholder theory, railways**,** local communities

Preface

Like family and many friends who walk beside me, we are awestruck today by the innumerable examples of our interconnectedness as a human species. It makes no sense for us to try denying the power of local communities (LCs) to either act—which in many ways supports the ideals of neo-capitalism and old institutions—or risk introducing a unique brand of phronesis or practical wisdom, good judgment and excellence of character marked by our humanity.

All our global goals and hopes are reduced to action—at the local and regional levels—period. Regardless of the intention of the world's largest councils, organizations, the most seemingly powerful and non-governmental agencies, or the richest multi-national enterprises, all efforts can be either concretized or vaporized by the power of communities, coming together for concerted, unified mass action.

Through this study, I hope to provide enough of a foundation that ignites a spark for further research into this dynamic—and what I believe is a syncretic movement—towards having the voices of LCs heard and their wisdom respectfully shared with the North American railway industry. While railways were built to enhance the economy by connecting LCs hundreds of years ago, what is needed to unite them now is trust, transparency, and knowledge—shared openly, truthfully, and freely to promote the collaboration and innovation for a sustainable future.

There is no question that the recent events of 2020 will serve to highlight our vulnerabilities—individually and collectively; however, they will hopefully (and equally) show the incredible benefits and power of real relationships that are necessary to sustain all life and businesses.

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Abbreviations

AAR	Association of American Railroads
BNSF	Burlington, Northern, Santa Fe Railway
CDP	Carbon Disclosure Project
CN	Canadian National Railway
CP	Canadian Pacific Railway
CSR	Corporate social responsibility
DB	Deutsche Bahn (Germany)
EPA	Environmental Protection Agency
FCM	Federation of Canadian Municipalities
FRA	Federal Railway Administration
GRI	Global Reporting Initiative
IAA	Impact Assessment Act
IFC	International Finance Corporation
IIRC	International Integrated Reporting Council
KS	Kansas City Southern Railway
LC	Local Community
MTR	Mass Transit Railway (Hong Kong)
NACI	North American Class I Railway(s)
NBS	Network for Business Sustainability
NR	Network Rail (United Kingdom)
NS	Norfolk Southern Railway
OECD	Organization for Economic Cooperation and Development
RAC	Railway Association of Canada
SASB	Sustainability Accounting Standards Board
SDG	Sustainability Development Goals
SE	Stakeholder Engagement
ST	Stakeholder Theory
STB	Surface Transportation Board
UNGC	United Nations Global Compact
WSDOT	Washington State Department of Transportation
WCED	World Commission on Environment and Development/Brundtland Commission

Chapter I: Introduction

Statement of the Problem

A tremendous chasm exists between the ways in which local communities (LCs) and North American[1] Class I railways (NACI) perceive their relationship and its role in supporting sustainable development. Throughout North America, the railways are under federal jurisdiction, but the impacts from infrastructure projects (and operations) are felt locally. The Canadian Council for International Cooperation speaks to the escalating need for local governments to play a leadership role in driving solutions, as societies around the globe tackle the 17 Sustainable Development Goals (SDGs) and 169 targets towards a sustainable world (Condon, 2018). The implementation and monitoring of progress toward sustainability are significant challenges for which LCs and governments need to be strengthened to plan, prepare, coordinate, and manage local responses. These capabilities do not necessarily accompany the efficiency in management practices that railways currently strive for, but rather build on relationships that are the hallmark of the resiliency needed for sustainability.

To address these challenges, some understanding of the nature of the NACI-LC relationship, and any intrinsic obstacles to acting on these objectives, would be beneficial. As such, my research questions are:

Question One: What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure? and,

Question Two: How do NACI engage with LCs? What is the nature of relationships with local communities as disclosed by North American Class I railways?

[1] North America is defined, for the purposes of this study, as Canada and the United States based on the connectivity of the network of railways and their interoperability.

Background

There has been an exponential increase in the adoption of standardized reporting by corporations to satisfy stakeholder requirements (EY & Boston College, 2018); however, social sustainability, the more challenging dimension within sustainability, has not been as frequently reported and researched partly because it is not readily measured and is not as well-defined and understood as economic and environmental factors (Labuschagne & Brent, 2006). Railways have been a significant part of the economic and social fabric of North American society for more than 150 years, but their adoption of some key principles of social sustainability and related disclosures, I submit, are lagging other industries, even those associated with significant negative environmental impacts such as oil and gas.

In appreciating the essence of this subject matter, the relationship relies heavily on an assumption that disclosures of sufficient quality are being used both as antecedents to and consequences of sound stakeholder engagement (Global Reporting Initiative, 2016; Herremans, Nazari & Mahmoudian, 2016). As such, what constitutes good quality disclosure and stakeholder engagement by the NACI are important hallmarks necessary in responding to both research questions. The disclosures in question, although non-financial in nature and considered voluntary (i.e., not a mandatory requirement of a regulatory body), are the consequence of yielding to the pressure (reduce the tension) from stakeholders through institutional mechanisms including isomorphism (coercive, mimetic, and normative) by responding in a similar manner as the other firms within the industry (DiMaggio & Powell, 1991; Labuschagne & Brent, 2006). These disclosures, if well structured and released in a consistent fashion, allow for ease of comparison which puts pressure on firms. In so doing, the cost of not disclosing is assessed higher than the cost of disclosing (Durand, Hawn & Iannou, 2019). In a similar vein, other researchers have found that managers will only disclose information when the benefits outweigh the costs (Guidry & Patten, 2012; Healy & Palepu, 2002). Disclosure, therefore, and social sustainability disclosure by extension, can be viewed as a strategic response used specifically to change the competitive dynamic (Gao, Yu & Canella, 2016) and improve

performance. Further research of a holistic nature that looks at proprietary costs and beneficial outcomes of sustainability disclosure is needed[2] (Flammer, 2013). As such, it is important to appreciate both the content and quality of social sustainability disclosure as necessary components and indicators of the relationship between local communities and the Class I railways of North America.

Regarding the railways' social sustainability disclosure and quality stakeholder engagement with local communities, perhaps the most prominent example is CN's acquisition in 2008 of the EJ&E Railway which encircles the City of Chicago and was a highly strategic manoeuvre designed to divert the intense rail traffic from traversing the city's core to the suburbs using five distinct radiating lines. At the time, the environmental assessment and environmental impact studies were the most comprehensive and expensive on record with the Surface Transportation Board. Mitigation efforts were in the order of $300-400 million USD. This deal, which was promoted as a highly sustainable option, had its impacts on no less than 33 local communities, and the environmental mitigation and oversight by the Surface Transportation Board (STB) was extended for a variety of reasons. While the chosen option presented perhaps the best net impact to our environment and economy compared to other possibilities, it raised many concerns that are unresolved to this date regarding these infrastructure projects that almost always negatively impact communities of lower socio-economic status—the significant disparities among the railway's engagement with local communities became evident; the information asymmetry of the railway's disclosures; environmental justice concerns; and the railways' dynamic capabilities—both first order (engagement) and second order (the use of systematized learning in a transparent fashion); and concerns around nationalism. These issues spoke to the sheer significance of both local economy and politics (as shaped by capitalism and the institutional environment) and the call for better understanding of attitudes towards

[2] This concept was reinforced by Dr. Caroline Flammer, Associate Professor, Strategy & Innovation, Questrom School of Business, Boston University, at the Academy of Management conference, August, 2020.

relationship change (as shaped by stakeholder theory) that impact the disclosure-engagement dyad in effecting sustainability.

Since the purpose and questions that this research aims to address are situated within the domains of stakeholder engagement (in advancing sustainability) and railways, it is helpful to review some of the relevant historical, political, and socio-economic factors that explain how and for what purpose railways have come to engage with local communities. The definition used for this study is derived from United Nations' Global Compact, which views social sustainability as the proactive identification and management of the direct and indirect social impacts (both positive and negative) of corporate activities on people within the communities where companies operate. It relates to the relationships and engagement of stakeholders who are employed by the company, within the value chain, customers, and local communities (United Nations Global Compact). This definition connotes specific corporate responsibility as part of the broader meaning to which it is aligned; that is,

> "a process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm with design of the social world – *infrastructure* to support social and cultural life, social amenities, and space for people and places to evolve." [emphasis my own] (Social-life.co, n.d.)

The pervasiveness and longevity of our lack of understanding of the social sustainability performance-social sustainability disclosure and financial dynamics has become a relevant aspect of the ongoing corporate social responsibility (corporate social responsiveness or corporate social performance) debate. This debate relates to the actual relationship and responsibility of business to society and what it should entail (Bansal & Song, 2017; Clarkson, 1995; Freeman, 2010; Margolis, Elfenbein & Walsh, 2009). A lack of definitions, however, and theory to support a framework or model, as well as challenges related to the operationalization of sustainability, are to blame for this, according to Clarkson (1995). Social performance of the corporation has been difficult to measure and challenging to differentiate from organizational effectiveness (Ullmann, 1985). Some current arguments can be traced back to Ullmann,

who, in publishing his research on the relationships between social performance, social disclosure and economic performance, opined that "additional variables based on a contingency approach should be included in any attempt to correlate social performance, economic performance and social disclosure" (p.554). Longitudinal studies that investigate *how strategies change as a result of shifting stakeholder power* or economic performance were encouraged for future research. Only then, as posited by Ullmann, could one appreciate different strategic postures; the differentiation between mandated and voluntary (e.g., European as compared to North American) social performance activities and related disclosures. Information disclosure constitutes part of an organization's strategic posture and is therefore relevant for strategy researchers to study because it examines the integration of the firm's decision, serves an integrative function with other firm decisions, and is situated across various actors within different fields and across time (i.e., outcomes of decision a, become antecedents for decision b).

However, in the name of environmental justice and in her advocacy for the voice of *all* constituent stakeholders, Rachel Carson quoted Jean Rostand when stating, "The obligation to endure gives us the right to know" (Carson, 1962). This knowing is a joint responsibility between the NACI and LC and the manifestation of sound social sustainability that is clearly articulated with complete and balanced disclosure on various environmental issues.

This research study, therefore, is charged with two related, fundamental tasks: one, an exploration of the variables that impact the business-society relationship (stakeholder engagement of local communities) (Ullmann, 1985); and, how they are linked to disclosure (in a synergistic fashion) compared intercontinentally for North America and some railways of Eurasia.

Determining the nature and suitability of engagement by railways with local communities and municipalities, and what the goals should be, is a highly contentious and complicated endeavour. Although corporate strategic decisions are guided by many factors, response is further complicated by the divergent requests from local communities, and the fact that the needs of municipalities are not

homogeneous (and even when those needs are identified, they frequently vacillate). This, then, challenges the investigations into characteristics of engagement by researchers and practitioners who are expected to make feasible recommendations.

Empirical evidence to support an understanding of current dynamics in the highly politicized environment of the railway industry is lacking. So, too, is the proper funding mix to affect optimal outcomes. The impact of political and jurisdictional ambiguity is most evident as public and governmental affairs departments attempt to address not-in-my-back-yard (NIMBY) activism and reconcile the fit between stakeholder importance and stakeholder involvement in infrastructure projects (El-Gohary, Osman & El-Diraby, 2006). Pellizzoni (2011) argues, and I would agree, that the politicization of expertise plays a significant role in the creation and augmentation of a power differential that is mediated by knowledge and its access. In managing the interests at stake, frameworks are often created by the experts that ascribe value and specific ways to deal various stakeholder interests. The literature has presented a critical point in this discussion: "the community is an everyday lived environment and that citizen participation in its future is vital." (Sénécal & Reyburn, 2006: p. 245). With the assumption that residents, local communities, and civil society are interested in the preservation of community spirit, and in genuinely participating in a well-coordinated consultation and negotiation process (Sénécal & Reyburn, 2006), this research project seeks to explore the characteristics of social sustainability reporting in the recent past by North American railways as they have engaged with communities. It also seeks to explore the nature of those relationships.

Throughout this paper, comparisons are drawn between large global railway/logistics companies[3] (the strategic approach) and, at other times, within a railway over a ten-year period (economic sociologist approach). Furthermore, I also postulate on potential recommendations for project stakeholder

[3] Railways in North America and around the world, through globalization, have increasingly expanded their offerings to include logistics in order to provide end-to-end, customer-centric solutions that help to meet just-in-time demands and simplify their supply chain.

engagement approaches by highlighting exemplars with good sustainability practices. These recommended principles and actions could inform and elevate decision-making for community representatives, public policy and governmental affairs personnel, project managers, sustainability directors, special interest groups and municipalities.

Organization of Dissertation

To accomplish the goals of this research, qualitative methods that involve two distinctively different approaches—strategic management, and economic sociology—were combined to promote an enhanced understanding of the behaviour of North American Class I railways (NACI). “Strategists explore efficiency from the perspective of the firm developing theories of why one strategy is more successful than another, given product, firm and industry characteristics. Sociologists focus on efficiency from the perspective of the corporate environment, developing theories about the context in which one strategy becomes defined as efficient and diffuses across the corporate landscape.” (Baum & Dobbin, 2000: p.4).

This study recognizes the interdependency between essential theories that informed its framework of better practices—stakeholder theory and voluntary disclosure theory (as seen in guidelines, standards, and exemplars)—as well as key concepts from institutional theory that explain the NACI’s current and traditional approaches of sustainability for our planet, its people and the organizations that support us. In keeping with this, in the section that follows I will provide some background information that highlights the global, national, and local significance of the problem to be addressed through this research.

In the section that follows, Chapter I Introduction, a more focused contextual picture is described. This includes a discussion of the confluence of historical, economic, and social antecedents and policies that have shaped the course of the railway-local community relationships, predominantly in North America.

Chapter II, Review of the Literature, provides a review of the most *relevant literature*, which is mostly, but not entirely, based on research found in peer-reviewed journals. To incorporate diverse perspectives to affect a comprehensive understanding of the issues at hand, supporting, and at times controversial, ideas were gleaned from informative sources sometimes labelled as "grey literature"—news articles, policy-related documents (e.g., American Council for Capital Formation-Policy Research Center, Macdonald-Laurier Institute for Public Policy), and position papers of trade organizations. The interwoven nature of the research questions necessitated that following an overview the literature review should begin with *Overarching Concepts* that are relevant to understanding the conceptual framework used for the research questions:

Question One: What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure? and,

Question Two: How do NACI engage with LCs? What is the nature of relationships with local communities as disclosed by North American Class I railways?

Concepts and definitions of key terms include sustainability; descriptions of formally used theories such as *stakeholder theory*, as well as informal contribution by institutional theory.

Chapter III Methodology explains the overall Methodology of the research used, and details specific methods for data collection, data reduction, and inductive methods of data analysis. Here, the methods used for both research questions are explained.

In Chapter IV Analysis and Findings, I relay findings based on multiple sources, including: the railways' published reports, charters, policies, and strategies; news articles in the public domain; archival books and dissertations; conference and court proceedings; company websites; and for comparisons with adopted guidelines and other industries. Throughout this chapter and the next, examples from a few select case studies are drawn to assist in understanding the practical, contextualized knowledge. These cases, such as CN's acquisition of Elgin, Joliet & Eastern Railway (which encircles Chicago and was declared

by CN as a strategic manoeuvre aimed at reducing freight traffic through the densest metropolitan area), and learnings offered by the Eurasian experience are incorporated.

Chapter V Discussion provides my interpretations of the previous chapter's findings, synthesizes patterns that emerged and highlights areas of congruency (as well as discordance) between disclosure and stakeholder engagement to provide characteristic relationship benchmarks for the NACI and LCs. Here, some specific case examples are incorporated to support—not the generalization of findings, but to engage in an understanding of the "practical wisdom" or contextualized knowledge as a means of constructing how the NACI are responsive to their environment (Marshall & Rossman, 2016; Flyvbjerg, 2001). I concur with Flyvbjerg (2001), who said, "The advantage of the case study is that it can "close in" on real-life situations and test views directly in relation to phenomena as they unfold in practice" (Flyvbjerg, 2001: p.82). In this section, I rely heavily on the knowledge surrounding two infrastructure projects, both of CN; not with the intention of engaging in critical discourse, but, through the support of readily available information (and to minimize the impact of organizational differences by employing data from one NACI), to highlight the graveness of the challenges before us as we attempt to optimize the business-society relationship through the examples of one railway and its lineside communities, one at a time. Therefore, the discussion in Chapter V is where the comparisons and recommended better practices from the Eurasian railways will be found. These are categorized as such where better or optimal alignment with the formal guidelines and standards exist.

In the final chapter, Chapter VI, a summary of the purpose of the research, and interpretation of findings into meaningful contributions for practice and to provide a basis for subsequent research are shared. Additionally, it highlights reflections, concerns and limitations of the study and speaks to the implications for management practice and policy review within the railways.

Research Context

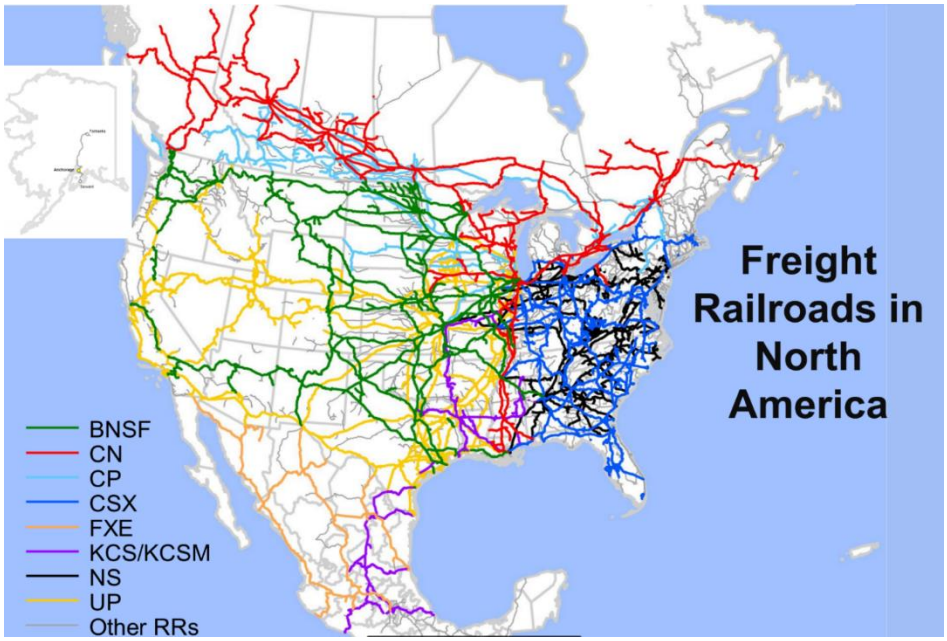
Brief History

The network of North American railroads, by track length, is the largest in the world, and is often credited as having been responsible for "catalyzing industrialization and settlement across the continent" (Hayes, 2010: inside flap), thereby changing its face. The Class I Railways of North America (NACI)[4], of which there are seven that primarily transport freight, have a history that dates to 1830 when Baltimore & Ohio[5], the oldest and first common carrier in the US, was founded. The construction of the railways was largely driven by the call to transport commodities (e.g., gold in California brought 300,000 people to the state) and to connect as many communities as possible—an act that was also necessary to establish and maintain the network's viability. The expansions needed to connect North America's west to the east[6] were the result of capitalism and to advance many political careers (Gilder Lehrman Institute of American History; Lower, 1939; Leonard, 1911). Not surprisingly, the North American Class I (NACI) railways have long since been considered the backbone of the economy and together constitute a network that spans the entire continent. The seven NACI that comprise this case study and their geographic operations are: Burlington Northern Santa Fe (BNSF), Canadian National (CN), Canadian Pacific (CP), CSX, Kansas City Southern (KS), Norfolk Southern (NS) and Union Pacific (UP).

[4] Class I refers to railway companies with annual revenues of $250M or more. North America's seven Class I railways are: BNSF, UP, CSX, Norfolk Southern, CN, CP and Kansas City Southern.
[5] Baltimore & Ohio operated until 1987 when, along with several other railways, it became CSX. As a distinct entity, Union Pacific was founded in 1862 in Washington, DC; Burlington Northern Santa Fe (BNSF) was founded in 1995; Canadian Pacific Railway in 1881; Canadian National, which resulted from the bankruptcy of several other railways was founded in 1919; Norfolk Southern in 1990 (amalgamation) and Kansas City Southern in 1887
[6] The Transcontinental Railway was completed in 1869 in Promontory, Utah.

Figure 1

Map of North American Class I Railways



Source: Transportation Research Board (2014)

Sociopolitical Context

The genesis of the NACI is inextricably tied to governmental policy, with three subsequent and distinct regimes that have transformed business strategy and regulations that impact infrastructure (i.e., space planning and permitting under federal jurisdiction) and operations: public capitalization, pro-cartel, and anti-trust (Dobbin & Dowd, 1997).

Policy has led to constraints and incentives that heavily influence managerial strategies that are predominantly mimetic[7] across the industry for NACI. North American railroading has experienced all

[7] This refers to the copycat nature of actions taken in the development of sameness or isomorphism. Neo-institutionalists such as DiMaggio & Powell (1991) and Meyer & Rowan (1977) described three types of isomorphism: mimetic, normative (influence of professional practice) and coercive (influence of regulatory and governmental requirements).

three policy styles, having benefited from both public and private capitalization as well as both cartel and anti-trust regimes, the latter of which is present in most industries.

The deregulation of the railway industry has imbued it with significant power (Harvey, 2018; Campbell, 2020). Two major pieces of legislation that impacted policy shifts were the Staggers Rail Act of 1980 in the US, which has been credited with revitalization of rail transportation; and in Canada, the Canada Transportation Act of 1996/1997 (Irani et al, 2016; Hatch, 2018; Transport Canada, 2015). These legislations resulted in increased productivity and efficiency, as pricing was then enabled at market value by railways. Unprofitable rail lines were eliminated[8], and the entire rail network was reorganized to a 40 percent decrease in track miles, but concomitant with an increase in density for overall efficiency. As competition from road and air transportation increased, so was the onus for railways to become more efficient. Commensurate with this strong need to satisfy customers and shareholders amid private capitalization was an even greater quieting of voices from the LCs. Additionally, public disinvestment reduced any perception of ownership and would have marred any meaningful public involvement.

In its recent website update on the Railway Safety Act (Canada), the Transport Ministry also advised that even, “Compliance with existing regulatory requirements will not be enough to adapt and adjust to the rapid pace of change in areas such as technology, business practices, urbanization, community involvement and human factors.” These challenges were reiterated by the 2018 Railway Safety Act Review (independent of government) which declared, “It is time to take action to find a solution to the longstanding issues of incompatible use of land near railways, given the population growth, continued urbanization and densification guarantee that the proximity between rail operations and communities will become a more and more pressing public safety issue” (Transport Canada, 2018: p.74). Therefore, not only did this foreshadow the enhanced LC involvement, but it also underscores their

[8] From 1978-1994 the number of Class I railroads, through mergers and acquisitions decreased from 41 to 12 as they competed with oil pipelines, highways, and air.

relevance even in situations where their interests have not been balanced with that of other stakeholder groups. I would, therefore, concur with Roy (1997), who opined that public-interest corporations metamorphosizing into private-interest obscure the important role of public initiative—the public, in this research, being represented by LCs.

For the NACI industry, as briefly expressed in the historical perspective, a high degree of institutionalization has shaped the culture—of both the railways themselves, the LCs and the local governmental organizations that represent them—such that some towns and neighbourhoods refer to themselves and are referred to as a "railway town"[9]. The degree to which North American railways are regulated, or ought to be regulated, by their respective federal governments is a highly controversial issue (Cairns, 2015 a & b; Campbell, 2019; Railway Association of Canada, 2007; Irani, Siers, Menking & Nickey, 2018), yet in their currently strong institutional environment, NACI strategies must either be adapted or allocate more resources devoted to transform it altogether (Dorobantu, Kaul & Zelner, 2017). This study will describe the predominant sameness in their approach to disclosures and engaging with local communities. As this institutional environment is reinforced, their social impact remains certain and relationship strategies unchanged.

Challenges that result from the degree of regulatory control by the respective federal governments, while being manifested in diverse areas such as eligibility for infrastructure investments, to obligations by railways to transport hazardous chemicals and grain from the prairies, are compounded by confusion related to interjurisdictional concerns (e.g., whether a plan by the railway is implemented and must meet federal or provincial or, less so, municipal laws).

[9] In Canada, the Dominion Lands Act of 1870 gave the railway companies the power to survey sites on which new towns would be set up in Western Canada. These constituted the majority. In cases such as Joliet, Illinois this connection remains to this day where the townspeople continue to rely on the freight rail and CN's intermodal yard's operations to support its economy. These towns have a resultant strong relationship with the railways.

The bureaucratic complexities associated with obtaining environmental approvals on infrastructure projects cannot be overestimated. One piece of Canadian legislation, the Impact Assessment Act (IAA), was recently changed (the IAA will be discussed later), but the requirements for railway projects' adherence to environmental assessment by the Surface Transportation Board (STB)[10], in fulfillment of the processes of the National Environmental Protection Act (NEPA), can be cumbersome (Danielle Gosselin, Deputy Director, Office of Environmental Analysis, STB, October 22, 2019 at the Railroad Environmental Conference). As confirmed on American Council for Capital Formation's (ACCF) website recently,

> "While NEPA provides important safeguards to ensure federal agencies carefully consider environmental impacts, the process as it stands has become a tangle of bureaucratic red tape for many industries wishing to deliver on new, modernized infrastructure projects. Overly burdensome analytical requirements, broad definitions of reasonable effects or impacts, excessive levels of review and endless opportunities for review and comment have led to significant uncertainty in planning major projects" (Isakower, March 19, 2020).

They went on to state that, "…long NEPA-related permitting times may exceed financial cycles, meaning that by the time permits are granted for needed infrastructure, the funds—whether public or private—may no longer be available" (Isakower, March 19, 2020). These factors—the historical, political, and economic environments—acting on the railway corporations are crucial to the adopted institutionalized approaches and practices surrounding the engagement of stakeholders and how disclosure to them occurs. Stakeholder engagement is currently a widely accepted way of doing business and is a requirement in other industries such as pipelines, petroleum projects, mining, and other large infrastructure projects (IFC).

[10] As per the website of this bipartisan adjudicatory body which is housed within the US Department of Transportation established in 1996, the "Surface Transportation Board is an independent federal agency that is charged with the economic regulation of various modes of surface transportation, primarily freight rail. The STB exercises its statutory authority and resolves disputes in support of an efficient, competitive, and economically viable surface transportation network that meets the needs of its users" (https://prod.stb.gov/).

In keeping with this position, a brief overview of the research setting is provided, followed by a discussion on sustainability. This discussion entails a definition of sustainability and describes the attitude, performance, and goals of businesses towards sustainable development based on a survey (i.e., GlobeScan of Sustainable Business Survey, Business for Social Responsibility). The role of business and their expectations for a shared responsibility and commitment to sustainability is consistent with the United Nations Global Compact (UNGC)[11]. It is noted, however, that although at least two NACI acknowledge the UNGC (CN; and CP in its 2018 sustainability report indicating they are evaluating the opportunity to ally with it in addition to the UN Sustainable Development Goals and the Task Force on Climate-related Financial Disclosures), none is a signatory to the compact.

Concrete measures of a legislative nature, however, will require publicly traded companies, such as the NACI, to make specific ESG disclosures (which stands for environmental, social and governance, a term which in the literature is currently used interchangeably with "sustainability"). The rationale for this is manifold, according to Mindy Lubber, CEO of Ceres. In her July 10, 2019 (the first ever congressional hearing on ESG issues) submission to the US House of Representatives, Financial Committee, Subcommittee on Investor Protection, Entrepreneurship and Capital Markets, she said: "Transportation is the largest and fastest growing source of U.S. GHG emissions…Given tightening of global regulations and disruption in the transportation sector from new technologies (including electrification and automation), as well as from new business models for mobility, disclosure of climate scenario analyses, along with other risks, are critical in order to enable companies and investors to assess a variety of outcomes and future climate risk" (Lubber, 2019 p:9). Subsequently, the ESG Disclosure Simplification Act of 2019 was passed by the Committee but is expected to fail because of bipartisan politics. It would require the Securities Exchange Commission to define ESG metrics and companies to disclose the metrics along with their audited financial statements.

[11] https://www.unglobalcompact.org/what-is-gc/mission.

Research Setting

Railways have long been considered by many as the most sustainable form of mass ground transportation for various reasons, evidenced by their performance on environmentally-friendly indicators[12] (e.g., low emissions per tonne mile compared to trucks) and economic measures such as low operating ratios[13] (Cairns, 2015). The infrastructure and supportive networks have made the NACI industry a vital connector of communities and a significant contributor to national and regional economies[14].

Table 1

Top 10 Global Railways by Market Value

Railway (relative NACI ranking)	**Market Value (Billion USD)**
Union Pacific (1)	109.7
Canadian National Railway (2)	58.4
CSX (3)	55.2
Norfolk (4)	43.1
Central Japan	38.7
East Japan	37.9
MTR (Hong Kong)	34.8
Canadian Pacific (5)	26.7
Daqin Railway (China)	20.7
West Japan	14.2

Table 1 compiled by author from various sources.

The recent increase in infrastructure spending (after a long period of stagnation and deterioration of infrastructure) in the railway industry now signals an ever-expanding impact on local communities as rail lines are maintained, reconfigured, and expanded (AAR, 2018). However, there exists no

[12] A freight railway in North America moves one ton of freight 479 miles for every gallon of fuel consumed while emitting 75% less greenhouse gases than trucks. (https://www.aar.org/issue/freight-rail-and-the-environment/)
[13] A low operating ratio is indicative of high efficiency. "Operating ratio is a company's operating expenses as a percentage of revenue. This financial ratio is most used for industries which require a large percentage of revenues to maintain operations, such as railroads. In railroading, an operating ratio of 80 or lower is considered desirable". (https://en.wikipedia.org/wiki/Operating_ratio). CN's Q1 2018 OR=.678; CP's Q1 2018 OR=.675 (https://www.benzinga.com)
[14] Most North American rail lines are older than the cities and towns they connect.

comprehensive database or listing by the major trade organizations for the NACI—either the Association of American Railroads (AAR) or Railway Association of Canada (RAC)—regarding the infrastructure projects either in various stages of planning and permitting or construction.

The investment structure of North American (NA) rail infrastructure is both complicated and significant. There is an ever-increasing awareness for North American infrastructure to support railways to respond to the demand, productivity, and transportation capacity needs necessitated by the global economy (Cairns, 2015a, b; Transport Canada, 2015; Association of American Railroads, 2016). Although competitive rivalry exists among the NACI, the geographic distribution of their rail lines is often a decisive factor impacting a shipper's choice. It is also widely understood that geographic and operational limitations dictate that encroachment on local communities is inevitable and poses challenges related to proximity and appropriate mitigation measures (Coulter & Associates, 2013). An average of approximately $26 billion per year is spent on railway infrastructure projects in the US (Irani, Frye, Grimm & Menking, 2016; Jefferies, 2019), and approximately $3 billion was committed for 2016 in Canada by CN alone (personal communication, Marc Vinh, Chief Economist, CN, October 2016). This investment is associated with a requirement for optimal, timely reporting and stakeholder engagement strategies to inform disclosure needs (Global Reporting Initiative, 2018).

Most of the past investments were derived from private funding for projects chosen based on either the highest return on investment (Association of American Railroads, 2018) or on whether they were shovel ready (Transport Canada, 2015)[15]. In 2017, approximately $13 billion USD was spent on

[15] The amount spent on infrastructure by the Canadian government in the last 15 years has been motivated by the short-term goal of stimulating local economies and creating jobs (with project approvals based on "shovel-readiness" and "fair share disbursement" across the nation) instead of the longer-term aim of sustainability, economic development, and economic cost-benefit analysis (Pathways: Connecting Canada's Transportation System to the World, Volume I). This myopic view of economics has resulted in reduced contributions for Canadian railroad infrastructure spending, from 3%-5% of GDP in the 1950s and 1960s, to 1% in 2013. Because of this decrease in infrastructure spending, the quality of railroad infrastructure in Canada, which ranked 15th out of 140 countries on the World Forum Global Competitiveness Index in 2010, declined to the 19th position by 2014.

railway infrastructure in the United States alone, while CN reported having committed $3 billion CAD[16]. Although there was a net decrease in the total miles of railway, there was an increase in capacity because of simultaneous double-tracking (i.e., adding capacity only where needed)[17] and the use of double-stacked containers and longer carloads. These factors impact the social sustainability for communities, as citizens must endure longer wait times at grade crossings, and more frequent projects increase the maintenance requirements on tracks and other structures.

The end of 2015 marked a significant downward shift in capacity and related revenue streams, and the rail industry has become much more politicized[18] in the years since then. Freight and passenger needs have coalesced, and there have been challenges related to funding, capacity demands from emerging new actors (e.g., Amazon), regulation, and infrastructure spending (Hatch, 2018). These factors, when taken together, provide some indication of the necessity to identify the stratified needs of specific stakeholder groups—such as local communities. Discrepancies are inevitable between what stakeholders require or demand and what is (or can be) delivered by railways. Legislative gaps exist at the levels of sub-provincial or state, county and municipality levels and are central to disputes (Gullo, 2018). These, therefore, challenge any timely achievement of sustainable solutions for communities and railways as is evidenced by the high incidence of litigation between communities and railways in both pre- and post-construction periods of projects.[19]

[16] CP's sustainability report of 2018 indicated an investment of $1.6B on "network resiliency" (p.71); however, 2017's commitment is unknown.
[17] Personal communication with Jeff Moller, American Association of Railroads, Sept. 26, 2018.
[18] Pillar members of organizations, such as the Surface Transportation Boards (US), were previously industry practitioners who were very connected to the transportation industry. Appointments are considered by many to now have political affiliation as opposed to subject matter expertise (confidential source, 2018).
[19] One example of litigation in the pre-development phase of a project involves the action brought by Halton municipalities against Canadian National Railway regarding the Milton Intermodal Hub in Ontario, Canada. A second example, which is post-development/acquisition of a project, is the EJ&E lines of Chicago which had an unprecedented 10-year period of oversight by the Surface Transportation Board (Finance Docket No. 35087 (Sub No.8 January 10, 2017) & Decision No.16, December 24, 2008) http://www.stbfinancedocket35087.com/html/faq.html.

One common feature of large infrastructure projects (and perhaps a contributing factor in suboptimal knowledge transfer pertaining to stakeholder engagement) is the reliance on external consultants for the leading and implementation of the stakeholder engagement process with local and/or rail-side communities on infrastructure projects. This dependency on external resources can impede internal/organizational knowledge acquisition (Aerts, Dooms & Haezendonck, 2017; Flyvbjerg, Garbuio & Lovallo, 2009) for railways and the retention of long-term relationships—factors that are central to sustainability. Another challenge relates to aggregate reporting (i.e., enterprise-wide, and not specific to projects); a notable consequence is that information is not shared across projects, thereby minimizing the learning within communities. Also, these activities of stakeholder engagement are frequently impacted by (and implemented by) separate divisions within a railway (e.g., portfolios responsible for environmental issues but executed by public affairs or communications). This retards the possibilities for continuity and focus on salient sustainability issues. To date, however, there are no definitive studies that address the relationship between stakeholders, stakeholder engagement strategies and sustainability reporting or disclosure, although some have argued that management must act in accordance with the needs of *all* stakeholders and not just shareholders (Rasche & Esser, 2006; Ayuso, Rodriguez, Garcia-Castro & Arino, 2011; Freeman, 2010; Freeman, 2017; Freeman, et al, 2010).

The North American Class I Railway companies (NACI) highlighted in this study own the majority of the industry's infrastructure (approximately 90 percent), are responsible for most of the industry's track mileage and revenue, and broadly impact the economy (AAR, 2018). In most cases, passenger railways (e.g., Amtrak) have entered into agreements to use networks owned by the Class I freight railways. Concomitantly, a surge of public-private partnerships (P3s) are increasingly being used to fund highly capital-intensive rail infrastructure projects (AAR, 2018; Jupe, 2009). It is well known that governments have used private contractors for building infrastructure projects. "The difference from P3 projects is generally increased scope and complexity of the private sector involvement in a project, the long-term

nature of its involvement, and potential involvement of the private parties in financing, operating, and maintaining the asset" (Opara, 2014). As well, issues related to the not-in-my-back-yard (NIMBY) phenomenon, can be understood from the perspective of optimal engagement of local communities. Additionally, the structure of infrastructure projects must be necessarily attractive to garner public sector support for private funding so that the required capital is available (World Economic Forum, 2016). The position taken by local communities and their elected officials can have a significant impact on project execution and the capital investments by various governments.

Railway Infrastructure

Based on the evidence that rail is a more sustainable and viable option for freight transportation[20], funding from the public sector is increasingly becoming a source of investment[21]. As a result of this, for example, the Canadian government is being implored to promote the use of rail transportation and to invest in railway infrastructure (Railway Association of Canada, 2017). Shared investment responsibility means an increased likelihood of public-private partnerships in strategic transportation infrastructure investments[22]—and the need for broader stakeholder engagement. The investments required to grow and maintain railway infrastructure are significant[23], and so even well-managed and profitable railway companies must make ongoing and significant capital expenditures related to infrastructure. Indeed, the infrastructure sector requires increased investment to enable network capacity and to drive economic growth and this is "bound by a collaborative spirit" (World Economic Forum, 2016: p.6).

[20] The Railway Association of Canada (railcan.ca) states that: rail generates only 5% of emissions of the transportation industry and 1% of the greenhouse gases; and rail is four times more fuel efficient than truck transportation (one litre of fuel is required to transport 1 tonne of freight).

[21] Projects that are often labelled as having been funded privately by railways are frequently a result of collaboration with local governments. For example, the CCX intermodal infrastructure project, Carolina Connector in North Carolina received $40M from CSX and the other $118M from taxpayers.
https://www.newsobserver.com/news/local/article229590649.html

[22] NACI have not typically published their individual goals regarding infrastructure investment. As a best practice, DB of Germany provides a disclosure regarding their projection of planned spending on infrastructure from 2010 to 2022.

[23] Due to its capital-intensive nature, infrastructure is often amortized over a 30-year period.

The challenges of implementing effective strategies and the resources required for collaboration between NACI and LCs on rail infrastructure projects provide some indication of the need for quality disclosure and effective tools. The Uinta Basin Railway Project (State of Utah) provides perhaps the only example of a modern-day public-private partnership to build new (i.e., not expansion or reconfiguration of existing) and significant infrastructure involving multiple NACI (i.e., UP and BNSF), every level of government, and every type of owner. Planning for the Uinta project involved development and comparison of 29 options along with the costs of developing three different environmental impact statements for consideration by the Surface Transportation Board. Ultimately, however, selection of the preferred option (which traversed Indian Canyon) was based on public outreach and the engagement of communities potentially impacted (Kevin Keller, HDR presentation at RREC, October 22, 2019). This example points to the benefits derived from better understanding of the linkage between stakeholder groups (e.g., local communities specifically), value creation and sustainable rail projects and their contribution in developing concrete, operational solutions for managers that enhance sustainability and are transparent to all stakeholders (Johnson, Swearingen & White, 2010).

Table 2 (Page 21) shows that North America (Canada and the US), with a combined network of approximately 300,000 km of railroad, is the largest network in the world.

Table 2

Network Length

Country	**Railways**	**Network Length (km)**
United States	UP, BNSF, CSX, Norfolk, Kansas,	250,000
China	Guangshen Railway Company Limited	100,000
Russia		85,000
India		65,000
Canada	CN, CP	48,000
Germany	DB	41,000
Australia		40,000
Argentina		36,000
France		29,000
Brazil		28,000

Economic factors such as return on investment, competitive potential, and market forces, in combination with government policy, have historically guided investment strategies regarding Canadian rail infrastructure (Cairns, 2015; Transport Canada, 2015). I would argue that the normative view of the LC as stakeholder is different in private compared to state-owned enterprises (Leach, Lowndes, Cowell, & Downe, 2005; Freeman, 2010)—the former having multiple and diverse stakeholder groups to be satisfied and interests to be balanced among them. In this regard, the 'public' is not viewed simply as a group of external stakeholders, but rather assumes the role of principal in these negotiations—with the government their 'agent' (Flyvbjerg, Garbuio & Lovallo, 2009). The strategies of private rail corporations that undertake infrastructure projects need increasingly to acknowledge the role of local communities and private citizens.

It has been suggested that the sustainability contribution of an infrastructure project can only be measured *within the context of the project*—in both the short- and long-term (Newcombe, 2003). Additionally, rail infrastructure in North America, contrary to many other parts of the world, is privately owned—a factor which, together with the legislative intricacies, complicates the engagement with LCs and disclosure on social sustainability because of the voluntary nature of sustainable practices. This study addresses links between the project-based and sustainability contexts to be researched.

This study is purposed in part to distill better practices and effective ways to approach both the engagement of LCs by railways and to support an understanding of ways to reduce the asymmetry in disclosure on social sustainability. Woven through the responses to questions one and two are examples from three international railways: Deutsche Bahn (DB) of Germany; Network Rail (NR) of the United Kingdom; and MTR of Hong Kong. From that point, insights are drawn from established practices for ways to enhance engagement with, and disclosure to, local communities. These insights are integrated throughout the analysis and findings—and later in the discussions—regarding questions one and two.

Sustainability

This study adopts the statement of the United Nations Global Compact that "Sustainability begins with a principles-based approach to doing business" (UNGC). Furthermore, "Achieving sustainability should not be a trade-off among the principles, but rather an intersection of all of these principles" (Transportation Research Board, 2011: p.4). This focus on *principles*—not products, profits, processes, planet, or people, specifically—is reiterated in the transportation industry's description that incorporates the seminal definition of sustainability presented by the World Commission on Environment and Development (WCED) in its report, "Our Common Future." (Brundtland, United Nations, 1987, p.41). The *Guidebook for Sustainability Performance Measurement for Transportation Agencies*, on behalf of the Transportation Research Board (2011), states:

> "In general, sustainability encompasses a holistic consideration of economic, social, and environmental progress—usually referred to as sustainability dimensions—with a long-term perspective. Sustainability includes not only conditions today but addresses the needs of future generations as well. And sustainability incorporates equity among socioeconomic and demographic groups, both today and over time. The fundamental principles of sustainability as envisioned in this guidebook are that sustainability entails meeting human needs for the present and future while:
> • Preserving and restoring environmental and ecological systems,
> • Fostering community health and vitality,
> • Promoting economic development and prosperity, and
> • Ensuring equity between and among population groups and over generations" (page 3).

The guidebook goes on to further explain that sustainability, though posing significant challenges from a legislative and organizational perspective because of its transdisciplinary and intergovernmental nature, is also incorporated in short-range transportation planning; project-level planning; design; land acquisition and permitting; and construction, maintenance, and operations.

An appreciation of the theoretical context for understanding sustainability is supported by Bansal and Song (2017), who made the following distinctions of note: They advised that 'corporate responsibility' (which arose in the 1950s) was related to the harm inflicted on society by the markets. This contrasted with 'sustainability' (beginning with the constraints of growth in the 1980s), which had an orientation

focused on the harm to natural systems caused by economic development. To advance meaningful and appropriately-defined research in the field, Bansal and Song (2017) proposed that future studies need to choose between using the normative theory of the firm or the systems theory of the business and society—and not both. While a normative view has traditionally been a popular approach to appreciating the role of institutionalism among railways, I opine that for this research study, Freeman's most recent iteration (2018) lends a systems perspective that is befitting of the stakeholder management approach—a new way forward—while a normative approach has defined the NACI approach to date. I would also argue that research oriented in pragmatism, which acknowledges the myriad factors simultaneously impacting managerial decisions in the current business climate, is best served by appreciating the interconnectedness of system factors—such as political orientation (both internal and external to the organization), rapidly changing legislative and regulatory environments, and the competing demands of stakeholders in a rapidly-evolving, globalized economy.

There are some fundamental differences in the focus on sustainability for North American and Eurasian railways in general. These differences arise from political influence, ownership (private or state), proportion of revenue base (freight versus passenger) and national culture (Hofstede). Additionally, priorities have shifted such that there has been a decline in new infrastructure in Western Europe for the past decade, with a concomitant emphasis on upgrading existing technology.

In Canada, the recent enactment of Bill C-69[24] for the Impact Assessment Act, which altered the emphasis on infrastructure projects from the very physically and biologically focused environmental assessments to impact assessments (and altered the associated regulatory agency from the Canadian Environmental Assessment Agency to the Impact Assessment Agency), now requires that more robust analyses of socio-economic factors material to local communities be completed with the concomitant

[24] Bill C-69 came into effect in June 2019. It changed how major infrastructure projects are reviewed and approved in Canada with an overhaul of the agencies responsible for enforcing the various legislation, NEBA and CEAA.

decision-making residing outside the government's administration. In addition to a more inclusive mix of concerns is the attention paid to approaches involving lifecycle assessments[25]—or a circular economy—and the requirement for the earliest possible and long-term engagement of stakeholders. Additionally, Bill-69 requires that the resources and financial responsibility to support the LCs' building of capacity for responding, monitoring and engagement required to affect sustainability in a decidedly intentional fashion lies with the project proponents. In short, there is opportunity for the NACI to engage in more meaningful, trustworthy, transparent, and accountable ways with LCs that truly enable them to become "learning communities" or "sustainable communities" so that they can continue to support the backbone of our economy.

To understand sustainability as practiced by each NACI, the strategic integration of sustainability, and the nature of disclosure regarding engagement with local communities, it is reasonable to first look at the attitudes, approaches and performance of companies operating in the North American context[26] from a sustainability perspective. In the 11th Annual Business for Social Responsibility (BSR)/GlobeScan of Sustainable Business Survey (bsr.org), they did just that by reporting on some insight into sustainable business as gleaned from the lens and practices of 125 corporate sustainability professionals (of BSR member companies)[27]. Although the top reported priority continues to be climate change (bsr.org), survey results noted shifts in priorities and challenges in corporate sustainability, in addition to future milestones that sustainability strategies are designed to address. They cited the concern of deeply integrating

[25] Lifecycle assessments are important in understanding the full impact of infrastructure on a community. One example of the work that is required following a railway's withdrawal of operations from a community can be found at: https://www.cityofnorthbay.ca/media/1406/cnr-pictorial-history-final-edition.pdf?v=635990094310000000. This file chronicles the construction (five years), operations (80 years), decommissioning, abandonment, and demolition (10 years) of a CNR line; and subsequent gentrification of a local community (five years) following the cessation of operations.

[26] Ultimately, measures and standards of sustainability used are globally derived, but requirements such as environmental compliance and social indicators including reporting on accident rates are monitored federally.

[27] Member companies of Business for Social Responsibility are primarily Global 1000 Companies. In addition to looking at sustainability priorities, management and sustainable development goals, there were four focus areas surveyed which included: climate change, human rights, inclusive economy, supply chain and women's empowerment (bsr.org)

sustainability into business which poses a tremendous challenge (CN, Management, 2018; Business for Social Responsibility, 2019) for which there has been little movement in the past three years (since the previous survey was conducted)[28]. Other salient findings include that over half of companies report sustainability to be among the top five priorities of their CEO—and that CEO interest in sustainability is a very important driver of sustainability, with their voice being one of the most important ways to engage stakeholders and the most effective tool among those who see its relevance[29]. However, as reported by GlobeScan, the key driver of sustainability activities is still investor interest (bsr.org). For railways, an overriding aim of sustainability rests with its opportunity to "mitigate risks that can negatively impact operations and the ability to generate revenues" (Gullo, [30]2018: p.14). The potential for local communities to be part of the solutions or mitigation of risks throughout both the due diligence process of project planning and the ongoing stakeholder engagement has not been studied. OECD (2017) points to the potential knowledge from LCs: "Stakeholders themselves can contribute important knowledge to help identify potential or actual impacts on themselves or their surroundings" (OECD, 2017: p.18). But sustainability, when approached holistically, using an integrated, systems perspective, has the potential to achieve levels of knowledge-sharing that leads to innovation and value creation for all stakeholders (Ayuso, Rodriguez, Garcia-Castro & Arino, 2011; Freeman, 2010; Garriga, 2014; Kramer & Pfitzer, 2016; Lankoski, Smith, & Wassenhove, 2016; Provasnek, Sentic & Schmid, 2017). Value creation is relevant because it is used by proponents of stakeholder theory to balance the interests of all stakeholders without trade-offs. Freeman (2010), in particular, refers to the need to increase the size of the pie or derived benefits and the interconnectivity of goals of stakeholders.

[28] In part, it was information of this nature gathered from my conversations with railway executives, presentations and conferences, elected representatives of municipal governments, retired railway executives and public administrators, that provided the incentive for me to conduct this research in order to better understand the disconnect between the business sustainability strategy and its gap with its practical implications for our society.
[29] Later in this research, I will discuss the relevance of CEO and top executive interest to performance in social sustainability through various channels of engagement and disclosure.
[30] Michael Gullo is Director of Policy and Government Affairs, Railway Association of Canada.

The critical path to achieving sustainability in part is to address the issues of relevance to stakeholders. This involves the process of soliciting, assessing, and responding to the needs of those who can be impacted by—or can impact—a project or enterprise. The issues are considered "material" and this process, known as the materiality assessment, typically culminates in a materiality matrix.

Materiality Assessment

A materiality assessment is a stakeholder engagement exercise that gathers important insight on specific environmental, social and governance (ESG) issues. This insight then forms the basis of the sustainability reporting and communication strategies; and sometimes, internally strategic planning, operational management, and capital investment decisions. Interest in materiality assessments is developing, and their adoption is being pressed by reasons that include:

> "1) investor demand for more disclosure; 2) global reporting framework synergies; and 3) financial market convergence. *Investors want more transparency on ESG risks and opportunities*, as illustrated by the recent spike in shareholder proxy demands. At the same time, there is new guidance from institutions such as the Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC)[31] and Sustainability Accounting Standards Board" (SASB)[32](Greenbiz, 2013).

Limitations. A broad-based concern of sustainability reporting is that data gets reported but the essence of the sustainability narrative to a diverse set of stakeholders goes uncommunicated or is obfuscated. Materiality assessments provide resolution to this issue.

Materiality assessments serve a three-fold role in reporting: 1) disclosure strategy; 2) content design; and 3) communications based on stakeholder segments. Process inventories are used internally to advise senior management on the assessment and analysis of the company's performance based on stakeholder

[31] The International Integrated Reporting Council (IIRC) was cofounded in 2010 by the GRI to promote sustainability performance disclosure with the use of a comprehensive report that includes financial and non-financial statements. A 2013 MOU declared their continued collaboration (EY/Center for Corporate Citizenship)

[32] The Sustainability Accounting Standards Board (SASB) has developed industry-specific standards for reporting that supports businesses to "identify, manage and report on the sustainability topics that matter most to their investors" (sasb.org). This enables company-company comparisons within an industry that is based on feedback from companies, investors, and other market participants as part of a transparent, publicly documented process. (sasb.org)

perspectives. Over the last few years, sustainability reporting has become more web-based, with a few railways not even producing a portable document format (pdf) but one that is strictly electronic, permitting real-time and targeted strategies, such as community investments to local communities.

Stakeholder Engagement. An important part of the materiality assessment involves the identification and engagement of all stakeholder groups by the executive at the highest level within the organization—beginning with an inventory of material issues drawn initially from an internal workshop. Questions arising from the workshop usually inform a survey completed by a diverse mix of external/internal stakeholders. Survey data are then correlated into a matrix (typically with four quadrants) with stakeholder interests ranging from low to high on the X-axis and the railway's interests on the Y-axis. Each quadrant enables clear distinction regarding prioritization and alignment of issues, thereby allowing a comparison of the various perspectives of the stakeholder groups. This resulting quantified analysis allows one to see the gap between stakeholder expectations or material concerns and the current functions, thereby informing strategic planning and the critical bridge between operations and reporting.

Risk Management and Valuation.

> "For example, analyzing carbon in the context of production efficiency and [earnings before interest, taxes, depreciation, and amortization] (EBITDA), helps a company understand how its business model would be affected by a price on carbon. If the carbon footprint of a production facility or product is a significant market driver, then the company can assess its risk-to-hold value of its current assets, and inform business and financial planning, such as where to best allocate its operating expenses (OPEX) budget towards operational improvements, or its capital expenses (CAPEX) towards research and development and innovation" (Greenbiz, 2013).

Stakeholders can therefore influence a company's approach to risk management, operational management systems, product development, R&D, marketing, and stakeholder communications (Greenbiz, 2013). Oftentimes, communities are viewed as a potential risk to be mitigated rather than being participants within an opportunity to be pursued. This latter perspective negatively impacts the

engagement process, making it into a communications or public relations project as opposed to a chance to innovate novel solutions.

Sustainability reporting is largely voluntary (with few exceptions, such as GHG emissions and safety), while financial reporting is regulated, which makes companies more cautious about its implications. Indeed, companies involved in training on how to report using GRI standards have reported that their legal departments do not permit the use of the term "material" because of its potential interpretation by those who align it with financial disclosure and culpability. In other words, identified stakeholder issues could expose a weakness. But the reality is *companies that do the work gain valuable roadmaps for enterprise risk management and strategic planning.*

> "The historical trend on sustainability reporting was 'less is more.' That is, if you're not prepared with a positive impact story, say nothing. In today's fast-moving, social media-driven markets, real, substantive content is fundamental. From the stakeholder perspective, telling your sustainability story and the progress of your journey is a strength. To investors, it's a proxy statement of management quality; to customers, it informs choice and brand loyalty; and to public institutions and communities, it's table stakes for establishing or maintaining a company's social license to operate." (Greenbiz, 2013).

GRI's framework includes clarified guidance on assessing materiality, and the Sustainability Accounting Standards Board is working to create sector-specific materiality guidance. The current trend in North America is that socially responsible investors (SRI) are converging with traditional market investors who are accounting for sustainability issues as they also do with traditional risks and opportunities (Greenbiz, 2013).

"This was demonstrated when the Investor Network on Climate Risk (INCR) joined with NASDAQ, NYSE and several other global exchanges in requesting that the World Federation of Exchanges make sustainability/ESG reporting a mandatory listing requirement for all stock exchanges"(Greenbiz, 2013).

Thus, the emergence of the sustainability stock exchange. "In fact, the INCR proposed segments of a listing requirement specifically include a materiality assessment in annual financial filings. It is clear

the role of these assessments is becoming more important to the future of CSR reporting" (Greenbiz, 2013).

Sustainability, NACI, and Materiality

As suggested thus far, it is not possible to discuss the sustainability of railways without drawing on the importance and untapped salience of one stakeholder group specifically—the LCs (Freeman, 2010). For several reasons, the sustainability landscape for the Class I railways in Canada, CN and CP, appear more evolved than in the US. For example, there are no formal documents published by the representative organization, Association of American Railroads (AAR), regarding any collective action on sustainability. In contrast, members of the Railway Association of Canada (of which CN and CP belong) conducted their own materiality assessment of which sustainability was among the top three most salient concerns for RAC members (Network for Business Sustainability, 2014) and was identified as a strategic priority in two successive strategic plans (Gullo, 2018). The resulting Sustainability Working Group then implemented a materiality assessment which, after analyzing sustainability reports from the seven NACI, 30 interviews with investment representatives, think tanks, municipal associations, First Nations, and a public participation workshop involving academia and non-governmental organizations, resulted in the identification of four priority areas: rail safety, supply chain, energy emissions, and assets and socio-economic impacts. These material topics are described as follows:

Table 3

Materiality Topics Developed by the Railway Association of Canada

Rail Safety	SMS and Safety Culture • Safe railway operations • Safety management systems • Safety culture
	Dangerous Goods and Emergency Preparedness • Accident, incident prevention and outreach • Storage, handling, and transportation of dangerous goods • Emergency preparedness • Remediation and recovery
Growth, capacity, and supply chain	• On-time and efficient service • Rail capacity and growth • Supply chain collaboration • Proximity and land use
Energy, emissions, and assets	• Environmental benefits of rail • Emissions and risk management • Climate change adaptation
Socio-economic impacts	• Direct and indirect economic and social impacts • Railway investments • Labour and aboriginal relations
The highlighted areas are those in common with the emergent themes from my qualitative analysis.	

Source: *Railway Association of Canada, 2018.* List of material topics developed by the Railway Association of Canada which resulted from an industry workshop held with railway representatives, academic institutions, and non-governmental organizations.

Significant findings of the process were encapsulated in the following:

> "Participants advocated for open communication with multiple stakeholders, especially First Nations and communities. "The stakeholder piece is the heart of sustainability," said one participant. *They also urged railways to consider and enhance their impacts on communities. These impacts are many and varied, from land use to employment to other forms of community investment*. A passenger rail representative suggested that railway stations could become community hubs, with grocery stores and meeting places." (Emphasis, my own; Network for Business Sustainability, n.d.).

As this research unfolded, the highlighted areas of Table 3 (above) also emerged as relevant themes when the qualitative analysis was completed on the sample data. The nature of qualitative research involving emergent processes dictates that the planning must be flexible enough to accommodate change as themes evolve (Creswell & Creswell, 2018). Topics of greatest concern at the intersection with LCs and railways were safety, direct and indirect socio-economic impacts, railway investments, Aboriginal relations, proximity and land use, rail capacity, and growth and climate change adaptation. Climate change and its potential impact on infrastructure is a particularly important area of concern for LCs because it can have devastating consequences that increase the vulnerability of railways

and the safety of LCs (Canadian Rail Research Laboratory, CaRRL, n.d.). (Also see geotechnical events in Chapter IV Analysis and Findings section).

While the above represented RAC's own materiality assessment, the best practice within sustainability performance involves the completion of the materiality assessment by each actor as an engagement exercise with its stakeholders, thereby leading to several decision points for the respective company.

Sustainability disclosure

The Global Reporting Initiative (GRI Standards), in addition to its standardization of the reporting process, places materiality at its core and provides direction on how it should be completed. These involve aspects of greatest concern to stakeholders that relate to environmental and social issues and have the most significance to the company's business. The GRI is harmonized with other guidelines, such as Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises (2019), ISO 26 000[33] and the UN Global Compact. ISO 26 000, through a system of multiorganizational processes, gives guidance on integrating socially responsible behaviour into organizations and represents a form of transnational governance (Hahn & Weidtmann, 2016) which aims to "maximize an organization's contribution to sustainable development" (ISO 26 000: p. ix). Investors of all types benefit from reports that have been independently assured by an external firm and, therefore, "robust material and audited sustainability information for corporations" is highly encouraged and endorsed. To date, evidence suggests that time and resources, as delimited by company size, are key factors impacting social responsibility action as well as whether the business is networked. Expertise and

[33] According to the International Institute for Sustainable Development (2008) considerable debate surrounds the significance of ISO 26000 for small and medium enterprises (SMEs). Based on their survey findings regarding advancing social responsibility, SMEs saw standards as a preliminary tool for the introduction of sustainability but did not consider them of high value in key business activities for viability such as raising skills, diversification of products and services and acquiring and maintaining legal compliance. Furthermore, a need for less formal methodologies of social responsibility and better understanding of the various subcultures were highlighted (IISD, 2008).

financial resources—but also if an obvious linkage between business profitability, stakeholder relations and daily operations—were factors necessary for the adoption of social responsibility by small and medium enterprises (Perrera, 2008). I would submit that this degree of how remote the social responsibility principles are to daily operations are presumed also to be present with NACI because their social license to operate continues in the absence of any significantly publicized dispute with LCs.

The factors that impact and are impacted by the NACI-LC relationship moderate social sustainability disclosure as determined by themes arising from the review of the literature. These factors, which inform this study's conceptual framework, arise predominantly from peer-reviewed literature, but also guidelines, standards, and grey literature as found in news articles, industry publications and papers/presentations by subject matter experts.

Chapter II: Review of the Literature

Overview

This chapter, Review of the Literature, lends support to the development of various components of the Conceptual Framework. In responding to question one, several factors are relevant. These include the characteristics of quality disclosure, one of which is stakeholder engagement. Components of the Global Reporting Initiative's Standards, which are widely accepted by organizations wishing to structure quality disclosure, is detailed. Additionally, assurance, diversity, and other pertinent links of the business-and-society interface on sustainability performance are addressed through the lens of characteristic disclosure and stakeholder engagement by North American Class I railways with local communities. This integration of concepts covers principles and standards increasingly accepted globally in pursuit of Sustainable Development Goals 2030.

I operationally define concepts of sustainability, social responsibility, and stakeholder engagement by exploring key indicators and identifying their relationship to the objectives of this research study. Salient theories such as stakeholder theory and institutional theory are discussed.

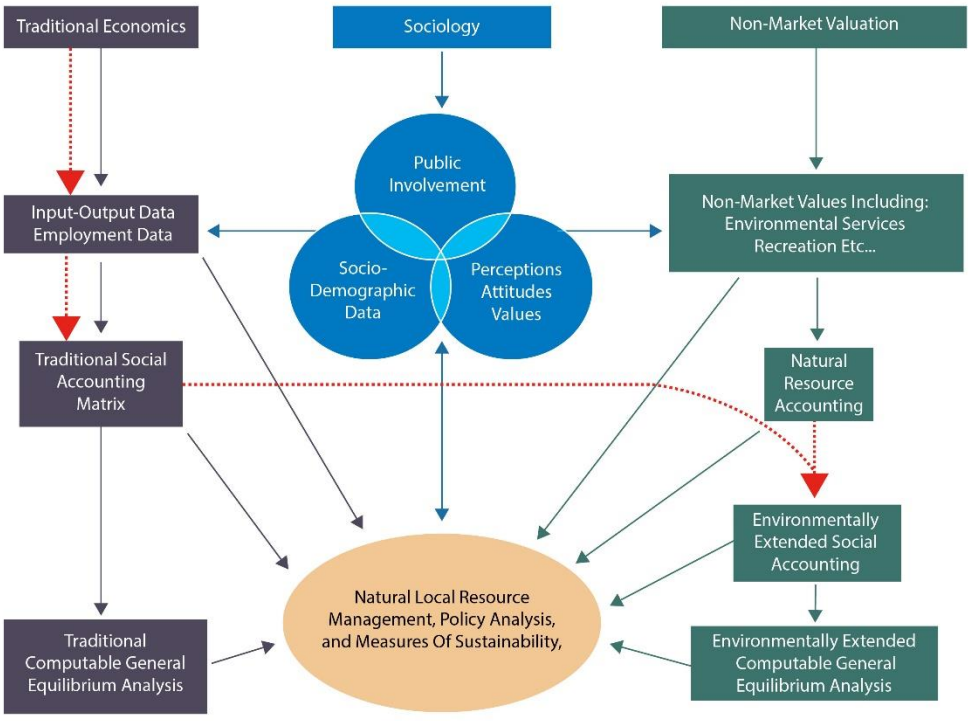
This study accentuates the interconnectivity of the social dimension of sustainability as the dependent variable impacted by stakeholder engagement, relationships with LCs—its importance is becoming progressively important as we begin to digest the power of the voice of LCs (represented or not; organized or not)—and its impact on governance, economy, and the environment. Guidelines, standards and trends of disclosure and project management used to affect sustainability are addressed alongside the challenges of the company-wide strategic integration of sustainability and the complexities of evaluating social performance in the context of attaining goals specific to sustainable development.

Strategic Management

In laying the groundwork for this study's approach, a combination of concepts used by economists (strategic management) and sociologists was introduced (refer to Figure 2). Strategists are interested in optimal strategies based on insights of successful firms, while sociologists will investigate differences

Figure 2

Linking the Social Sciences to Inform Policy.



Source: In *Learning from the Landscape*, Bott & Udell (2018) p. 233. Developed by the Social Science Research Group, Northern Forestry Centre, Canadian Forest Service for the Foothills Model Forest. Permission by William A. White.

This figure demonstrates two key points: 1) the parallel processes between the ways in which sustainability is conceived for value across business and society—the economic and social realms. This relationship is mirrored in this research which also combines the sociologists' longitudinal view of examining across many actors and data with the strategic approach used by economists (what promotes exceptional sustainability performance); and 2) the need for social accounting, as impacted by environmental (i.e., physical) variables to be better integrated into non-market valuations.

across many firms or an entire industry over time. By combining elements of these two major perspectives—industry population, variances in behaviours across firms, and within a firm over a period, and optimal strategies— a fuller understanding of exemplary and prescriptive firm behaviour for use by executives and managers can be derived, as well as the post hoc approach to deciphering trends in corporate behaviour—a key objective of this research. "The most basic method in strategic management is to observe the winners and look for what makes them win. The most basic method in economic sociology is to observe large numbers of firms and look for what explains differences in their behaviour, following the comparative analytic strategy outlined by John Stuart Mill and Émile Durkheim" (Dobbin & Baum, 2000: p.2).

Disclosure in the form of sustainability reports is an engagement strategy presumably for multiple stakeholders, as it uses public language. Gao, Yu and Cannella (2016) asserted that public language is a strategic tool used to engage both stakeholders and competitors. Within an integrated model, Gao et al. (2016) classified its uses according to four setting types: entrepreneurial, image threatening, financial and competitive. However, Oliver (1991), in *Strategic Responses to Institutional Processes,* also addressed managerial decisions based on salience and cost-benefit analysis. She also developed a typology that explained organizational behaviour according to specific strategic responses (acquiesce, compromise, avoid, defy, and manipulate) based on context (choice limited by external pressures in the environment to which a response is necessitated for survival) and motives (attempt to attain stability and legitimacy). The institutional explanations, therefore, related to conformity, habit, and convention, feed the idea that stability and power is then attributed to the institutional environment (Oliver, 1991).

The surge in business interest in sustainability and corporate social responsibility, though having its revolutionary roots in the 1980s, became an identifiable and, I would submit, institutional response in the case of the railway and other industries to the global financial crisis of 2008 when civil society sought ways to make businesses more responsible for their actions (Freeman, 2017). Actions that were previously

considered a moral obligation, duty or "nice to do," where benefits flowed toward constituents (hence the term "corporate social responsibility"), are now better reflected in "corporate responsibility," (Bansal & Song, 2017; Greenwood, 2007) "corporate sustainability," or "sustainability." Sustainability, however, has not been consistently or well defined in the literature. Therefore, creating a management approach that balances the three dimensions of sustainability—economic, social, and environmental—poses a significant challenge for corporations (Herremans, Nazari & Mahmoudian, 2016; Huemann & Silvius, 2017; Martinez, Peattie & Vazquez-Brust, 2019; Planko & Silvius, 2012; Silvius & Schipper, 2014; Transportation Research Board, 2011). Nevertheless, some industries have reported substantial progress towards the sustainable development goals (SDG). Others have lagged in the restructuring of, and performance towards, the necessary strategic and operational goals.

In their review of research studies on determinants of sustainability reporting, Dienes, Sassen and Fischer (2016) conducted a systematic review which examined 85 reports and found content analysis to be the most frequently used methodological approach. Content analysis was also used by Clarkson, Li, Richardson and Vasvari (2008) in their study on the relationship between the level of environmental disclosure and environmental performance. Therefore, because of its pervasiveness in studies of sustainability reporting and performance, the arguments for using content analysis in the context of this research will be laid out.

In the case of Class I North American railways (NACI), sustainability research in general has been sparse—and studies on the social dimension of sustainability completely lacking. Although the reasons for this gap are unclear, they could relate to the view of railways as strong environmental performers[34] within a transportation sector known for its negative environmental impacts. However, in the push for operational efficiency and environmental sustainability, some railways have altogether neglected to

[34] Railway transportation is reportedly four-five times more fuel efficient than transportation by truck. One train can take as many as 400 trucks off the highways (based on the 2018 report of 400-car length trains being assembled in Joliet, Illinois); and one gallon of diesel can haul one ton of freight 450-500 miles.

engage local communities (and unleash the sustainable benefits of LCs), while others have not achieved meaningful, quality engagement that could promote innovation and value creation (Ayuso, Rodriguez, Garcia-Castro & Arino, 2011; Freeman, 2010; KPMG, 2011, 2016; Schramade, 2016b; Watson, Wilson, Smart & Macdonald, 2018). Sustainability disclosure, as investigated by earlier researchers, is intricately tied to stakeholder engagement, an association which will be elaborated on in this section. This research, therefore, seeks to contribute to the literature by filling this gap with a study on the role of stakeholder engagement in the relationship of local communities with NACI on infrastructure projects.

Overarching Concepts

Stakeholder Theory: A Primary Role

For several decades, companies have been forced to relinquish their purely capitalist views (Porter & Kramer, 2011) for more inclusive management approaches in response to pressure from investors (i.e., the markets) and regulators (responding to citizens' demands) to incorporate environmental, social, and governance-related performance in their reporting[35] (Doyle, 2018; EY & Boston College, 2018; Railway Association of Canada, 2018). Among the many schools of thought offered in the name of management direction, stakeholder theory has arguably been the most widely accepted approach used by proponents of sustainability. This is partly because of its ability to explain the relationship between a company's allocation of its internal resources to the many stakeholder demands that impact success (Freeman, 2010).

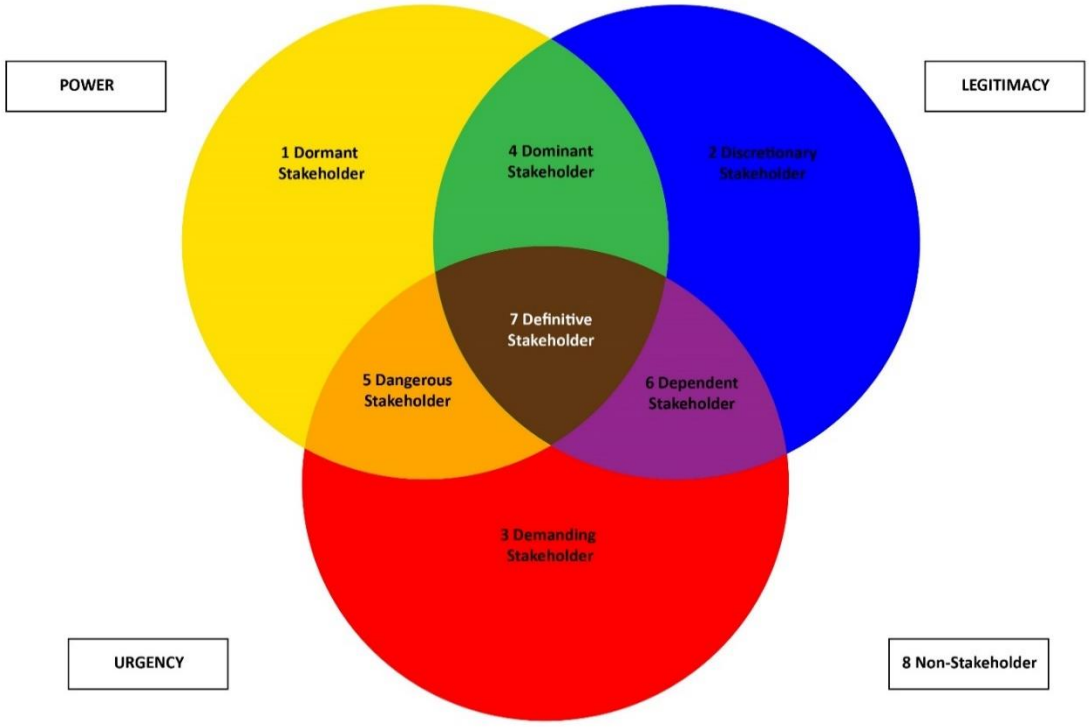
Typology. Stakeholder theory (ST) was designed to address three main objectives (also known as the *basic mechanics of stakeholder theory)*: (i) the problem of value creation and trade; (ii) the problem of the ethics of capitalism; and (iii) the problem of the managerial mindset (Freeman, Harrison, Wicks, Parmar & DeColle, 2010). The problem of value creation related to the challenge of shifting relationships when the context of business would change depending on the society, industry and nation, and the

[35] This triad is frequently referred to as ESG reporting.

impacts of capitalism (i.e., a change in dependency of resources). Ethics of capitalism addressed the need to look beyond the economics of value creation and trade (Freeman et al, 2010). The problems of the managerial mindset referred to the need to impact what was taught and expected of managers so that they could make decisions resulting from globalization, turbulence (i.e., from environmentalism) and business ethics. ST did not pit ethics against capitalism, but rather saw them as coalescing. The unit of analysis was no longer capital, but instead the *relationships* between business and its stakeholders.

Figure 3

Stakeholder Typology



Stakeholder Typology: One, Two, or Three Attributes Present. Interactive effects that contribute to a stakeholder's saliency which can be independent of, or borrowed from, other allies. These include the characteristics of a stakeholder's ability to influence a firm (power), the stakeholders' relationship with the firm (legitimacy), and a stakeholder's level of claim (urgency) against the actions of a firm. Adapted from Mitchell, Agle, & Wood (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886. Source: Mitchell, Agle & Wood (1997).

Stakeholder theory, therefore, emerged out of the following four ideas: *the separation fallacy* (the idea that a business decision and an ethical decision are mutually exclusive); the *integration thesis* (which speaks to the intimate connection of business and ethics); the *open question argument* (the receptivity or openness to business decisions and their explanatory theories, such as for whom value is created or destroyed by a decision); and the *responsibility principle* (Freeman, Harrison, Wicks, Parmar & DeColle, 2010).

Complementary Theories. Within stakeholder theory (ST) there exists elements of overlap with several other theories, such as legitimacy theory (Chen & Roberts, 2010; Hummel & Schlick, 2016), and resource dependency theory (RDT). Legitimacy theory refers to the idea that activities meet the values of society and is socially accepted by the socio-political and regulatory environment the firm operates within, whereas RDT refers to the railway accessing the necessary capital to successfully conduct its business from resources outside of its organization, (Pfeffer & Salancik, 1978). Stakeholder engagement is largely based on stakeholder theory (ST); however, Freeman, Phillips, & Sisodia (2018) recently declared that ST should be viewed *not* as a single theory, but as a genre of theories. He opined that where many divergent opinions on ST have been levied, there has been much overlap and compatibility with resource dependency, legitimacy theory, and others. Theories of legitimacy or voluntary disclosure and political economy (resource-based) have provided some preliminary understanding of factors at play in stakeholder engagement and disclosure (Clarkson, Li, Richardson & Vasvari, 2008). However, while resource dependence might set the context in which we could understand the overall strategic direction, or motivation, for the development of an infrastructure project and the role of a particular LC on impacting the processes, stakeholder theory has its relevance in every aspect of the framework, as well as in future implications for application. There is an appreciable overlap of these theories—for example, if a company's viability is contingent on a group of stakeholders, then resources must be allocated to them (Freeman, 2010). Inherent aspects of the stakeholder theory provide for the inclusivity of groups (which

extends to acknowledgement that LCs are unique audiences deserving of a communication channel that informs them on follow-through of their concerns). Also, since management decision-making is affected by the relationship with external entities, and that value is achieved by the ability to optimally involve that which the company is reliant upon, I find that the applicability of legitimacy and RDT constitute important aspects of stakeholder theory. I propose that stakeholder theory (Freeman, 2010; Freeman, Phillips, & Sisodia, 2018) is arguably a comprehensive systems theory—contrary to Bansal (2019)—that incorporates elements of several other theories. This is the definition of stakeholder theory that I find most applicable in understanding the dynamics of the NACI-LC relationship.

Stakeholder Perspective. To effect positive outcomes, railways need to match stakeholder perceptions with the corporation's results of the materiality matrix—which must then be aligned with the engagement strategies used by their corporate development personnel. Stakeholder theory is, therefore, quite applicable to environmental and spatial change. Lankoski, Smith and Wassenhove (2016) noted that "…it is not the absolute level of environmental impacts per se that determines stakeholder value (and stakeholder reactions) but how these impacts relate to the reference state employed by stakeholders" (p.234). This reference state is critical to framing the circumstance and the interpretation of a loss or gain, which, in social responsibility, for example, has a propensity for stating changes from past performance as improvements (Lankoski et al, 2016).

This viewpoint is common to Porter & Kramer's (2011) concept of Creating Shared Value, which sought to redefine business not as a source of sustainability-oriented problems but one capable of meeting the broader needs of society. In so doing, the "competitiveness of a company and health of the communities around it are closely intertwined" (Porter & Kramer, 2011: p.66). In an environment of shared value, communities would not feel as though companies are benefiting from their sacrifice (for example, of high unemployment and local business distress), but that social and economic realities of the LCs are also augmented and not seen as peripheral to the issues at hand.

Institutional Theory: A Secondary Role

Institutionalization refers to the process undergone by organizations that have been influenced by and conform to the pressures of external actors, thereby becoming imbued with value, social meaning, and long-held beliefs and values within the industry regarding their stakeholders and the roles they play in exerting pressure on corporations. Durand, Hawn and Iannou (2019) and Oliver (1991) proposed a model of institutional theory on how organizations generate responses to normative pressures and a typology of strategic responses to institutional process, respectively. The evidence which supports our understanding of the relationship between sustainability performance and sustainability disclosure is mixed. Clarkson et al (2008) found that companies with good sustainability performance will disclose information to increase their market capitalization; that is, superior performers disclose more. Furthermore, poor sustainability performers disseminate high volumes of low-quality information, which is also done in the pursuit of garnering a positive reputation or acquiring legitimacy among stakeholders (Hummel & Schlick, 2016). This theory promotes a balanced approach to disclosing based on stakeholder interests (e.g., integrated reports of IIRC and qualities such as transparency, accountability etc.). In summation, the greater the readability of sustainability (i.e., CSR) reports—as measured by complexity indices typically used to measure obfuscation in accounting and finance research—the better sustainability disclosure and sustainability performance (Nazari, Hrazdil & Mahmoudian, 2017).

Stakeholder theory also explains the *connections* between specific strategic objectives and stakeholder management, while variations of the theory (as influenced by prospect theory) lend greater understanding of how *value* is attributed to corporate actions by stakeholders (Lankoski, Smith & Wassenhove, 2016). This latent construct of value, although typically defined differently across stakeholder groups, is a key unifying factor within groups (it is acknowledged that even within local communities, a wide range of opinions and needs will exist on any issue, although appropriate decision-making processes of public participation can satisfactorily support this). In line with this thinking,

connections between successful sustainability initiatives and specific stakeholder groups, and between sustainability and organizational attributes, have been suggested. Abbett, Coldham and Whisnant (2010) concluded that the congruency between organizational culture and sustainability is proportional and predictive of its successful integration or embeddedness in corporate activities; that is, the more they are alike, the greater the opportunity for sustainability success.

Tang, Hull, and Rothenberg (2012) addressed the many dimensions of sustainability engagement strategy in developing their theory of maximizing potential benefits of sustainability: a good pace of activities, relatedness, and consistency of activities. Basu and Palazzo (2008) addressed the importance of consistency in sustainability strategy to achieve alignment more easily with the firm's overall strategy, prioritization, and resource allocation. While consistency provides a clear message to stakeholders regarding commitment, inconsistency, on the other hand, could signal opportunistic tendencies, questionable intent, or impression management (Tang et al, 2012).

Stakeholder Engagement

Local communities have been marginalized in importance on the stakeholder landscape with railways; however, attitudinal shifts must occur when a company's viability is contingent on a particular group of stakeholders (Bryson, 2004)—which then necessitates that resources must be allocated to them (Freeman, 2010). Mitchell, Agle & Wood (1997), in citing the opinion advanced by Clarkson (1995), indicated that there is no difference whether the relationship is real or potential—they are equally relevant. Although this NACI-LC relationship has not been well studied, the relevance of stakeholder engagement in the context of sustainability has been investigated by many researchers (Manetti, 2011; Mathur, Price & Austin, 2008; Moratis & Brandt, 2017; Morsing & Schultz, 2006; Onkila, Joensuu & Koskela, 2014). In fact, the managerial perception of stakeholder input has been found to influence the company's sustainability direction and practices (withholding or allocation of resources) (Sharma & Henriques, 2005).

Moratis and Brandt (2017) developed a stakeholder engagement checklist to examine the quality of disclosure by corporations and their degree of alignment with GRI guidelines. Prior to this, Friedman and Miles' (2006) ladder of stakeholder engagement, with a lesser emphasis on a top-down approach with stakeholders, expanded on Mitchell, Agle and Wood's (1997) ladder of management.

This link between stakeholder engagement and disclosure, the focus of my research question two, has been researched in several industries—including financial, aviation, and energy and extractives (Herremans, et al, 2016; Moratis & Brandt, 2017; Onkila et al, 2014). However, these studies relied exclusively on enterprise-wide corporate data, which is how disclosures to local communities (LCs) are done. Therefore, regardless of the industry, we find the data necessary to understand the operationalization of the sustainable development goals on the ground and based on projects to be lacking (International Finance Corporation, 2007; Meyerstein, 2017). Likewise, absent in the literature are any empirical studies that point to the impact of SE on LCs when experienced at the level of individual railway projects. Furthermore, although effective stakeholder engagement is now a widely accepted precursor to sound strategic management and business success, and to informing content on material topics in sustainability reports, there remains a lack of insightful project-specific information to enlighten and benefit LCs linked to railways within North America. The engagement of local communities, the channels of communication used, and information therein relayed, have something to tell us about the railways' strategies and attitudes toward LCs and how effective their current drive toward achieving the SDGs is.

My research borrows from Mintzberg's (1990) assertion that decision-making closer to where its impacts are felt is key to resolving social and ecological issues that involve firms—at the management levels of their operations or periphery [read: locally with communities and municipalities]. In keeping with maintaining a connection between these expressed practical needs and localized decision-making is the information sharing both necessary for and resulting from stakeholder engagement. Freeman, Phillips and

Sisodia (2018) argue that "both stakeholder management and stakeholder theory could benefit from a more pragmatist philosophy." Stakeholder theory is particularly useful in understanding a targeted corporate response to a strategic direction, or in identifying the rationale for choosing the development of one area over another. While elaborating on how various categories can bring relevance to stakeholder theory (ST), Donaldson and Preston (1995) divided the theory into descriptive, normative, and instrumental types of work (beyond the scope of this study), with the normative[36] view being more central to ST and overall, to the understanding of SM.

Later in this chapter, I will use these basic mechanics in succession to achieve the following: substantiate decisions made related to methodology and methods; provide evidence that supports the dynamics of sustainable projects and stakeholder engagement (International Finance Corporation, 2007); and offer insights for practitioners and academics who grapple with optimal project-specific interface with local communities.

The quest for legitimacy is crucial in the processes of disclosure, as it affects the ways in which information is ultimately used and the significance attributed to different variables that align with stakeholder interests. Legitimacy refers to alignment of the railway's values with that of society and whether the organization should have, amongst its goals, societal expectations (Chen & Roberts, 2010). From the point of conception of the oldest NACI about 160 years ago, railways were designed as an important conduit for economic development (e.g., transportation of natural resources such as gold and for industry), to connect communities, and to transport people, to a lesser extent. As such, achieving and maintaining legitimacy for each project (and operations) has always been important for NACI because of the shared space and direct consequences to rail side communities. For some time, a perfect storm has been developing at this point of intersection between the LCs and NACI. On both sides of the border,

[36] Normative refers to the requirement of a "fit between stakeholders, values, social issues and the society within which managers operate" with audits for the identification of social issues and values, plus monitoring of performance (Freeman et al, 2010: p.214)

various political and socio-economic realities have contributed to the challenges we see today: the privatization and concomitant deregulation of the Canadian railways in 1995; the Staggers Act in the US[37] (both as previously mentioned); major supply chain disruptors, such as the transportation of crude by rail[38], and repeated derailments and oil spills—for example, the Lac-Mégantic tragedy, Gogama, and many others. These incidents have led to constituents challenging the industry's social license to operate (Gullo, 2018). But the precipitating causes are far deeper than a response to the "growing western economy", as suggested by Gullo—a key factor, but nonetheless one of many that bear opportunities for change and further development for the industry. However, along with the need to have social acceptance, a necessary component of social license to operate, is the historical, political, and economic environments that are germane to the genesis and development of the railway industry in North America—key factors in understanding how NACI are situated within our societal context.

Projects

To accomplish their infrastructure objectives and enterprise goals, railways, as with other enterprises, use projects to achieve sustainability. Sustainability is related to the products created by projects, the processes used in creating value, and the organizational structure within which resides the very attitudes and approaches held by the managers who enact the projects. The integration of sustainability into projects, and the relationship of sustainability with project management, are

[37] The Staggers Rail Act deregulated the railway sector in 1980, one of the first in the US, as part of an overhaul to the transportation industry. The act permitted railroads to enter into contracts and exercise prudence involving the abandonment of unprofitable routes and merging with other companies. It is credited with saving the railways which went from 41 to 12 major railways and many jobs were lost along with numerous bankruptcies. Until then, The Interstate Commerce Act of 1887, regulated shipping rates in what was effectively a monopoly within transportation.

[38] In his final address to the Senate regarding failure to adopt the amendment of Bill C-69, D. Black discussed the significantly increased transportation of crude by rail in the two years prior to this writing: "the amount of oil carried on trains is up 500 to 600 per cent. This is not an ideal circumstance. Our very Transport Committee, a year or a year and a half ago, examined this issue and alerted the Senate to the risks that we're incurring." (https://sencanada.ca/en/content/sen/chamber/421/debates/307db_2019-06-20-e?language=e#115)

increasingly being viewed as catalysts of change—though few studies have addressed the intersection of these two fields (Martens & Carvalho, 2016). Researchers have debated the difficulties of translating strategic sustainability objectives into activities (Marcelino-Sádaba, González-Jaen & Pérez-Ezcurdia, 2015; Martens & Carvalho, 2016; Simionescu & Silvius, 2016). This difficulty results from the tension created by the temporal differences associated with projects—which are temporary organizations by nature, ending with acceptance of their deliverables—and sustainability, which invokes a long-term, future-oriented horizon. Additionally, although project management literature employs an instrumental view of stakeholders, stakeholder engagement literature clearly does not—it utilizes a normative view. In fact, Jones, and Wicks (1999), who proposed a convergent stakeholder theory, assert that both normative and instrumental perspectives are vital to the normative core.

Marcelino-Sadaba, Gonzalez-Jaen and Perez-Ezcurdia's (2015) research based on their review of 450 studies provided an understanding of how strategic sustainability objectives were transformed into specific actions. Most of the research that investigates the confluence of sustainability and project management has been on construction projects and, specifically, infrastructure projects which have their impact on environment, economy, and society—with global, national, and regional implications. In Marcelino et al's (2015) study, they categorized sustainable project processes as managing stakeholders, life cycle management, sustainability assessment and decision-making. Within the context of this study, the interest is on local communities, the management *for* which, in and of itself, is a strategy to connect social and ethical concerns. If a project aims to balance stakeholder interests, then the participation framework, which is contingent on project phase, is relevant (See Four-Dimensional Framework, Figure 7, page 86 for more details). Additionally, the diversity of stakeholders involved in decision-making (i.e., not only those that are more directly and imminently influenced) who could be crucial at different points in time must be considered. Of note is the concurrence among authors/researchers and NGOs that

stakeholders across the full project lifecycle should be considered if the entire project is to be appreciated (International Finance Corporation, 2007; AccountAbility, 2015).

Impacts on Local Communities

The potential impacts, both positive and negative of railway proximity to a local community (because of shared space and its associated socio-economic, environmental, and public health-related effects), should not be underestimated. These effects include changes to housing affordability; employment; access to social services; noise, vibration, air, and water pollution; safety; and transit interruptions (Federation of Canadian Municipalities and Railway Association of Canada, 2013). Despite the expectations of various standards and guidelines for companies to report on positive and negative effects (e.g., balanced reporting is a quality requirement for the overall management approach set by the Global Reporting Initiative), or the social sustainability impacts to local communities, Section 413-2 of the GRI Standards is not receiving the attention it deserves in developed economies (e.g., North America), while greater emphasis is being placed on issues such as anti-corruption policies impacting emerging economies (e.g., Mexico).

Determining the extent to which railways should sustainably engage with local communities and municipalities, and what the goals should be, is a highly contentious and complicated endeavour. This tension, and its consequences, reached a boiling point in the winter of 2020 in Ontario, Canada at the Tyendinaga Mohawk Territory when members of a First Nation allegedly blocked a portion of CN's railroad, thereby impeding its social license to operate. Although the local community's three-week long protest was in solidarity to the Wet'sowet'en Hereditary Chiefs' stance regarding land rights of a First Nation 5,000 km away in Northern British Columbia and related to a completely different infrastructure project in the energy sector[39], the absolute dependency not only for the railway, but the ripple effects at

[39] The Wet'sowet'en Hereditary Chiefs were advocating against the violation of their land rights and quest for sustainable development.

all levels of the Canadian economy, were quite severe. We are increasingly experiencing the insistence of LCs to have their voices heard (by NACI and governments), and they have a greater willingness to share and receive information, a sophistication in their mode and manner of responding, and a readiness to resolve their issues by any means necessary—including litigation.

There are many examples of ongoing litigation with LCs as plaintiffs who have brought action against NACI (e.g., Elgin, Joliet & Eastern acquisition and reconfiguration in the Chicago region, US; and the Milton Intermodal Hub proposed for Halton Region, Canada). On the other hand, legislators are attempting to keep pace through the formulation of new legislative measures and self-regulatory initiatives, such as the Proximity Guidelines[40], which exemplify the potential of collaborations when railways and municipalities focus on recommendations that support the streamlining of new builds near existing railways. While much of the proximity and safety issues emanate from situations where railway infrastructure pre-dated the municipal development, this is certainly not always the case. The precipitating events that bring about these land use permitting or proximity challenges at times relate to new railway infrastructure projects that could enhance efficiencies (e.g., Alameda Project)[41] with the potential to promote sustainability. At other times, they involve reconfiguration of existing structures to accommodate operational changes (e.g., from corridor to classification yards). An example of this is the Strathcona project in British Columbia. In these circumstances, there appears to be a dearth of information or guidance from either legislation or federal government entities—such as Transport Canada or Federation of Railways of America—despite wide acknowledgement of the crucial leadership role that they must play in collaboration and problem-solving.

[40] Proximity Guidelines is a collaboration between the Federation of Canadian Municipalities and the Railway Association of Canada. It supports the building and maintenance of harmonious operations related to newbuild by municipalities that are situated close to railways.

[41] Alameda Corridor Rail Project was a large P3 infrastructure project, unlike other projects of its size, was completed on time and on budget. It ensured a successful future for two ports, reduced railside pollution increased employment in the region (BCG Foundation, Centre for Public Impact, 2019)

Differential Engagement

It is not unusual for knowledge and crucial pieces of information relating to railway infrastructure projects to be disclosed to local communities in disparate ways. This differential approach could affect the empowerment and engagement, and therefore the outcomes, for an LC. Contingent on one's theoretical approach—strategic management, organizational behaviour, or sustainability—the literature offers many plausible explanations for the differential engagement and sharing of information with stakeholders. With respect to the type of relationship, Bowen, Newenham-Kahindi and Herremans (2010) proposed three types: transactional, transitional, and transformational. Other factors included: ownership composition of the corporation; the strength and quality of the company's sustainability performance; regulatory climate; dynamic capability; and project management maturity. Some researchers, in studying various industries and stakeholder groups, have determined that different types of relationships benefit from different types of sustainability engagement and disclosure (Herremans, Nazari & Mahmoudian, 2016). Relevant relationship factors are further mediated by issues such as: the saliency of the stakeholder (the presence of one, two, or all three attributes—power, legitimacy, and urgency—as in Figure 3, Stakeholder Typology (p.39), by Mitchell, Agle & Wood, 1997); resource dependency; the prior experience of a local community with industry actors; a community's historical profile with railways; and the future potential for business expansion. This is based on a number of authors and theories, including Ullmann (1985), who asserted that, "…when stakeholders control resources critical to the organization, the company is likely to respond in a way that satisfies the demands of the stakeholders. Thus, stakeholder power tends to be associated with social performance" (p.552). Similarly, this typology (See Figure 3, page 39) has potential to be used to track changes in how LCs are classified over time and to examine any concomitant trends in engagement strategies and tactics with the deepening of saliency. Appreciation of the degree of saliency of the LC, and the relationship with NACI, can be understood through characteristics of disclosure and stakeholder engagement. This is relevant because, as Ullmann (1985) has asserted, "Conversely, if the

power of stakeholders is low, their demands tend to be ignored by the focal organization" (p.552). Proponents have also used stakeholder theory, already discussed (Freeman, 2010; Freeman et al, 2010; Herremans et al, 2016), to speculate on the relevance of examining stakeholder interest and power in understanding a company's long-term performance.

Development of Conceptual Framework

In the previous section, I presented overarching information related to the theories and concepts relevant to this study. These were broad-based and provided to offer the context from a theoretical perspective. In this next section, I build on specific studies and reports that systematically develop the variables examined in this study. The evidence was extracted entirely from documents containing voluntarily disclosed information. As such, elements of voluntary disclosure theory emerge from the literature in responding to the research questions.

Therefore, the first research question is:

1) Question One: What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure?

Researchers and practitioners have augmented their understanding of the interdependency between local communities and railways through the lens of stakeholder theory. To investigate the relationship that railways have with this group of stakeholders, as evidenced by their engagement and disclosure, stakeholder theory not only has the capacity to provide strategic management direction but is commonly accessed for sustainability research studies (Garriga, 2014; Greenwood, 2007; Harrison, Bosse & Phillips, 2010). Clarkson, Li, Richardson and Vasvari (2008) found a positive association between environmental performance and the level of discretionary environmental disclosures, although Herbohn, Walker and Loo (2014) noted the difficulty in testing the relationship between sustainability disclosure and performance (owing to the methodological challenges). Hummel and Schlick (2016) demonstrated that the relationship between sustainability disclosure and performance was more so explained in terms

of the *quality* of disclosure being linked to sustainability performance. A disclosed positive association between social and financial performance tends to legitimize corporate social performance, and this link is among the strongest when environmental performance and corporate social performance is assessed through observer perceptions and self-reported social performance (Margolis et al, 2009). Therefore, developing a greater understanding of the relationship between stakeholder engagement and reported sustainability performance in the North American railway industry is justifiable because the local communities often also provide the social license to operate in many environments (Herbohn, Walker & Loo, 2014; Khan, Serafeim & Yoon, 2015). In developing the conceptual framework, as previously stated, and because of the lack of research specific to local communities (a sub-group of stakeholders with which there is typically no formal contract with the railways—in contrast to investors, employees, suppliers, customers etc.), the study has been informed by research on stakeholders. Therefore, the "stakeholders" is an assumed proxy for LCs. Certain characteristics have been found to be able to predict disclosure quality; therefore, one of the objectives of this research is to provide a better understanding of the nature of this disclosure as it relates to local communities and their engagement as a distinct group of stakeholders.

Question One: Quality of Disclosure

Disclosure has been used as an effective leveraging tool to successfully manage stakeholders to meet corporate strategic goals (Notteboom, Parola, Satta & Penco, 2015). This research defines quality of disclosure as the following:

> "1) consistency with materiality matrices of the industry and the company's own matrix (if one exists) or the results of their materiality assessment;
> 2) consistent with GRI Standards;
> 3) reporting on major concerns as represented by the news (societal interests and concerns);
> 4) any major concerns/topics as reported in association/industry reports or research."

This definition only partially relies on materiality matrices, because, while important in determining the topics salient to stakeholders, its utility, at least in addressing corporate environmental

performance, has come under question. For example, Ferrero-Ferrero, Leon, and Munoz-Torres (2020) found that, compared to materiality analyses used to artificially augment positive performance, GRI Standards include a management approach along with the following defining characteristics or reporting principles and reporting quality: stakeholder inclusiveness; sustainability context (geography); materiality (based on interviews, surveys, focus groups); and completeness (validation of data).

The evolution of disclosure quality began with basic frequency counts, but it is now assessed against the materiality matrix, the management approach, and the GRI characteristics of quality and content for disclosures. Regardless of how content is analyzed—by word, sentence, or paragraph—we acknowledge that the quantity of references or reporting can (but does not necessarily) represent the quality of reporting. The GRI Standards have supported better quality reporting when materiality assessments and matrices are utilized. This process has also given rise to benchmarking. More recently, researchers such as Torres (2017) and Clarkson (2008) initiated their approach with a frequency count, then reverted to ascertaining the level of in-depth, quality reporting. By using the materiality matrix as a basis of comparison, one area of insight into the company's quality of reporting can be determined. Therefore, in a manner consistent with previous studies, my use of frequency counts (to be detailed in Chapter III: Methodology) provided a broad-based overview of what the NACI were reporting as a sign of topic salience and identification of themes of interest. Subsequently, each reference I used is identified by a key word, phrase or meaning, and then titrated and synthesized into an overall contribution by company and/or industry. These above-noted hallmarks for disclosure defined the processes used for this study. Additionally, my operationalized definition is consistent with the principles for defining report content and quality that GRI provides as well: stakeholder inclusiveness; sustainability context (engagement); completeness and materiality; accuracy (assurances); balance; clarity comparability; reliability; and timeliness (Global Reporting Initiative, 2016). Research on quality disclosure has moved on

from simple frequency counts (although that is a starting point) and has measured quality of reporting against materiality matrices and GRI guidelines.

Table 4

Operationalization of Reporting Principles

Requirement of GRI guidelines	**Method used for assessment**
Quality	
Stakeholder inclusiveness	Checklist—systematic or generally accepted methodologies to inform report preparation, including monitoring of media, engaging with scientific community and collaborative activities with peers and stakeholders (per GRI). Specific variables, beyond LCs, are typically not included in a significant fashion in materiality process; use of survey in future research; separate measure for SE as per summary
Sustainability context	Stacked graphs (focus on identified social sustainability variables)
Materiality	Materiality assessment and its output
Completeness	Researcher-determined disclosure score
Content	
Accuracy	Interpreted as validity; Not assessed directly (beyond scope and resources of study); use of external verification or advisory panel or board approval
Balance	Disclosure of positive and negative impacts
Comparability	Radar graphs allowed for year-to-year comparison for each NACI
Clarity	Readability – for future research consider the FOG index
Reliability	Consistency of mention across multiple information channels (e.g., degree of information overlap between social sustainability issues randomly selected appearing in newswire and then checking against sustainability reports)
Timeliness	Immediacy and frequency of reporting in relation to issues of concern and events

Both owners and consumers of corporate reports are keenly interested in the quality of voluntary disclosure on sustainability because of its association with key financial and non-financial variables of firm viability (Rezaee & Tuo, 2019). These variables include cost of capital, social license to operate, stakeholder strategic management and value creation. There is also a greater expectation of companies to articulate CSR practices more explicitly (Carson, Hagen & Sethi, 2015). Significant positive influences on the quality of disclosures include effective monitoring by the board of directors (internal) and stakeholder

engagement (external)—a factor also known to impact the quality of corporate sustainability performance (Manning, Braam & Reimsbach, 2019). There has been significant growth in the production of sustainability reports globally. According to KPMG (2015), 92% of the 250 largest global companies indicated they voluntarily use standards such as the Global Reporting Initiative and rely on third-party (e.g., independent auditing firms) assurance processes. The prevalence of external assurance of these reports has, according to KPMG (2015), increased from 29% to 63%; however, notwithstanding the global uptake, there remains skepticism that these reports are essentially public relations tools used to communicate legitimacy and to signal that the content is trustworthy (Talbot and Boiral, 2018). The questioning of integrity of the processes used to produce these disclosures has come under fire—whether the reporting occurred through integrated, annual reports or standalone corporate sustainability documents. Although the evolution of voluntary sustainability reporting is well beyond the scope of this paper, Dragu and Tiron-Tudor (2013) described this as having occurred over three periods: 1) non-financial reporting initiatives issued from 2000-2006 (e.g., GRI being most popular); 2) sustainability era from 2007-2010[42]; and 3) the integrated reporting revolution from 2011 to present. The International Integrated Reporting Council (IIRC), one of the founding organizations of the integrated reporting format, has proposed a principled model of "strategic focus, future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, consistency, and comparability" (International Integrated Reporting Council, n.d.). In their study, Herda, Taylor & Winterbotham (2013) found that the disclosure of sustainability reporting was inferior in integrated reports compared to either standalone sustainability (CSR) or annual reports. To date, only one of the NACI has produced integrated reports, with some publishing three separate reports: annual;

[42] In 2009 Bloomberg began providing access to sustainability data to terminal subscribers as part of their usual subscription—more than 100 data points for each firm with a 29% uptick in indicators viewed in 2010 than the previous six months (EY/Center for Corporate Citizenship)

sustainability/corporate responsibility/corporate social responsibility; and one geared to their community engagement efforts.[43]

Extensive research has been conducted on the nature and constitution of quality disclosure; however, the findings have led to contradictory results regarding the linkage between good disclosure in an area of performance and the quality of overall reporting. For example, Talbot and Boiral (2018), after surveying the content quality of the sustainability reports of 21 companies to determine climate disclosure in the energy industry (all with an A or A+ application-level rating over a five-year period), found significant non-compliance (in 86 of 93 cases) with GRI standards. In their 2015 study, which examined the relationship between corporate social performance and financial performance, Chen, Feldmann and Tang (2015) found that "improved corporate social performance as well as more transparent disclosures of corporate social performance would have a strong relationship with improving the *internal* utilization of financial resources of the companies. But such corporate social performance and its disclosures are not necessarily improving the company's external financial performances" (p.452).

Research has also demonstrated that some companies have reported increasingly opaque information over time; and researchers determined the use of four impression management strategies: justification of information, minimization of negative impacts, excuses, and commitments or concealment by omission or manipulation of measures (Talbot & Boiral, 2018). In this same study, they illuminated the inherent difficulties of assessing the credibility and reasonableness of these reports from any specific variable or set of variables.

Assessment of Quality

The need for more objective assessments of sustainability has been indicated, and in their 2008 study—which focused on voluntary environmental disclosure—Clarkson et al (2008) used the Global

[43] Sustainability or CSR reports are published annually by CSX, Kansas City Southern, Union Pacific and Norfolk (Norfolk's data is reported in a document labelled by the year that follows); CP, CN, BNSF report bi-annually.

Reporting Initiative's (GRI) sustainability reporting guidelines (standards) to develop a content analysis index for this purpose. The voluntary use by companies of the GRI format is intended to result in hard disclosures (seen more so in economic and environmental variables that are readily quantified) that are not easily mimicked because the descriptions of 'material' information are clearly laid out. It is noted that, for this research, the importance of the quality of information by railways must incorporate both social and environmental dimensions, in addition to the economic (which is frequently evident). This holistic perspective is critical and should be consistent with the social aspects, as ultimately the economy and environment must fundamentally serve civil society if a business is to be truly sustainable. The premise is that the quality of disclosure on fundamental indicators of sustainability is entirely consistent with, and representative of, a company's overall quality of sustainability disclosure. This is because the core performance indicators are indicative of corporate sustainability performance. Sustainability disclosure is now viewed as best practice, and by focusing on sustainability organizations are better able to manage environmental and social impacts, as well as operating efficiency. Transparency through reporting offers a company financial and social benefits (EY & Boston College, 2018).

Disclosure (A)symmetry

The role of reporting to stakeholders is to reduce information asymmetry (Hahn & Lulfs, 2014). Reports such as corporate social responsibility, corporate responsibility, sustainability, and community reports are formal structures that speak more so to a reflection of the gap between internal performance and that which the railway wishes to readily share. Researchers such as Hawn and Iannou (2016) have found a positive relationship between the degree of congruence of internal and external communications (i.e., the smaller the gap, the better) regarding sustainability performance, and that which is reported, to the market value of the firm. Table 1 (page 16) indicates[44] the market value or capitalization of the world's

[44] Union Pacific 125.6; CN 67.9; CSX 63.9; NS 53; Central Japan 41.8; MTR Hong Kong 37.1; East Japan Railway 34.7; CP 30.3; Daqin Railway China 18.8; West Japan Railway 13.9 in $billion USD

top 10 railways (five belong to the NACI[45] industry). Perhaps the most salient method of promoting and achieving sustainability is through the processes of disclosure as a means of engaging stakeholders (Clarkson, Li, Richardson & Vasvari, 2008; Hummel & Schlick, 2016; Li, Gong, Zhang & Koh, 2018). Researchers have also found that disclosure related to sustainability has an impact on firm value (Li, Gong, Zhang & Ko, 2018).

Empirical studies, such as Clarkson, Li, Richardson and Vasvari (2008), and Hummel and Schlick (2016), have furthered our understanding to include evidence linking strong sustainability performers to their typical use of hard information (i.e., objective and easily verifiable) that discloses their sustainability achievements. Poor performers, although they too disclose in significant amounts, do so with 'soft' information (subjective and difficult to dispute) explicitly to delude, promote legitimacy, and/or hide their inadequacies to the markets. Nevertheless, considerable discretion exists for both the quantity and quality of corporate disclosure. Because there is no binding or mandatory requirement for sustainability reporting in some jurisdictions, the assumption is that corporations will strive to present themselves in the most positive light possible. Additionally, while there is no legal risk attached to the withholding of negative information that is not legislatively required to be disclosed, there is much to gain from a reputational perspective by optimally representing the corporation's image. These reputational gains are believed to be motivational in nature and can keep these organizations striving toward increasingly better performance on sustainability measures. But how sustainability is assessed is problematic, and a review of the literature has been instructive.

https://www.statista.com/statistics/260683/the-largest-energy-railway-companies-worldwide-based-on-market-value/

[45] With North America having five of the world's top 10 railways (by market value), one would therefore expect to see a smaller gap or greater congruence between their internal and external communications than other railways not in this category.

Motivational Influences

Beyond the act of reporting, disclosure serves multiple needs and provides much insight—not only regarding performance, but the company's motivation and ability to adapt to and fulfill strategic objectives (Brower & Mahajan, 2013). Solomon and Lewis (2002) suggest there is limited willingness to disclose social and environmental performance, and that corporations that do disclose do so in fragmented and disparate ways; however, the degree of fragmentation and credibility of NACI disclosure has been understudied. DeVilliers and VanStaden (2011) had similar findings which demonstrated that "firms with bad environmental reputations" disclose environmental information in annual reports, but those "experiencing an environmental crisis" disclose on their websites (p.509). Clearly, not all companies will approach disclosure in the same manner—even for the same company (as associated with factors such as changes in leadership, environmental performance, and the relationship with stakeholders). Therefore, this makes some firms more credible and relevant than others.

Even at the level of the employee, Onkila, Makela and Jarvenpaa (2018) found that sensemaking (and their differing stakeholder orientation) was instrumental in understanding the role of sustainability reporting as part of an organization's identity change. Disclosure, in the form of reports, is both an approach (to engage with stakeholders[46]) and the product of said engagement.

Voluntary Disclosure and Legitimization

Manning et al's (2019) research on voluntarily disclosed sustainability reports of Dutch companies demonstrated that those with superior corporate sustainability performance disclose high-quality information on corporate sustainability performance to signal the firm's relevant superior sustainability performance—whereas poor performing companies legitimize their inferior sustainability

[46] As indicated in the introduction, the stakeholder group of interest does not have a business or contractual relationship with the railways, such as shareholders, suppliers, customers, or employees. The priority population for this research is civil society, local governments, and neighbourhoods—so called, "local communities" (LCs), who, along with businesses, provide an incentive for win-win solutions for issues at the interface of railways and society.

performance by complying with more reporting standards rather than by directly improving their underlying sustainability performance. Railways that demonstrate strong performance in quality reporting and sustainability have devolved approaches to stakeholder engagement, which is reflected in various types of disclosure (reports, websites etc.) but also incorporates strong involvement from a board representative responsible for sustainability (e.g., Deutsche Bahn Rail).

Benefits of Reporting. Sustainability reporting has substantial strategic benefits that would undoubtedly influence managerial decision-making regarding the content of the disclosure. These motivating factors are thought to play a role with NACI, as they are publicly traded entities with investors interested in non-financial disclosure. Some of the strategic benefits of disclosure (adapted from EY & Boston College, Center for Corporate Citizenship) are summarized in the following ways:

- Way to expand transparency with stakeholders and report positive deeds to build public trust—also number one motivation for reporting across all surveyed industries.
- A best practice that helps organizations to manage their social and environmental impacts, improve efficiency and productive and natural resource stewardship.
- Vital component of shareholder, employee, and stakeholder relations.
- Protects reputational assets and wins stakeholder and shareholder trust.
- Differentiator in competitive environments, bolsters confidence and employee loyalty.
- Considered by analysts in assessment of management quality and better access to capital with a reduction of forecast inaccuracy by 10%.
- Greater business value arising from positive market reaction to sustainability reporting.
- Helps make organizations' decision-making processes more efficient.
- Requires data collection on processes and impacts possibly not measured before; therefore, creating transparency and more knowledge to improve efficiency and operational performance.
- Avoidance of environmental and social risks with material financial impacts concurrently with environmental, social, financial, and business value.
- Sustainability activities promote better risk management—number three reason for reporting among firms valued over $5 billion.
- Standards permit guidance on material issues, quick assessment, fair judgment, and comparability (e.g., Global Reporting Initiative Sustainability Reporting Framework or GRI Framework).
- An assured report is factored into the analyses of analysts and investors who do not consider themselves as social investors.
- Improved relationships with regulatory bodies.
- Helped organization refine its corporate vision or strategy and take measures to increase long-term profitability.
- Different industries realize value from reporting in different ways; improved financial performance is attributed to these benefits.
- Appear on sustainability rankings and at a higher level.

- Fulfill needs of communities seeking information about how a company is managing the social and environmental impacts of its operations.
- Meet regulations related to environmental and social issues.
- Growth in socially responsible investing. In 2013, $3.74 trillion in assets were administered by portfolio managers who systematically look for and evaluate sustainability practices for their portfolios.
- Meeting the needs of mainstream analysts and some of the world's largest institutional investors.
- Meeting the needs of stock markets in 20 countries across six continents, which require or strongly encourage sustainability reports from companies.
- Environmental sustainability reporting and firm value have a positive relationship.
- Higher levels of transparency are associated with higher cash flows.
- Anticipate and address concerns in communities where operations occur.
- Process improvement in more agile fashion.
- Forecast material scarcity.
- Provide new insight in supply chain sustainability.

Disclosure and Performance. A company's motivation to pursue social sustainability, or 'the intangible,' is frequently questioned and linked to a desire to promote its legitimacy (Morsing & Schultz, 2006). The relationship between environmental and social performance has been linked to financial performance with respect to the legitimization of corporate social performance. Margolis, Elfenbein and Walsh (2009), through their meta-analysis of 192 effects within 167 studies, found that the link between corporate social performance (CSP) and corporate financial performance is "strongest for the analysis of the specific dimensions of charitable contributions, revealed misdeeds, and environmental performance and when CSP is assessed more broadly through observer perceptions and self-reported social performance" (Margolis et al, 2009: p.2). Clarkson, Li, Richardson & Vasari (2008) found a positive association between environmental performance and the level of discretionary environmental disclosures, although Herbohn et al (2014) noted the difficulty in testing the relationship between sustainability disclosure and performance (owing to the methodological challenges). Hummel and Schlick (2016) demonstrated that the relationship between sustainability disclosure and performance was more so explained in terms of the *quality* of disclosure being linked to sustainability performance. A positive link between social and financial performance tends to legitimize corporate social performance, and this

link is among the strongest when environmental performance and corporate social performance are assessed through observer perceptions and self-reported social performance (Margolis et al, 2009).

In a more recent study, Martinez-Ferrero, Suarez-Fernandez and Garcia-Sanchez (2019) investigated the link between corporate social responsibility performance and managerial socially responsible disclosure strategy using a 273-company sample and found that, according to obfuscation disclosure strategy, evidence demonstrated that firms with the worst corporate social responsibility performance disclosed information that was not balanced, clear or accurate, but instead employed thematic content, verbal tone manipulation and quantity and syntactical reading as impression-management tools (Fabrizio & Kim, 2019; Lehavy & Merkley, 2011; Martinez-Ferrero, Suarez-Fernandez & Garcia-Sanchez, 2019).

In other research, consistency in the relationship between sustainability disclosure and social performance was demonstrated. They indicated that because a firm's environmental direction and strategy are antecedent to both the environmental performance and environmental reporting, an inherent interconnectedness exists; that is, they are endogenous (e.g., Al-Tuwaijri, Christensen & Hughes, 2004). Moreover, some asserted that an experienced environmental reporter tends to also be a good environmental performer (Herremans, Nazari & Mahmoudian, 2016). And, as previously mentioned, a Clarkson, Li, Richardson and Vasvari (2008) study indicated that companies that disclose better also perform better along the environmental dimension. Bouten and Hoozee (2013) postulated that environmental management accounting acts as a mediator between environmental reporting and performance. The dimensions under investigation were extended by Hummel and Schlick (2016) to include social performance and reporting. Their finding indicated a robust and strongly positive relationship between voluntary disclosure and sustainability performance—on both environmental and social dimensions. The argument is made by Hummel and Schlick (2016) that nearly all previous studies (citing: Al-Tuwaijri et al, 2004; Cho et al, 2012; Cho & Patten, 2007; Clarkson et al, 2008, 2011; DeVilliers

& van Staden, 2011; and Patten, 2002) that examined the relationship between sustainability performance and sustainability disclosure were based on either voluntary disclosure theory or legitimacy theory. The relevant context—according to voluntary theory—for corporate disclosure was the presumed 'no cost' and 'truthful nature' of the information. There is, in fact, a cost to disclosure and rational managers will withhold unfavourable information (Durand, Hawn & Ioannou, 2019)—a shift in the focus away from quantity to the quality of disclosure. In other words, superior sustainability performers disclose using high-quality sustainability disclosure, while poor sustainability performers use low-quality sustainability disclosure (Hummel & Schlick, 2016). I would also suggest that a company's dependence on a resource held by a stakeholder group (e.g., social license to operate or land permitting, etc.) would play a mediating role in this type of decision-making, as resources are either granted or withheld by stakeholders in accordance with the outcomes of their evaluation of a company's governance. The nature of the disclosure may also be linked to the salience attributed to the stakeholder group. This governance, therefore, involves the ability to acquire necessary resources, the astute use of said resources, and strategic implementation that impacts the company's viability contingent on those resources. At the same time, not surprisingly, efforts linked to increasing (market) value by disclosing sustainability performance, which is exemplary for the industry, are voluntarily disclosed. In some research, these theories have indeed been applied—not only to financial information, but to non-financial information as well (Clarkson et al, 2008).

Sustainability Disclosure and Stakeholder Engagement

There exists a close, albeit under-studied, relationship between sustainability disclosure and stakeholder engagement (Mahmoudian, Lu, Yu, Nazari & Herremans, 2020). The nature of the disclosure may also be linked to engagement via the salience attributed to the stakeholder group (Mitchell, Agle & Wood, 1997). Nakabiito and Udechukwu (2008) found that the willingness to communicate with more than one stakeholder group (i.e., stakeholder engagement) had the greatest influence on the amount of

information disclosed in sustainability reports. Therefore, developing a greater understanding of the relationship between stakeholder engagement and reported sustainability performance in the North American railway industry is justifiable because the local communities often also provide the social license to operate in these environments.

In characterizing differences in American and European corporate social responsibility reports, Carson et al (2015) distinguished the following systems factors impacting the expression of social responsibility [and I would add environmental as well]: political (European power of the state versus American corporate discretionary power); financial (differences in corporate ownership and the role of capital markets in the respective economies); education and labour (labour interests are more hierarchical and powerful, as represented by trade unions, but industry associations are more powerful in Europe than in North America); and cultural (beliefs that govern attitudes around philanthropy and the ethics of business) (Carson et al, 2015). These factors they saw as contributors to more explicit forms of CSR that were not necessarily indicative of a company being more (or less) socially responsible, but simply that more tends to be communicated by US companies (Maignan and Ralston, 2002).

Corporate Governance and Diversity

In their review article on the drivers of sustainability reporting, Dienes, Sassen and Fischer's (2016) findings demonstrated that firm size, media visibility and ownership structure played a role in disclosure—but that the influence of corporate governance impacted only the existence of audit and sustainability committees. This finding was further corroborated by Pucheta-Martinez and Bel-Oms' work (2018) which linked the presence of women on the board with more robust internal control mechanisms, such as subcommittees; however, evidence to support conclusions regarding the impact on sustainability performance or disclosure quality could not be made. Hollindale, Kent, Routledge, and Chapple (2019) did find a positive relationship between the presence of women on boards and the quality of corporate disclosure regarding greenhouse gas emissions. It has been postulated by Pucheta-Martinez, Bel-Oms and

Olcina-Sempere (2018) that an inverted U function describes the relationship between the percentage of women on the board and corporate performance, with an optimal threshold occurring at 12.71%. A Katmon, Mohamad, Norwani and Al Farooque (2019) study on diversity among 200 Malaysian companies concluded that education level, gender diversity and board tenure diversity had positive correlations with quality corporate social responsibility disclosure; however, the quality of disclosure was negatively impacted by board age and nationality diversity. In the same vein, Lu and Herremans (2019) found that male and female board members contribute to boards in different ways, and that achieving a critical mass of two or three women on the board is most effective for sustainability performance. This is particularly seen in environmentally sensitive industries for the total environment score. Other studies conducted primarily in international development (which have tended to approach this issue from the perspective of sustainability as a conduit for the empowerment of women), including McCarthy (2017); and Grosser, McCarthy, and Kilgour (2016), have noted that synergy exists.

Assurance and Credibility

A connection was also found between disclosure quality and sustainability assurance when the assurance was conducted by a top-tiered accounting firm, resulting in a significant reduction in the cost of capital and investor perception as compared to the use of an engineering or consulting firm (Martinez-Ferrero & Garcia-Sanchez, 2017). Interestingly, however, negative incidents in sustainability reporting were found to have no impact with decision makers' stock price estimates and investment decisions compared to judgments based on financial information only if sustainability disclosure were self-reported compared to if voluntary disclosure had been reported by an NGO and if the company simultaneously reported these incidents (Reimbach & Hahn, 2015). Additionally, Reimbach and Hahn (2015) found that the risk attached to the stigma of negative incidents is mitigated when disclosed through sustainability reporting. These disparities in reporting and disclosure practices make some firms more credible and relevant than others. Arising out of their research on environmental disclosure, Cormier, Gordon and

Magnan (2016) found that in response to the financial market's need for information, firms were pressed to minimize the gap between their performance and disclosure, thereby becoming more challenged in how they legitimately represented themselves to the community. And that environmental disclosure, with its underlying legitimization and economic considerations, had a direct impact on analysts' forecasts. Others have found that a transparent positive relationship exists between environmental performance and environmental disclosure (Cormier et al, 2016). One of the objectives of this research is to provide a better understanding of the nature of this disclosure as it relates to local communities and their engagement as a distinct group of stakeholders. A strong link has been demonstrated between what specific stakeholder group a company's disclosure relates to, the stakeholder group's relationship with the company, and the purpose of the disclosure (Herremans, Nazari & Mahmoudian, 2016).

The paucity of practical sustainability assessment tools, however, makes meaningful objective evaluations difficult for external entities, as the available tools are neither project-based nor do they incorporate the three dimensions of sustainability—social, environmental, and economic. In fact, currently there is no agreed-upon methodology for assessing sustainability in infrastructure projects (Bueno, Vassallo & Cheung, 2015). Although numerous frameworks do exist, social impacts in general are not included in appraisals in a manner that facilitates comparison to environmental and economic effects. (Guers, Boon & Van Wee, 2009).

To deepen an understanding of social sustainability performance as disclosed by a NACI on railway infrastructure projects, and what the features of SE are when there is optimal disclosure (thereby adding value for one specific stakeholder group), local communities specifically are addressed as a focus of SDG #11. Arguments for the utility of the SE of LCs in the integration of sustainability and enhanced project-based performance are made more difficult by the wavering and oftentimes competing interests of groups within the local communities and interests of proximal LCs impacted by the same project. Members of these same stakeholder groups often compete (in a counterproductive manner) to have their issues

classified as 'material' (to the detriment of each other stakeholder group), but the quality and quantity of the non-financial (corporate social and environmental) disclosure is significantly influenced by the industry (Fasan & Mio, 2017). The research, however, appears to be consistent in conclusions that relate to a strong positive correlation between the volume of reports completed and the quality of sustainability reports (Moratis & Brandt, 2017).

Summary of Evidence for Question One

GRI promotes quality stakeholder engagement as a core content of quality disclosure which, in addition to internal governance by a diverse board of directors and external verification, work to reduce asymmetry of information disclosure. Now we turn our attention to corroboration of the variables used to understand the relationship of NACI and LCs as seen from the perspective of stakeholder engagement. I posit that among NACI, the association between social sustainability disclosure and quality as represented in their sustainability reports would demonstrate to the extent that the variables mentioned are present in NACI, the higher will be the quality of their report.

Question Two: Stakeholder Engagement

In the preceding section, evidence that a) justifies the examination of specific variables related to disclosure, and b) answers research question one was addressed. The interdependence of sustainability disclosure and stakeholder engagement as components of the NACI-LC relationship is crucial to its understanding because of the positive feedback loop between disclosure and engagement. In keeping with this, the subsequent section outlines variables that emphasize stakeholder engagement (SE), keeping in mind that this does not imply exclusivity of the forthcoming literature to SE, as many concepts will also pertain to disclosures. Therefore, now that I have discussed question one, (What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure?), I turn to the evidence for the conceptual framework, and what supports question two: *How do NACI engage with LCs? What is the nature of relationships with local communities*

as disclosed by North American Class I railways? To provide some context in building the framework, it is important to begin with a historical perspective. This demonstrates the longstanding basis for the current NACI-LC relationship, along with influential factors—such as the institutionalized nature of the industry, the impact of politics, the economy and the pervasiveness of approaches and techniques.

Railways and Their Engagement with Local Communities

Historical Background

The first documented uses of a railroad in North America are equivocal—reportedly between 1762-64 by John Montresor, a captain in the British Army (to transport supplies), in the area that is now Lewiston, New York; however, the first commercial railroad[47] is believed to have been constructed around 1810 in Delaware County, a suburb of now Philadelphia (Hayes, 2010). The evolution of the railway industry has been inextricably tied to economic growth and policy impacted by political will. The railroad was not rivalled by any other instrument of western settlement and, therefore, spread its transcontinental branches to ensure that as many communities as possible were connected—and in many instances preceded expansion as well (Lower, 1939). The role of railways in the development of North American townships is, therefore, unquestionable. The 1830s marked the beginning of operations for the first railways, characterized by exponential growth occurring in the next decade, from 3,000 miles to a ten-fold increase in just 20 years, and by 115,000 miles in 1880 in the US alone. But as technological feats gave rise to innovation and economic growth, there were parallel social injustices through the conquest of Indigenous peoples (Gilder Lehrman Institute of American History, n.d.), dispossession and control of their lands, and the abuses carried out on the Chinese (Stanford University, 2018) and Black labourers who built the railroads (Kornweibel, 2010; National Railroad Hall of Fame, 2017).

Early beginnings. The disregard for visible minorities who either played a significant role in building the transcontinental US railway (Chinese and African American) and/or had their communities

[47] Tye has referred to a railway built to transport granite in 1827 (Tye, 2004: p.6)

negatively impacted (Native American) is mirrored today because of neoinstitutionalism and racism (Gilder Lehrman Institute of American History, n.d.; Harvey, 2018; Tye, 2004). The strategies that support global and national trade disproportionately impact neighbourhoods with low socio-economic status because of proximity to infrastructure, environmental health issues, and differential compensation schemes for permitting and acquisition of social license to operate.

NACI (or their predecessors) have been strong players—both politically and economically—as the "backbone of the economy" throughout North America's recent history. The power of capitalism marked by events such as the discovery of gold in California created a major incentive for the government to connect the west—California in the US and British Columbia[48] in Canada—to the rest of the continent. And so, large grants of public lands[49], meant to be later sold to help pay for the construction, were used to finance the transcontinental railway lines[50] in this manner (in the US only) except one. By luring migrants with incentives such as housing and cheap fares from the East and Europe, the railways were able to sell the land, thereby rapidly advancing settlement. This was true for both the US and Canada, where the economic hopes for the terminus of the Grand Trunk Pacific Railway (now CN) in Prince Rupert is only now seemingly fulfilling its promise (Prince Rupert Archives).

Stakeholder Engagement. Stakeholder engagement has been a part of railway history (and was a crucial ingredient contributing to its operations and social license) since its inception. Although the railways have ventured into other related businesses, such as hotels, logistics, marine operations,

[48] Some historians have indicated that the construction of the Canadian Transcontinental railway was a promise made by Canada to the province of British Columbia to join the Confederation. The railway, which was completed in 1885, built by labourers including over 15,000 Chinese temporary workers, connected Eastern Canada to BC

[49] The Railroad Land Grant Act of the United States was passed in 1851 and lasted until 1871. Although Canada did not have a comparable land grant act, the government granted Canadian Pacific Railway 25 million acres (Hayes, 2010)

[50] In the US, the Transcontinental started "with the signing of the Pacific Railway Act of 1862 by President Abraham Lincoln. The Central Pacific Railroad of California, chartered in 1861, was authorized to build a line east from Sacramento. At the same time, the Act chartered the Union Pacific Railroad Company to build west from the Missouri River. The original legislation granted each railroad 6,400 acres and up to $48,000 in government bonds for each mile complete". www.up.com/goldenspike/index.html

telecommunications, and resource industries, they have maintained their core business activities and continued involvement with the local communities with which a relationship of co-dependency exists. One early example of this dates to 1919 following the amalgamation of several railways[51] that became Canadian National (CN) when the new president of CN, Henry Thornton, reversed its dire financial situation. Thornton leveraged the support of 99,000 employees and promoted community service to the extent that branch lines and school railcars were introduced along with Red Cross units for the purpose of providing service to the children and sick in remote areas. From there, a network of radio stations and various broadcasting programs also emerged.

There has been reported growth in collaborative governance arrangements, including governance networks which provide a framework for the horizontal co-ordination of public, corporate and community interests, and actions which are linked by resource dependencies (Provan & Milward, 1995). But, as a tool of strategic management, resultant tensions or criticisms with stakeholder theory have been raised based on the types of problems that the theory is intended to address. Freeman, Phillips and Sisodia (2018) opine that ST is pragmatic and is intended to solve behavioural problems in the context of business, which in turn is part of an interdependent system with long-term viability. The inherent interconnectedness is said to produce tensions whenever attempts are made to separate components, such as the false dichotomy between facts and values. Therefore, to address this potential splitting, objective means or publicly disclosed documents are used in this study as an indication of information that is both factual and connotes the values of the company. Once stakeholders are appropriately identified, how they are engaged, as a function of strategic management, is instrumental in the achievement of sustainability.

Generalizable rationales for stakeholder engagement on construction projects exist, and they suggest that the industry "should engage with stakeholders to determine what they need" (Mathur, Price

[51] These railways included Intercolonial, Canadian Norther, National Transcontinental, and Grand Truck Pacific, later adding Grand Trunk Railway in 1923.

& Austin, 2008; p.602). In response to the failure of public-private partnership infrastructure projects, stemming from stakeholder opposition, El-Gohary et al. (2006) have claimed that capturing stakeholder inputs in such projects can be crucial.

Stakeholder engagement (SE) is a common technique used in the management of construction projects around the world (Yang, Shen, Ho et al, 2009), though its purpose, approaches and techniques may differ (Erkul, Yitmen & Celik, 2016). SE is sometimes a regulatory requirement of federal or state governments or their regulatory agents (for example, the Impact Assessment Act, 2019, of Canada has this requirement). In the railway industry, effective and purposeful SE becomes even more imperative when the project occurs in densely populated areas, which make concerns such as air pollution, environmental diversity, and traffic congestion salient or material for LCs. Erkul et al (2016), in relying on Kelly (2004), described stakeholder engagement in the following manner:

> "Stakeholder engagement is the practice to determine and include stakeholder concerns, needs, and values in the transport decision-making process. Two-way communication which provides a platform for information flow and stakeholder involvement is essential between the stakeholder, the formal decision-makers, and the transport project team. The main purpose of engagement is to gain a transparent decision-making process with greater input and feedback from stakeholders and their active supports of the decisions which are made." (p.706).

Within SE, the concept of value creation emphasizes the differences in the ways in which the interests of stakeholder groups are addressed, how they appropriate value, and how that value is measured. Ultimately, stakeholder theory is about the effective running of a business in such a manner that the maximum value is achieved—for the purpose of trade and for stakeholders (Freeman, 2010). An approach to understanding the role of stakeholders in this process of value creation was developed by Amartya Sen (Sen's Capability Approach) and examined by Garriga (2014) from a stakeholder welfare perspective rather than a utility function. The Capability Approach stated that the following capabilities were the most important for stakeholders: being employable, being autonomous, being innovative, being entrepreneurial, being responsive, being socially integrated, being emphatic, being ''green'' and "being healthy." (Garriga, 2014: p.489). Understanding value creation from the perspective of the stakeholder

has not been well-studied. Harrison, Bosse el al (2010) argued that when value creation is approached from the perspective of the stakeholder's welfare, additional potential exists for value creation. The role of connected actions of an organization and its external stakeholders builds trustworthiness which then translates into elements necessary for value co-creation when shaped by the stakeholder's dynamic reference state, a point that was reiterated by Castro-Martinez and Jackson's (2018) study. They concluded that, "utility is not the result of an organization's decision-making and actions but rather, it is *shaped* by these interlinked practices, moderated by each stakeholder group's dynamic reference state." (Castro-Martinez & Jackson, 2018: 1).

Stakeholder theory is, therefore, quite applicable to environmental and spatial change. Lankoski, Smith and Wassenhove (2016) noted that "…it is not the absolute level of environmental impacts per se that determines stakeholder value (and stakeholder reactions) but how these impacts relate to the reference state employed by stakeholders" (p.234). This reference state is critical to framing the circumstance and the interpretation of a loss or gain, which in social responsibility, for example, has a propensity for stating changes from past performance as improvements (Lankoski et al, 2016).

Henisz's approach (2016) provides a unique and useful perspective on the role of stakeholders in the fulfillment of the corporate strategy. When translated for the railway industry, the key concepts are as follows:

1) external stakeholders, such as local communities, are an asset and not just a risk to be managed or minimized after conflict occurs;
2) communication alone is not enough to build trust; an elaborate strategy of formal and informal channels is needed, and this allows for opportunities to be seized;
3) do not assume that stakeholders know the railways' interventions, which should be conveyed directly and through advocates and allies;
4) regular meaningful feedback from stakeholders is necessary;

5) the involvement of senior executives outside the organization for trust-building SE and legitimacy in the eyes of stakeholders (e.g., Deutsche Bahn's CEO attends town hall meetings);
6) differences between approaches taken by railways on projects—NACI approach is Decide Announce Defend (DAD) and European's approach Dialogue Decide Deliver (DDD) public railways; the latter being more inclusive where LCs are not just given lip service but given the opportunity to shape the enterprise through their feedback (IAP2 standards,
Moratis and Brandt, 2017 and Webler, 2014a).

Guidelines for Stakeholder Engagement and Social Responsibility

A review of current empirical research literature resulted in no findings on the engagement of local communities by NACI. Accordingly, several globally-recognized guidelines were used and cross-referenced to build an appreciation of what reasonable practices and good standards of conduct could be related to infrastructure projects. A summary is found in Table 5 (page 74). Firstly, *The United Nations Global Compact's Ten Principles (UNGC) was referenced.* These overarching principles promote a voluntary corporate responsibility framework—with community involvement and development as its core subject—while requiring adherence to human rights (respecting the protection of internationally proclaimed human rights and to not be complicit in human rights abuses), labour, environment (support a pre-cautionary approach to environmental challenges, undertake initiatives to promote greater environmental responsibility, and the development and diffusion of environmentally-friendly technologies), and anti-corruption (in all its forms, including bribery and extortion), as well as tools for use in its service (United Nations, n.d.). It is noted that although CN and CP acknowledge the UNGC, none of the NACI is currently a signatory to these principles.

Secondly, ISO 26 000 (Figure 4, page 76) recommends that before an analysis of core subjects and issues of social responsibility is performed, the one fundamental step to be done after recognizing an organization's influence in effecting social responsibility is the identification and engagement of

stakeholders (Hahn, 2013). ISO 26000 connects sustainable development with social responsibility and stakeholder engagement, drawing on specific practices for corporate-wide integration and strategic management—crucial factors used in this study to appreciate the reported value created by railways for local communities.

Table 5

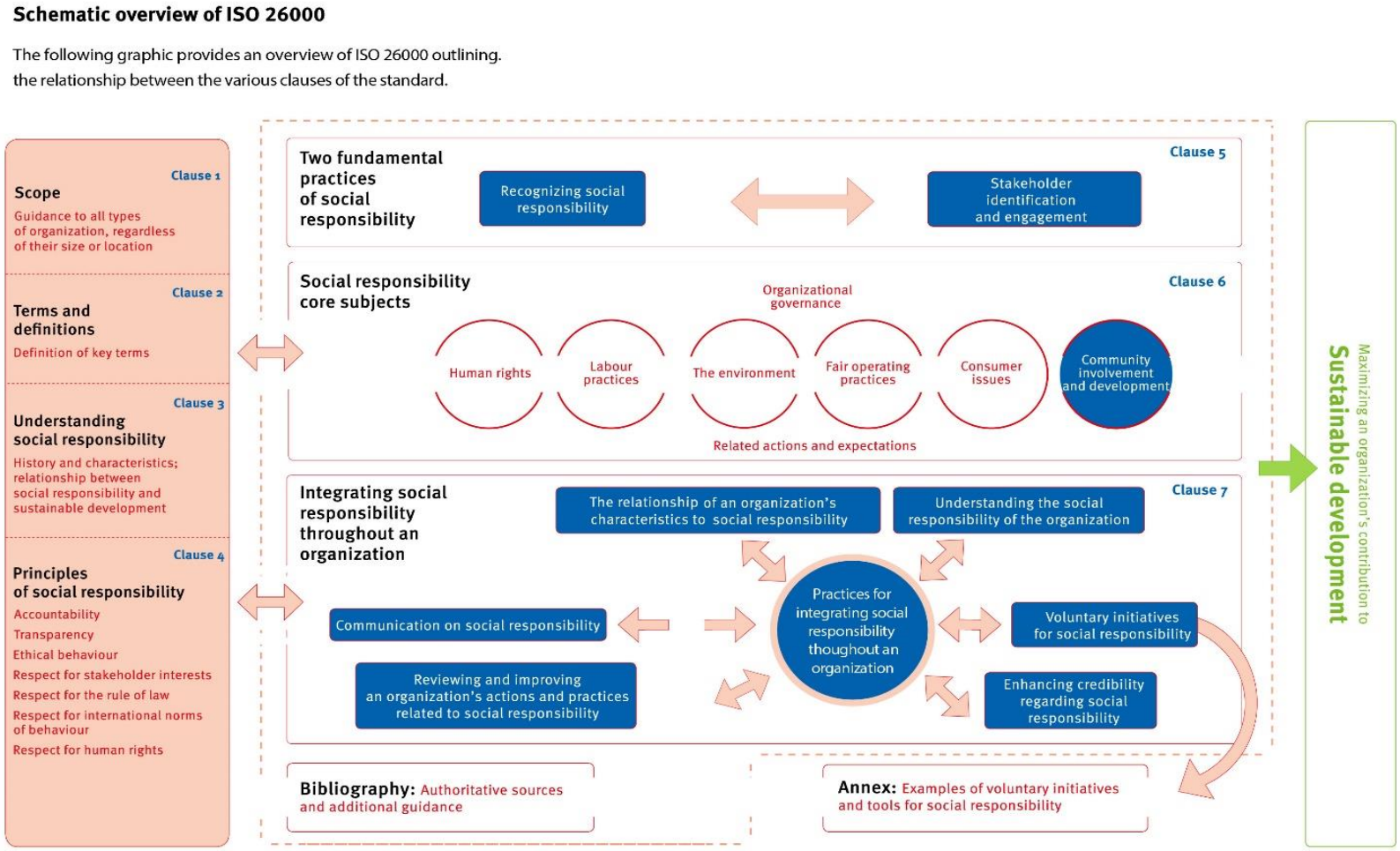
Comparison of Stakeholder Engagement Guidelines

Category	Topic	ISO 26000 Social Responsibility (see Schematic overview on p.88)	GRI reference – Standards of Reporting	IFC—Stakeholder Engagement Practice Handbook (project-based)	AA 1000—Stakeholder Engagement Standard 2015 (organization-based)
Stakeholder Engagement Commitment & Integration					
	Integration into organizational governance	✓ Clause 7 (see p.88)	✓		✓
	Integration into organizational strategy	✓ Clause 7	✓		✓
	Integration into operational management	✓ Clause 7	✓		✓
Scope and Purpose					
	Purpose of engagement	✓ Clause 5: recognition of org.'s social responsibility	✓	✓ External groups	✓
	Stakeholder identification	✓ Clause 5	✓	✓ +analysis	✓
	Engagement Level, nature of relationship, methods; Boundaries of disclosure	✓ Clause 5: core subjects and org.'s sphere of influence; Clause 6: core subjects and	✓	✓ + for project life and beyond; strategic	✓

		issues of social responsibility			
	Build capacity to engage (knowledge, skills, opportunity): know stakeholders, issues, local politics & culture				✓
	Indicators of quality engagement=impact co-established	✓	✓		✓
Implementation					
		✓		✓ Practices and tools known to work	✓
	Briefing and Engagement of stakeholders	✓	✓		✓
	Document engagement and output	✓	✓		✓
	Communicate engagement outputs and plans	✓			✓
Review and Improve					
	Monitor and evaluate engagement				✓
	Responsiveness to changing facts			✓	
	Learn, improve, follow-up on action plan		✓		✓

Figure 4

Schematic Overview of ISO 26 000:2010 Guidance on Social Responsibility



Thirdly, *Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets* (IFC) described relevant practices that are useful beyond the emerging markets, and ISO 26 000 was used to supplement an understanding within a broader context:

> "An organization's performance in relation to the society in which it operates and to its impact on the environment has become a critical part of measuring its overall performance and its ability to continue operating effectively. This is, in part, a reflection of the growing recognition of the need to ensure healthy ecosystems, social equity and good organizational governance. In the long run, all organizations' activities depend on the health of the world's ecosystems. Organizations are subject to greater scrutiny by their various stakeholders." (Source: International Organization for Standardization, 2010).

ISO 26 000 recognized the importance of social responsibility not only in terms of the benefits delivered to society, but its role in strengthening a corporation's value proposition:

> "The perception and reality of an organization's performance on social responsibility can influence, among other things: a) competitive advantage; b) its reputation; c) its ability to attract and retain workers or members, customers, clients or users; d) the maintenance of employees' morale, commitment and productivity; e) the view of investors, owners, donors, sponsors and the financial community; and f) its relationship with companies, governments, the media, suppliers, peers, customers *and the community in which it operates*." [emphasis my own]. (Source: International Organization for Standardization, 2010).

Mathur, Price and Austin (2008) summarized the benefits of stakeholder engagement in the following manner:

Table 6

Three perspectives of Stakeholder Engagement.

Perspective	**Benefits derived**
1.Strategic management	Capture knowledge; increase ownership of project by users; reduction in conflict; innovation enhancement
2.Ethical	Inclusive decision-making; Equity; Enhance local decision-making; Build social capital
3.Social Learning	Diverse stakeholders share a common forum; Values reflection—shared vision, shared objectives,
SE usually involves 1, or 1 & 2 but rarely 1, 2 & 3. Sustainability requires all three perspectives	

Adapted from Mathur, Price and Austin (2008).

And fourthly, AccountAbility 1000 Stakeholder Engagement Standards was used because it specifically frames the practical approaches to stakeholder engagement exclusively. The relevance of

stakeholder engagement (SE) as part of usual business practice has prompted mixed opinions related to its purpose. Some academics and practitioners have investigated the knowledge gleaned from engaging external stakeholders and its impact on innovation and other orienting aspects of corporate affairs when the information is managed and converted into new ideas (Ayuso et al, 2011). Watson et al, (2018) found that environmental sustainability, specifically, required engagement with external stakeholders for several reasons, including accessing expertise, solving complex problems, and gaining social legitimacy. SE was viewed as a dynamic capability that captured the differences between external stakeholders to augment their respective resource bases (Watson et al, 2018). Three aspects of the process of SE were demonstrated to have significance: operational capabilities; first-order dynamic capabilities needed to manage the engagement (engagement management capabilities); and second-order dynamic capabilities which allowed the firm to use the knowledge already collected or gave way to utilize information collected by reframing problems (value framing) so that they fit with new competencies (systematized learning). Therefore, the research has demonstrated the relevance of stakeholder engagement (SE) to the overall pursuit of sustainability. The importance of SE as part of a comprehensive strategic management approach has multiple benefits. Additionally, the interdependencies of SE and disclosure can provide greater understanding of the nature of the relationship between LCs and NACI—the opportunities for social learning, benefits of ethical decision making and innovation.

Figure 5

Developmental stages of stakeholder engagement.

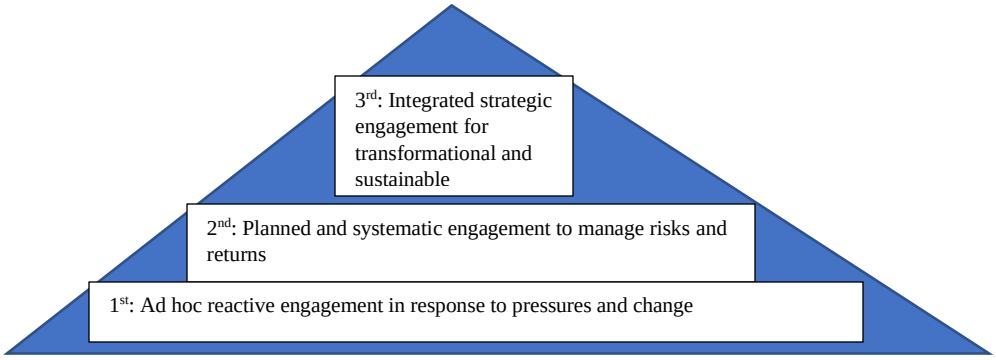


Figure 5 Source: AA 1000 Stakeholder Engagement Standards (2015)

The concepts of innovation and learning, as influenced by LCs, and techniques and approaches to engagement (as a project management function/engagement management capability), as well as social impact on local communities, are variables of interest under investigation (Provasnek et al, 2017). The strategic engagement of stakeholders is an important driver of quality and type of disclosure (Herremans et al, 2016; EY & Boston College, 2018), and as important dimensions within sustainability, are dependent on factors such as project management maturity (as already discussed) (Silvius & Schipper, 2014), the company's developmental stage of stakeholder engagement (AA 1000), and where along the continuum the company's enterprise-level approach to SE resides. See Figure 6 (page 79) for a graphical representation of quality of disclosure as a point of confluence resulting from project management maturity (Table 7, page 84), SE developmental stage (Figure 5, page 78), and level on the SE continuum (Table 8, page 85).

Figure 6

Level of Quality Disclosure

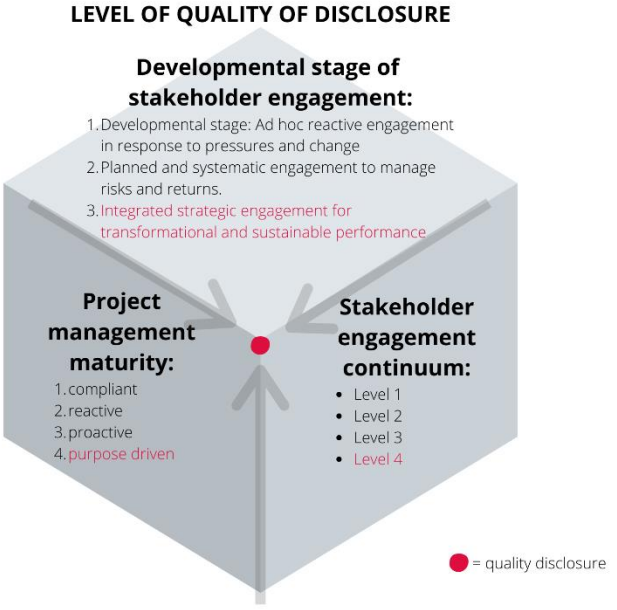


Figure 6. Comprised of adaptations from AA 1000 SES (2015) and Silvius & Schipper (2015)

Project Stakeholder Management

Projects are highly relevant to NACI because their projects throughout North America are carried out near local communities. As discussed, a project provides not only the mechanism used for infrastructure construction, but also the specific structure of processes that responsibly engage stakeholders throughout its lifecycle. The field of project management has only recently (circa 2013) recognized the knowledge area of "stakeholder management" as an important contributor to the value creation behind projects (Project Management Institute, 2013). Until recently, there had not been significant strides to integrate sustainability with the discipline of project management (Silvius & Tharp, 2013; Silvius & Schipper, 2014; Martens & Carvalho, 2016; Huemann & Silvius, 2017), and not long ago did research begin introducing tools and practical framework (Silvius & Schipper, 2019). The recent confluence of sustainability and project management proved inevitable, however, on the grounds of the criticality of globalization, the disruption of technology, climate change, and consumerism. Sustainability has also been proposed as a new school of thought in project management (Silvius, 2017). The focus of research on project management in sustainability has been on product deliverables or outcomes, and not as much on project delivery or processes (Kivila, Martinsuo & Vuorinen, 2017). Sustainable project management has its advantages in merging these two worlds, as it centres on the *principles* and processes of project execution being managed according to sustainability practices (Silvius & Schipper, 2015).

Although some efforts to catalogue the literature on sustainability in projects and project management *(*see Gareis' *Overview of Literature on Sustainability in Projects and Project Management*) have been made, we know that significantly more research is needed so that referenced class-based methodologies, as well as techniques and tools, can be developed (Singh, Murty, Gupta, & Dikshit, 2012). These methodologies and frameworks would have the potential, through institutionalized processes of adoption, to standardize the assessment of sustainability and promote its integration (Escrig-Olmedo, Fernández-Izquierdo, Ferrero-Ferrero, Rivera-Lirio & Muñoz-Torres, 2019). Standardization of the

processes of project management, including stakeholder engagement and stakeholder management, are found in project management standards, such as the Project Management Book of Knowledge (PmBOK), Project Management Institute (PMI). These processes are typically the channels by which sustainability has been brought to project management (Marcelino-Sádaba et al, 2015). This research has synonymous definitions for the terms “stakeholder management” and “stakeholder engagement” and, therefore, uses them interchangeably. The implication is that stakeholders are a group for which management is carried out to create value rather than a means of manipulation or only in the face of conflict resolution—the so-called management of stakeholders (Freeman et al, 2010). To date, practitioners and researchers have focused largely on the processes involved in projects to understand how sustainability can become embedded within the full lifecycle of a project (IFC, AA1000, ISO 26 000). This study is intended to broaden this perspective in two fundamental ways: by delving into the reported processes and approaches of project stakeholder management as NACI endeavour to progress along the continuum of sustainable development, and adopt and consistently practice sustainable project stakeholder management/engagement; and, through corporate disclosures, extract a sufficient understanding of their underlying principles guiding the methodologies and value creation techniques that could, upon further research, lead to reference class benchmarking underlying principles that guide them.

The confluence of project management and sustainability has produced many standards and approaches (for use across industries and sectors), such as the GPM PRiSM™ Methodology for Project Management and the Global Reporting Initiative (GRI) Standards. Sustainability, while often viewed by business as a goal to be achieved (and frequently as a costly endeavour or even a distraction from the ‘real business at hand’), is now being viewed by forward-thinking decision- makers as a *driver of value creation* which provides economic prosperity for many global companies. Therefore, sustainability needs to be considered and included in the earliest stages of project planning (International Finance Corporation, 2007; EY & Boston College, 2018; KPMG, 2016; Savitz, 2014).

The project management maturity model (PMMM) is a tool used to measure the developmental level of a project's progress. Because it provides oversight, and therefore clear indications of problem areas and achievements, it is critical for action-planning related to specific improvements. The PMMM, described as the 'foundation' for achieving excellence in project management, has five levels, each progressively representing a higher level of maturity (Kerzner, 2009). The use of this tool in strategic planning is critically different than strategic planning conducted at the executive level because it involves middle managers. The five levels of maturity, as applied to sustainability, include: 1) common language—this implies that the organization has little understanding of sustainability and few (to zero) existing policies; 2) common processes—this indicates an elementary level where sustainability is considered within the organization; 3) singular methodology—the organization has more capabilities, and individuals are inspired to contribute to programs; 4) benchmarking—specific industry aspects above industry standard; and 5) continuous improvement—sustainability across the entire enterprise (extending to customers, suppliers and partners) and recognized as a leader in driving industry standards (Silvius & Schipper, 2014). Although overlap may occur between the levels of maturity (for instance, level two can begin prior to level one's completion), an earlier level must be completed prior to the completion of the next (Kerzner, 2009).

While railways have relied on projects for construction of infrastructure and managing progress associated with the engagement of multiple stakeholders, how knowledge is accrued and transferred from one project to the next—including the managerial approaches used for engaging communities—have not been well-documented. There has, however, been limited research on the impact that a firm's maturity on project management has on several performance factors.

Sustainability Project Management Maturity Model (SPM3)

The Sustainable Project Management Maturity Model (SPM3) was developed by Silvius and Schipper (2012) as a practical tool to understand the status and encourage the integration of sustainability

in project management. The SPM3 is based in part on peer input from the 2010 IPMA conference (Silvius & Schipper, 2012), and is also informed by the Global Reporting Initiative. The SPM3 has influenced and/or been applied in several studies (see Simionescu & Silvius, 2016) and has since undergone many iterations by its original researchers. The iterations of the SPM3 augment its capacity to provide assessment information to an organization with "sustainable project management" for "the planning, monitoring and controlling of project delivery and support process, with consideration of the environmental, economical and social aspects of the life-cycle of the project's resources, processes, deliverables and effects aimed at realizing benefit for stakeholders, performed in a transparent, fair and ethical way that includes *proactive stakeholder participation*." (Silvius & Schipper, 2015, p.17, emphasis my own). The model, adopted from the Capability Maturity Model, which is common among maturity models, allows for the assessment of various concepts and supports their development while providing guidance on action plans and monitoring of progress. It incorporates five levels of maturity, as well as both the processes and the products (e.g., deliverables) associated with a project (Silvius & Schipper 2010). The SPM3 indicators are consistent with both Elkington's definition of sustainability (i.e., balance of dimensions of environmental, economic, and social; intergenerational; stakeholder-focused) and a full life-cycle orientation, as previously cited, which is used by the Global Reporting Initiative. This is, therefore, quite suitable to examine the degree to which sustainability is practiced and integrated in NACI railway transportation infrastructure projects as disclosed. The SPM3 also purports to enable *practical assessments using tools at the level of the managers, engineers, and urban planners* (Johnson et al, 2010). The SPM3 is meant to be used in its entirety, incorporating three dimensions of sustainability (personal communication, Gilbert Silvius, Jan 14, 2018); however, because of the limited scope of this study, and the paucity of research-based information on stakeholder engagement that benefits sustainability by railways, I felt that even minimal aspects could advance findings. Accordingly, the maturity level (adapted from SPM3) was

incorporated to help in better understanding the relationship between value for local communities and sustainability by NACI.

Table 7

SPM3 Project Management Maturity Levels.

Strategy	Maturity level	Description
'do no harm' ↑	Level 1: Compliant	(This aspect of) Sustainability is considered minimalistic and implicit, and only with the intention to comply with laws and regulations.
	Level 2: Reactive	(This aspect of) Sustainability is considered explicitly, with the intention to reduce negative impacts of the project.
	Level 3: Proactive	(This aspect of) Sustainability is explicitly considered as one of the areas that the project contributes to.
'positive contribu-tion' ↓	Level 4: Purpose	Making a contribution to(this aspect of) sustainability is one of the drivers behind the project and sustainability considerations are included in the justification of the project.

Source: Silvius & Schipper (2015)

Table 8

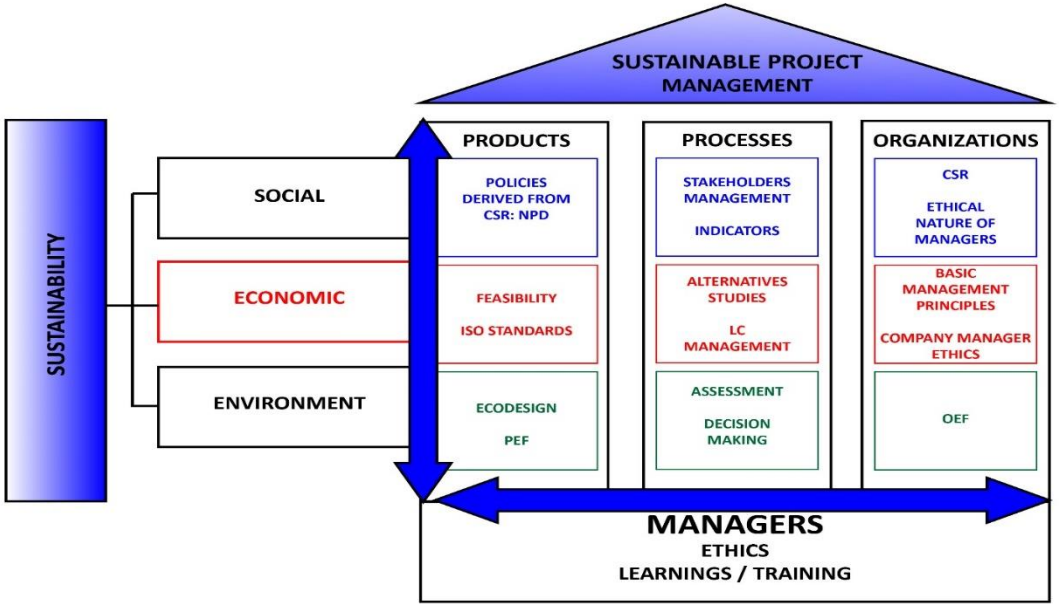
The Local Community Involvement Continuum

Analysis of communities being **impacted by the core activities**	Activities for stimulating **improvement of infrastructure for transport**, water, electricity, communication, etc.	Review of supporting Sustainable Development Goals or local development goals	Providing fair chances for local suppliers and SMEs	Plan for direct **local employment creation**	Plan for respecting cultural traditions and protecting cultural heritage	**Education and learning** programme for communities	Participation in local and national **skills development programmes**, including apprenticeships	Collaboration with universities or institutions in stimulating and providing **technology at local affordable conditions**	Programme for supporting communities with essential health care services, access to clean water, good sanitation
With eye on building relationships with communities and strengthening the development of communities		See ISO 26000 box 13	Paying taxes in those countries where activities take place		Especially when being impacted by its activities	For example: children, women, low literacy people in collaboration with local education institutions			
Rating: 1	1	2	3	3	3	4	4	4	5

ISO 26 000 dictates that increased performance in social responsibility is typically concomitant with an increase in sustainability project management maturity. Adapted by author from ISO 26 000.

Figure 7

Four-dimensional Conceptual Framework for Managing Sustainable Projects



Source: Marcelino-Sadaba, Gonsalez-Jaen & Pérez-Ezcurdia, (2015, p.3).

Figure 7. *Conceptual Framework for Managing Sustainable Projects* demonstrates the relevance of the manager in the delivery of sustainable project management to effect sustainability. The on-the-ground project manager is instrumental in integrating organizational, process and product-related concepts into all phases and aspects of the engagement with LCs. While the frameworks that are used to operationalize the economic and environmental dimensions lie on a continuum, highlighted for the purpose of this research are the social factors: policies of corporate social responsibility, stakeholder management or management for stakeholders and its associated indicators and, lastly, the enterprise-level considerations that must be translated at the level of LC engagement for genuine integration and successful sustainability.

Research on the precipitating factors and outcomes of stakeholder/local community engagement have produced some hallmarks from which to develop an understanding of the nature of the LC-NACI interface from the perspective of appropriate SE. Bowen, Newenham-Kahindi and Herremans (2010) reviewed the benefits of community engagement strategy for both company and community with a resultant typology of three engagement approaches: transactional, transitional and transformational—and longer-term advantages related to firm legitimacy. Bowen et al (2010) found that communication styles were suggestive of the quality of involvement along a spectrum, such that transactional relationships were largely identified by one-way communications whereby stakeholders were provided with information with no real opportunity to have their voices heard. Full two-way participatory dialogue signified a transformational relationship, engagement, and greater regard for the stakeholder's input as instrumental to decision-making processes. Therefore, the argument stands that SE by companies is an indicator of good (or at least better) sustainability performance and is useful in developing an appreciation for the role of SE by NACI with LCs. This literature review of important variables related to disclosure and its relationship to stakeholder engagement is the basis for Figure 8 (page 88), a summary of the literature and my conceptual framework for this research.

Figure 8

Conceptual Framework

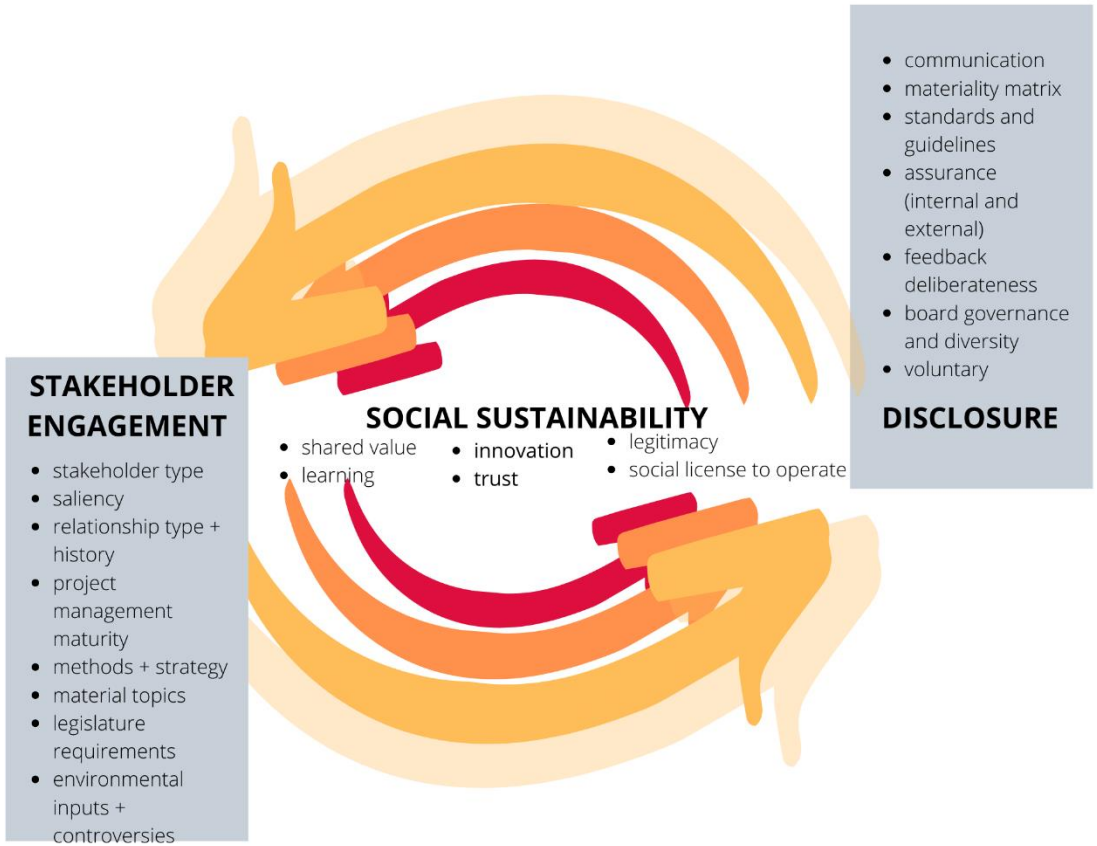


Figure 8. This figure depicts the cyclical and reinforcing nature of the relationship between stakeholder engagement and disclosure. As each railway engages in sound stakeholder engagement practices, the quality of disclosure improves, thereby giving rise to core values and principles such as trust and legitimacy with the local communities. In this manner, shared value is created that serves all stakeholders and projects in a sustainable fashion.

Chapter III: Methodology

Overview

In this chapter, I discuss my overall research philosophy, which is derived from my personal perspective; justify the choice of an exploratory study using secondary data as the most appropriate research strategy; and set out the research methodology and specific methods. I also describe approaches that promote robust and rigorous findings based on systematic data collection and an approach to analysis that serves to evidence and support the overall study, and ensures validity and reliability of the research outcomes. In so doing, I forecast what will be shared in Chapter IV on Findings.

The purpose of this chapter is to:

(i) discuss the research philosophy from a descriptive perspective that substantiates its justification;

(ii) present the rationale and outline of my research strategy and methodologies; and

(iii) introduce various employed indicators that were drawn from the literature and observations as well as the methods and adapted instruments that were deployed as most applicable to meet the research objectives.

Both this study's methodology and my motivation for conducting it have common origins. After contributing on two academia-industry research projects in an area associated with transportation, supply chain management/logistics, I became intrigued with rail because of its fuel efficiency and potential to support achievement of the sustainable development goals. As I sought ways to coalesce my work—which involved identifying and addressing the needs of local communities through various mental health and justice collaborations and programs—with my research, the voices of people most likely to be impacted by railway projects and operations, railside communities, and why their interests seemed to be underrepresented (if not unrepresented) in sustainability research intrigued me. Therefore, having been pointed in the direction of the EJ&E acquisition by CN, which was touted as an exemplar in the areas of

environmental impact assessment and mitigation and stakeholder engagement with 33 local communities, I sought to enhance my understanding of the relevant variables involving the local communities from the publicly available literature. I desired to get a general sense of what had been shared with the broad public. Over three visits to the Chicago region, I was able to gather background information that promoted my understanding of key variables—some of which I later used to conduct my investigation through the sustainability reports. Several crucial points came to light which were directional. They are as follows:

Gary, Indiana is the home to EJ &E's Kirk Yard that was acquired by CN in 2008. The yard is known in the steel industry for its shipping and other intermodal capacity, which represents a highly strategic position for CN. The region around Kirk Yard has not experienced a boost to their economy[52] commensurate with the positive impact of CN's coffers. The economic devastation (extent of job loss)[53], without any hint of vocational retraining or redirecting of occupational pursuits, would have been exacerbated (Economic Development Department, Gary, Indiana) by the EJ&E acquisition. Secondly, in an unsolicited manner, people were incredibly open to providing their positive (frequently tied to economic development to the exclusion of social consequences) and negative feedback and opinions of the local rail situation even though the CN acquisition had been transacted ten years previously. This willingness spoke to the enduring consequences of their lived experiences and the longer-term impact of infrastructure projects on local communities.

[52] The Environmental Impact Statement of July 2008 (EIS), Section of Environmental Analysis, Surface Transportation Board projected socioeconomic impacts to local communities (60 smaller communities had been proposed for the study area) that would experience heightened unemployment (but not so to the entire Chicago metro area because of its employment base of 3 million jobs), increased train volumes and accidents (by 28%) and worse delays, and a negative effect on property values. Environmental justice predictions included increased emissions because of increased fuel consumption resulting from longer routes; increase noise and vibration. The net environmental impact was felt to be positive, thought the burden would rest with specific local communities. These predictions of negative impacts were found to have been gross underestimations when compared to actual values. The EIS stated that about 75% of all CN rail travelling between Winnipeg, Manitoba; Toronto, Ontario and Memphis, Tennessee passes through Chicago, the busiest US rail gateway for over 100 years.

[53] The Environmental Impact Statement had predicted a loss of 280 jobs.

Thirdly, the information asymmetry and differential treatment of local communities by the railway, CN, led me to focus on public information and its use within the company's sustainability strategy—if in fact one existed.

In summary, the issues surrounding CN's acquisition of EJ&E Railways were grand, but I determined greater benefits from an industry-wide comparison rather than a single case study involving 33 communities—a scope that would be untenable. Additionally, the institutionalized environment—with strong isomorphism (normative, mimetic, and coercive), a desire for legitimacy, and deeply held patterns of responding to external pressure—warranted a more in-depth understanding of the disclosure-engagement interface. As such, irrefutable evidence of the railways' position—that which was freely and openly published to be consumed by all stakeholders—would be used. The intent is that this exploration could serve as a foundation for future investigations.

Despite the volume of research on environmental and economic sustainability performance, no empirical work existed that related to the social dimension of sustainability with issues involving stakeholders external to the firms' human resources programs and concerns. Determination of disclosure—and its quality—was felt to shed some light on managerial attitude on engagement and relationships with local communities. This study used an exploratory qualitative research method to describe select sustainability variables that are impacting the NACI relationship and its expression (disclosure) through engagement with local communities. With the intention of surveying reports based on infrastructure projects, this study covered the 10-year-period immediately following the Global Financial Crisis[54]. This duration provided enough data for a longitudinal view and assessment of the developmental performance of the NACI. Application of the core tenets of the stakeholder theory allowed

[54] This period is significant for being a time when attitudes regarding sustainability became accentuated following earlier financial failures including the stock market crash/internet bubble bursting of 2002 and the Enron bankruptcy.

my postulation of key underpinnings that support the relational structure of NACI and LCs, their outcomes and potential for improvements.

According to Wilson (2014), qualitative methods are appropriate in addressing research problems of unknown variables, and secondary analysis is a suitable social science method when "how" and "what" are central to the research question—and particularly if other approaches, such as surveys and interviews, would not provide a broad enough scope or representation of the issues under investigation (Yin, 2018; Spiggle, 1994). To organize the analysis of secondary data, the case study methodology is integrated because it: "1) copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result; 2) benefits from the prior development of theoretical propositions to guide design, data collection, and analysis, and as another result; 3) relies on multiple sources of evidence, with data needing to converge in a triangulating fashion" (Yin, 2018: p.15). Much of what is known about the NACI-LC relationship has not been systematically studied, but the reported exchanges are frequently reactions that follow an incident or during a period of discontent. Centrally, through the application of components of stakeholder and voluntary disclosure theories, an appreciation of the landscape drawn by disclosures will emerge, thereby permitting the voice of each organization relative to local communities to be projected.

Research Philosophy and Strategy

I first became interested in sustainability in 1986, when Greenpeace's action and the Challenger explosion forced me to confront my life's purpose and ways to positively impact our planet. But it was not until 2014, after experience on two operations sciences research projects (empty miles and collaboration among shippers in trucking; and the terminal yard efficiencies of global ports) in transportation that economy, environmental health, and my interests in local communities came into play. The benefits of transportation by rail and optimization of its use intrigued me, and I became encouraged to examine these powerful railways and the local communities through which their networks coursed. This curiosity was

then transformed, with the aid of many conversations with industry professionals, into this study that would become the topic of my dissertation in 2016.

While the nature of acceptable knowledge is the concern of epistemology, ontology focuses on the nature of reality. The perceptions and actions of social actors create social phenomena, and these are subjectively analyzed throughout this study.

In addition to a sound methodological base, it is a requirement that the investigation explicitly describes the theoretical basis which connects the ontological and epistemological viewpoints into a robust paradigm. The paradigm that follows delimits the scope of the research and provides a rationale regarding the direction taken and the reasonableness of conclusions that could be drawn. The adopted worldview is pragmatism through high levels of interaction with the data by using an inductive approach where movement from observation to insight (and potentially theory) occurs. To eliminate as much as possible the problems of reliability that could arise from interpretative dimensions of analysis, multiple sources of information are used and triangulated, not with the intention to generalize (Creswell & Miller, 2000), but to provide “interesting new insights into a particular context” (Wilson, 2014). Creswell and Miller (2000) view the pragmatist researcher’s focus as being the “what” and “how” of the research problem to generate the most significant insights. The highlighted knowledge is viewed as socially constructed and, therefore, to a great extent rests outside the researcher’s making—though is also influenced by it. For this reason, and several others, existing, published documents are used as opposed to surveys and (semi-)structured interviews that would rely heavily on memory and sensemaking of the engagement strategies used (Morsing & Schultz, 2006; Weick, 1995). Justification for the use of historical data rests in the fact that in producing sustainability reports, which are for public consumption, an inherent amount of collaboration, in addition to verification (by board members) and sometimes

assurance[55] (by external firms), exists. The result of these efforts is the representative nature of the narrative information that becomes both reliable and valid, as it is publicly available. "Historical analysis is particularly useful for obtaining knowledge about unexamined areas—and for re-examining questions for which answers were not as definitive as desired. It allows for systematic and direct classification of data" (Marshall and Rossman, 2016: p. 165). Additionally, historical analysis is relevant to "enhance credibility of statements of the past, to establish relationships, and to determine possible cause-and-effect relationships" (Marshall & Rossman, 2016: p.165-166).

Overall Methodological Approach

The methodological approach chosen is combinatorial of those used in seminal articles and having regard for the study's scope and resources. The principal analysis type was content by thematic reduction. After itemizing the steps taken, an explanation of the operational aspects of each is provided.

The steps taken were:

i. Data collection approach—for disclosure and SE, through GRI's database and company websites for all seven NACI—sustainability, CSR, and community reports for 2009-2018;

ii. Data were sourced from NACI CSR/sustainability reports, corporate websites, and rating agencies Sustainalytics and Refinitiv;

iii. Sampling—based on GRI indices and sections pertinent to social sustainability;

iv. Selection of variables—based on literature review, guidelines, and researcher's experience;

v. Thematic coding—codes established from seminal articles and reading sustainability reports;

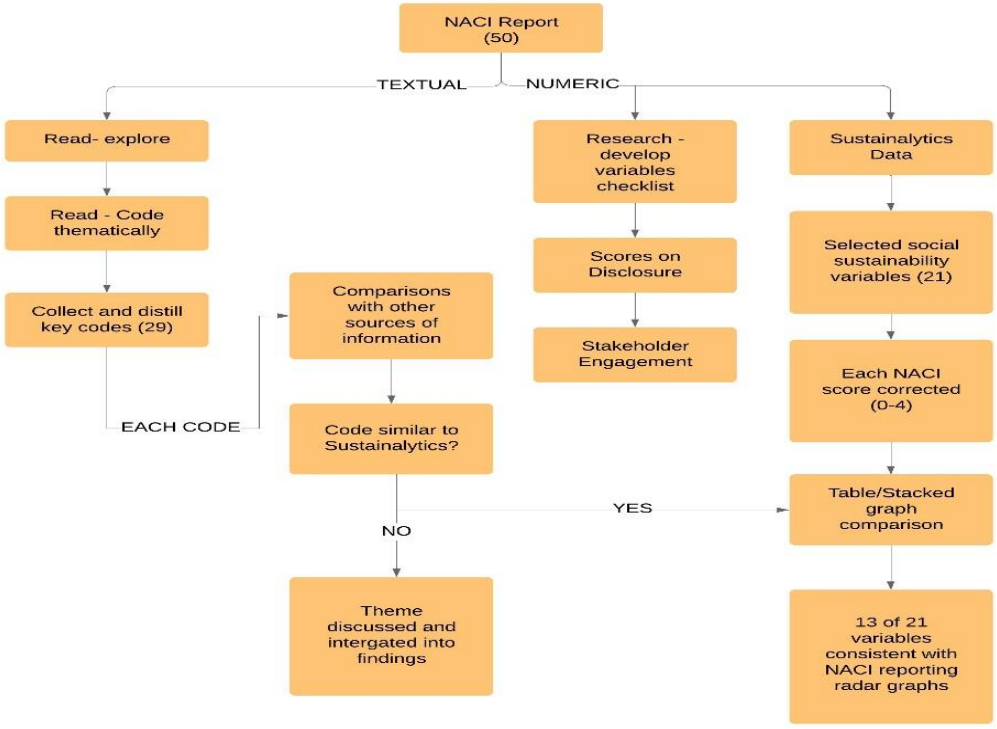
[55] The 2013 survey conducted by EY and the Center for Corporate Responsibility as reported in the Value of Sustainability Reporting stated that the scope of 51% of assurance reports related to the entire sustainability report and 32% for specific sections, 15% was not specified and only 2% was for greenhouse gases.

vi. Content analysis—reduction of report content based on codes and compared to other sources of information;

vii. Review of most salient themes (based on literature review)—comparisons with rating agencies, triangulation with multiple sources of information, and requirements of standards and guidelines and information.

Figure 9

Analysis Flow Chart



The process depicted in Figure 9, above, outlines how I sourced and analyzed the data to answer the research questions:

1) What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure?
2) How do NACI engage with LCs? What is the nature of relationships with local communities as disclosed by North American Class I railways?

My rationale for using content analysis precedes the detailed explanation.

Rationale for use of Content Analysis

Studies that focus on any one or a combination of the constructs of stakeholder engagement, sustainability and disclosure/reporting have employed content analysis. In their research into variables that impact when and how sustainability reporting is adopted, Hahn and Kuhnen (2013) found that the use of qualitative methods applied specifically to sustainability reporting and employed content analysis to understand the extent of reporting by first researching the volume of keywords, sentences, and page counts to "identify major themes discussed in sustainability-related reports." I adopted this manner of theme identification, as it was common to several other studies (Herremans et al, 2016; Manetti, 2011; Moratis & Brandt, 2017; Prado-Lorenzo, Gallego-Alvarez & Garcia-Sanchez, 2009). Next, when researching quality of determinants of reporting, the researchers found reliance on narrative and descriptive information that is "soft" and not readily verifiable. Hahn & Kuhnen (2013) recommended that future research should consider employing content analysis to meet GRI's guidelines on quality sustainability reporting and materiality, which call for a striking of balance between positive and negative disclosure, thereby filling a significant gap in the literature. This, too, I chose to adopt.

The research methodology by Chen, Feldmann and Tang (2015) provided the point of confluence for variables extracted from other studies. For example, they used content analysis, which they found effective for cross-industry (manufacturing) comparisons, and longitudinal investigation into the association between corporate social performance, transparency in reporting, and financial performance. Chen et al (2015) also used the GRI format as a sustainability measurement and the Sustainability Disclosure Database for sample reports. Additionally, they used human raters, which they advised had the advantage through their use of contextual information to both identify specific implementation as well as assess its intensity. The researchers felt that the advantage of using multiple coders, who together could then verify scores or reach a consensus, compensated for the subjectivity of their input.

Herremans et al (2016) also used content analysis to demonstrate the linkage between relationship type (based on ownership), stakeholder engagement approach, and sustainability reporting characteristics. Prado-Lorenzo, Gallego-Alvarez, and Garcia-Sanchez (2009) used content analysis on CSR reports to collect data on engagement with a group of stakeholders impacted by reporting of various quality levels. Manetti (2011) reviewed stakeholder engagement and management practices, while Onkila et al (2014) managed to demonstrate the utility of stakeholder engagement in sustainability reports.

Content analysis was performed to collect sustainability-related data on relevant aspects of stakeholder engagement and project management. It has been widely used in management research—on sustainability disclosure and reporting—to reduce, organize and understand what is being communicated and parse topics of importance (Al-Tuwaijri, 2004 et al; Clarkson et al, 2008; Fasan and Mio, 2017; Manetti, 2010; Martens & Carvalho, 2016; Notteboom, Parola, Satta & Penco, 2015; Onkila, Joensuu & Koskela, 2014). Two important reasons for the use of content analysis for data conversion include: a) filtration of volume data is reduced into categories of interest based on a defined set of coding rules (Wilson, 2014; Weber, 1991); and b) collation of information so that the knowledge can be organized and translated for applicability in a cost-effective and efficient way. For this, I used a software program, NVIVO, which is commonly and cost-effectively used for content analysis in qualitative research. Reports were read in their entirety and coded thematically according to the identified codes that related to the variables of interest.

This study follows an inductive research strategy of content analysis, which is consistent with grounded theory; that is, it involves the collection and analysis of data, which leads to new insights that inform the next round of data collection and analysis. The “codes, concepts and insights,” while some were suggested by pre-existing literature, emerged from, and were confirmed directly by the data and were thereby “grounded” in it (Leavy, 2017: p148). As mentioned in the literature review, to begin the analysis, some foundational categories were adopted from Herremans et al (2016); Silvius & Schipper

(2014) (social sustainability variables, and levels of project management maturity); Moratis and Brandt (2017) (stakeholder engagement checklist) and Friedman and Miles (2006) (ladder of stakeholder engagement). These previously mentioned guidelines are all foundational to what I devised—and provide directives on sustainability disclosure and stakeholder engagement.

The processes (as outlined in the analysis flowchart, page 96) are as follows: I examined 50 publicly available sustainability or corporate social responsibility NACI reports that spanned 10 years. Using specified variables, I analyzed the practices of disclosure, stakeholder engagement and social sustainability. Special attention was drawn from stakeholder and institutional theories to compare and align social sustainability performance with guidelines. Comparisons with ratings compiled by rating agencies that support the decision-making of investors were conducted (explanation to follow). The retrospective longitudinal approach allowed for review of sustainability performance, attitudes, and relationships, and to witness the true commitment of each NACI over time to the sustainable development goals from a social perspective. In determining the design to be used, a quantitative approach was considered so that measured variables could be potentially correlated for associations, dependencies, and the degree of change. Qualitative research would provide information on not only the content of the data, but also the context of its creation (Leavy, 2017). A form of analysis which was a primary consideration was “pooled cross-sectional time series” (PTSCS) (personal conversation with Shaun McQuitty, September 2018), which is now widely used with observational data across units and over time by the social sciences (Troeger, 2019). The PTSCS analysis could have allowed for a longitudinal view as well as the “identification through differences-in-differences approaches exploiting within unit variation” (Troeger, 2019: p.1). However, this was not possible because of the inconsistent reporting within the industry, as well as insufficient data. A decision was therefore made to examine the mutual roles of NACI, and LCs as reported and, ultimately, lessons learned based on those collected from other industries.

Through this methodology, the anticipated findings would contribute to an understanding of relationships in the context of (project) stakeholder management, enrich stakeholder theory, and provide the bases upon which future research could be built to make suggestions for project managers and decision-makers who impact policy. My overall research philosophy is based on pragmatism—the paradigm of choice for social studies (Wilson, 2014). This research, in its entirety, used secondary data that were published by the seven NACI in the form of reports (sustainability/corporate social responsibility/corporate responsibility, annual, data supplements and community); publications of trade organizations; newswires (e.g., Factiva); government agency briefings, and court-related documents. The rationale for a longitudinal study is embedded in the fact that a company will disclose to and engage differently with its stakeholders over time, thereby having a different impact on society—which evolves along with social norms or standards, economics, science, politics, and technology. Also, an important objective of sustainability disclosures to stakeholders (including local communities) is not only to present the status of the outcomes of sustainability efforts (i.e., in a balanced fashion—both positive and negative impacts—if following GRI standards), but also to relay the *corporate commitment for future actions*. Secondary data are ideal for longitudinal studies and allow for the comparisons in a way that eliminates the challenges linked to primary data collection (time, costs related to travel, and accessibility to decision makers given the researcher's limited resources etc.) (Wilson, 2014).

Data Collection Approach

Data Collection (i). For both research questions, data were collected from the sustainability reports provided from the GRI database, NACI, webpages for stakeholder engagement approaches and techniques, the Surface Transportation Board website, and the respective websites of projects used as case studies (e.g., Milton Intermodal Hub, and Elgin, Joliet, and Eastern websites). Whenever possible, corporate websites offered supplementary information that was compared with literature from sources external to the railway (other websites, articles, policy documents, regulatory papers, and court-related

documents). The three Eurasian railways were selected based on availability of their sustainability reports in English, comparability of size and scope of operations with NACI, and because, after reviewing them, each provided better practices in the three areas of interest—disclosure, engagement of LCs, and project-specific reporting to LCs.

Sources of Data (ii). Several factors were considered when evaluating the sources of secondary data to be used. Wilson (2014) recommends that these factors should include: purpose, scope, authority, audience, and format. The reports to be analyzed in this research study were acquired in one of two ways: 1) by accessing the Global Reporting Initiative's[56] database; and 2) going directly to corporate websites to ascertain any CSR or sustainability reports—when limitations to the GRI database were recognized for the target period. This ensured that the reports were from a credible authority representative of the railway and intended for the appropriate audience—its local communities and external stakeholders. Requests to several Eurasian railways for English translations were not forthcoming; therefore, I decided only to study a select few that were already accessible online in English.

The following, Table 9 (page 101) shows the various sources of information used and for what purpose; however, Table 10 (page 106) provides a listing of primary sample reports available from which the sustainability data for the seven NACI railways were retrieved.

[56] The Global Reporting Initiative is an independent international organization that has pioneered the most commonly used standards for sustainability reporting since 1997. The standards were developed with "true multi-stakeholder contributions and rooted in the public interest." (Globalreporting.org)

Table 9

Integration of Data Sourced

Item under investigation	Source Type	Source Organization
Research question one (disclosure quality)	• Sustainability/CSR/corporate responsibility; • Annual reports; • Company web pages regarding sustainability activities and other company documents, such as financial reports; • Factiva (various newswire)	NACI: BNSF, CN, CP, CSX, Kansas, Norfolk, UP. EA: DB, NR, MTR Are you better off after CN/EJ&E merger? June 10, 2013
	Rating agencies	Sustainalytics, Refinitiv/Eikon
	Government & agencies: Canada, US	Canada: Transport Canada Impact Assessment Act Safety Act Review US: Surface Transportation Board STB re: EJ&E: Executive Summary Draft Environmental Impact Statement, July 2008 Motion to expedite consideration, STB Finance Docket #35087, Sept 2008 STB Decision STB Finance Docket #35087 December 24, 2008. Joint Brief of Community Partners, April 2010 Opening Brief CN petition to review final of Barrington petition, April, 2010. Barrington petition joint brief of respondents, June 2010 Barrington petition CN's brief, July 2010 Joint brief of Community Intervenors, July 2010 Reply brief, CN July 2010 CN intervenors March 2011 Transcripts November 2011 Letter of February 3, 2015 from Karen Darch, Mayor of Barrington to Jill Leary, Acting Director, Chicago Metropolitan Agency for Planning Letter of August 16, 2017 from Karen Darch, Mayor of Barrington, to Federal Railroad Administration Incoming and outing correspondence of Finance Docket #35087 Chicago Metropolitan Agency for Planning letter to STB of December 21, 2016 Verified statement January 5, 2017 of David Dorn, Chief of Police, Barrington CN and Grand Trunk Corporation—Control—EJ&E West Company, Petition seeking imposition of additional

		mitigation pursuant to the Board's oversight jurisdiction and reopening pursuant to governing regulations, Finance Docket No. 35087 Sub No. 8, January 2017 Decision: permission to reopen denied, April 2017 Public meeting announcement sample Federal Railway Administration United States House of Representatives Committee on Financial Services Hearing Washington State Department of Transportation
	Standards and Guidelines	GRI, IIRC, SASB
	Subject matter expert reports	Cairns, Hatch
Research question two (stakeholder engagement)	Subject matter expert reports,	NBS, Webler
	Rating agency	Sustainalytics
	Industry association documents,	AAR, RAC, RAC Carbon Emissions Reports, RAC (Interchange) Proximity Guidelines (RAC and FCM)
	Community rail strategy (Eurasia) SE on projects	NR and DB sustainability and community reports; company documents; MTR
	Standards and Guidelines	AA 1000, ISO 26 000 IFC Stakeholder Engagement, OECD
	Subject matter experts	Harvey (neoliberalism), Campbell (policy)
Research setting	Court and hearings documents	Various agencies (governmental—municipal and federal)

***Sustainalytics database*.** Specific to answering my research question one, regarding quality of disclosure; and two, SE, sustainability data from Sustainalytics for years 2010-2018 were collected. However, there were missing data for 2018, and some data lacked clarity. Some limited ESG data from Refinitiv (Eikon) was also available. Sustainalytics is a global provider of ESG and corporate governance solutions-based research that rates organizations according to integrated ESG information using leveraged smart technology to help clients to determine risk and investment decisions. Its relevance as a reliable source of information stems in part from its longevity, methodology and ongoing involvement in publishing specific indices (e.g., Jantzi Index, which has demonstrated performance that exceeded

S&P/TSX Composite and S&P/TSX60) that have demonstrated utility in the investment market. Refinitiv indicates that it is "designed to transparently and objectively measure a company's relative ESG performance, commitment and effectiveness across 10 main themes (emissions, environmental product innovation, human rights, shareholders, etc.) based on company-reported data" (Refinitiv, n.d.: p.3). The overall score for each company was discounted when significant ESG controversies exist. The methodology used by Sustainalytics relies on 60,000 news sources and has an integrated process that provides a score on a hurricane scale from "one to five depending on the reputational risk to the company and potential impact on stakeholders and the environment[57]" (Sustainalytics, n.d.). Environmental and societal impacts are both considerations in Sustainalytics' assessment of major controversies or incidents. If an ongoing controversy exists, it is interpreted as potentially signalling an inadequacy of the management system's ability to shelter the company from exposure to ESG risks. Following the rating of each railway on variables of interest, an independent comparison (blind and following a review of Sustainalytics and Refinitiv's data) occurred to ensure that no bias was created).

[57] Sustainalytics' website indicates that they create reports of controversies based on incidents that may "negatively impact stakeholders, the environment" and operation, and "how the controversy is likely to evolve" over the next year (www.sustainalytics.com).

Figure 10

Sustainalytics Ratings Dimensions

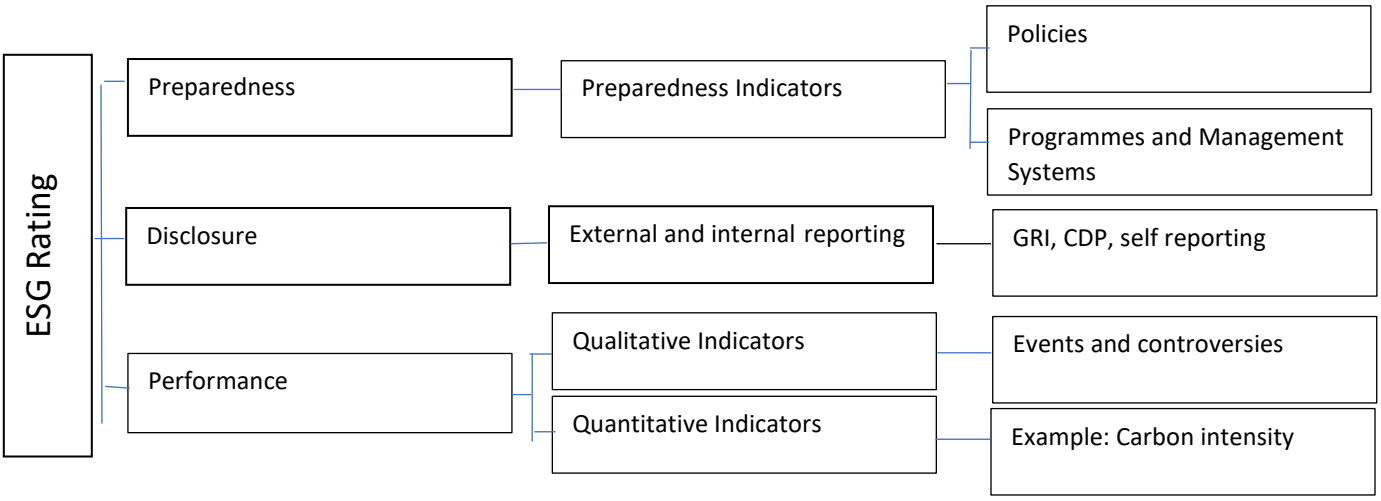


Figure 10 depicts the ESG Rating Dimensions. Source: Sustainalytics, ESG Ratings Methodology Quick Overview, (2017).

The rationale for using multiple sources was based on the need to neutralize the criticisms levied regarding the subjectivity of the rating processes which have multiple layers. These criticisms include claims regarding the rating agencies' need to legitimize their value to financial analysts and biases related to firm size, geography, and industry, etc. (Doyle, 2018). Many of the controversies—as relayed in the news (through Factiva)—that were incidents of interest were spills related to derailments or lawsuits and, therefore, could not be seen from a proactive lens.

***Rationale for use of Sustainalytics*.** To understand the nature of the NACI-LC relationship, and for the purpose of reliability (which was achieved through the triangulation of data), it was prudent to cross-reference variables chosen for analysis with those from a well-established source. Sustainalytics was chosen for this purpose after reviewing many other possibilities. Based on the idea that many of the social factors of interest exist along a continuum rather than being simply present or not (which is a common method used), employing Sustainalytics was consistent because it uses graduated or incremental ratings rather than the all-or-none rating methods of other rating agencies. Additionally, Sustainalytics was transparent in its methodology while using a large enough sample of clients. Others, such as RobecoSAM,

which was based on a defined sample of 2,400 corporations (pre-selected from high performers on the Dow Jones Sustainability Index), were felt to be too narrow in their scope.

Treatment of variables. Variables were constructs associated with behavioural performance of the NACI that could either be represented by a single code or multiple codes to describe/identify themes. This is the approach that was used for the qualitative review of the sustainability reports. Similarly, some codes could be understood and analyzed by searching multiple keywords and phrases that could be rated with a score, which were prescribed either ordinal or binary numbers to provide a measure of the railways' performance for the purpose of comparisons. For example, if the highest score attainable was 100%, quartiles were used so that this would be equated to 4 (0=0, 25%=1, 50%=2, 75%=3) and then ranked accordingly based on the range of values. For negative performance variables, such as controversies, the scales were inverted so that a disclosure with 100% would receive 0, 75% would equate to a 1, and so on. This was used to transform Sustainalytics' data for comparison with this study's data. Corroboration with other sources and databases (such as Eikon/Refinitiv) and referencing multiple sources were used. In some areas, such as sustainability strategy, significant discordance was noted between the Refinitiv and Sustainalytics rating.

Table 10

NACI Sample of Reports

NACI	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total Reports
BNSF*					2013	2014	2015		2017		4
CN*		2010		2012		2014		2016		2018	5
CP*	2009	2010/ 2011		Reported in 2014		2014		2015 and 2016		2018	6
CSX	2009	2010	2011	2012	2013	2014	2015	2016	supp	supp	10
Kansas					2013	2014	2015	2016	2017	2018	6
Norfolk	2009	2010	2011	2012	2013	2014 (2013)	2015 (2014)	2016		2018	9
UP	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	10
											50

Table 10 lists the CSR reports published by the NACI, and from which data were collected on their social sustainability. Blacked-out cell means that no sustainability report was published for that year by the NACI;
* means that the NACI publishes their sustainability report every two years.

Sample (iii). The North American sample is comprised of seven railways that produced 50[58] sustainability reports (the specific available reports by year and railway are found in Table 10) that are of primary interest. Some of the NACI referenced the GRI reporting guidelines or reported in accordance with them. The GRI Standards are the only globally-recognized, consensus-based (informed by Ceres, Tellus Institute and United Nations Environment Program) guidelines that are purportedly designed for many stakeholders and promote report content development, formatting, and value creation through legitimation. Not all railways involved in this study have adopted GRI methodology—while others have only done so recently.

Accessed reports (e.g., CSR, sustainability reports of Table 10, page 106) were categorized as "primary." Any others (e.g., annual reports, community reports) for NACI from Eurasia not forming part of the primary sample were considered secondary. Each report was accepted as the company's bona fide representation of their disclosure, as they were either posted on the respective railway's corporate website or the GRI site. Reliability was enhanced by reviewing various sources (e.g., CDP[59] ratings, etc.). However, validity or the truthfulness of the information had to be assumed, as it was not within the scope of this study to investigate the veracity of each stated claim. While the NACI are freight transportation (with infrastructure shared by passenger trains), the Eurasian railways include freight and passenger, as infrastructure network is increasingly shared by both. Infrastructure projects of both NACI and Eurasia, therefore, must ultimately consider the needs of both freight and passenger/commuter trains[60].

[58] This number represents only CSR and sustainability reports. Railways have used different nomenclature, and at times the relevant information was contained in annual reports when sustainability reports had not been produced. In other instances, "Integrated report", "report to community", "sustainability and citizenship" or "corporate responsibility report" were the ways in which reviewed reports were named.

[59] CDP (cdp.net) is a non-profit organization which acts on the belief that "corporate awareness through measurement and disclosure is essential to the effective management of carbon and climate change risk. We request information on climate risks and low carbon opportunities from the world's largest companies on behalf of over 515 institutional investor signatories with a combined US$106 trillion in assets and 147 major purchasers with over US$4 trillion in procurement spend" (cdp.net).CDP self-describes as having the world's most comprehensive environmental dataset which is used to monitor and track progress building toward a sustainable economy for people and planet.

[60] It is recognized that some infrastructure is exclusively for commuter/passenger or high-speed trains. These lines, by total distance covered, are believed to represent the minority of railways worldwide: China, 26,869 km; Europe,

Eurasian railways whose data contributed to understanding disclosure and SE published their sustainability reports in English and had networks of similar size as NACI. It should be noted that the Eurasian railways differ from the NACI in fundamental ways: ownership; freight is not a major proportion of their revenue base; and they can be diverse, with logistics constituting a part of their services. To review the industry-wide disclosure and engagement better practices of NACI versus Eurasia, their most recently available sustainability reports were used.

There were other factors that will not be incorporated into the research analysis, such as regulatory and legislative differences, geography, and socio-political climate. These factors were used as references to performance—regardless of the differences in other factors, such as ownership, culture, legislative and political context.

Several frameworks have informed both the philosophical mindset to be used and the development of a list of specific keywords that were used in the content for searching: AA1000 and Stakeholder Engagement (AccountAbility, 2015); Carbon Disclosure Project (n.d.); International Reporting Framework (International Integrated Reporting Council, 2013); ISO 26 000 (International Organization for Standardization, 2010); OECD Due Diligence Guidance for Stakeholder Engagement in the Extractive Sectors (Organization for Economic Development, 2017); and United Nations Global Compact UNGC (United Nations, n.d.). Once the list of words was established (refer to Table 11, page 110), a word search supported a secondary check to identify passages of text with valuable information that was not accessible from obvious subtitles and categories from GRI indices, etc. The codification of these passages was again used to contribute to the categorization of the themes. Where a theme already existed, the codification provided additional content to broaden and intensify its meaning.

17,376; Asia (excluding China), 4,490, Western Asia, Central Asia and Africa, 1996 and United States 54.6 which is owned by Amtrak (list of high-speed railway lines).

There were intrinsic disadvantages in using secondary data because the information is presented in ways that were not designed specifically to answer my research questions. Data points had to be collected from multiple sources to achieve a more comprehensive understanding than what any one NACI report could provide and to enhance validity through triangulation of data. In some instances, these multiple sources also aided the reliability of findings; in others, they served to challenge the position taken or claims made by the NACI. However, as Wilson (2014) points out, secondary data allows for comparative research of a cross-cultural or international nature to be done while overcoming the inherent limitations of collecting primary data. Together, the combined sources provided a window into characteristics of each railway—illuminating organizational culture, the degree to which LCs are a priority, and their strategy, management maturity and willingness to evolve.

Progressive sampling evolved, as acquired reports referenced additional documents of interest through various channels—such as online links to corporate white papers, annual reports, industry/association position papers, and other types of publications found in the public domain (Wilson, 2014). This fuller sampling, beyond the GRI-listed reports, enabled the breadth and depth of studying the relevant issues as they arose in the literature and contributed to the reliability of findings.

There are inherent concerns when one relies only on text documents produced by the firms being investigated. These include deliberate falsification of information to promote public image or legitimation, and the fact that words and phrases may now have a different meaning than they did at the time of writing. The possibility also exists that some practices of engagement might have become so commonplace in a firm that it is not (or no longer) reportable even though required for approach to disclosing by GRI. I chose to accept these risks and assume that the absence of evidence was, in fact, the evidence of its absence.

Selection of Variables (iv). Qualitative analysis is necessary to explore concepts in a field of study that is relatively unknown (Marshall & Rossman, 2016). I used an iterative process. It entailed several

rounds of reviewing, scanning, and reading the reports in greater detail following the first exploratory round. The first round provided a general idea of content, terminology, breadth of reporting and depth. It supported the search for variables that the academic literature or reporting standards, such as GRI, suggested were characteristic of either quality disclosure or SE. Researchers such as Gill, Dickinson and Scharl (2008) relied on the GRI for search terms that represented the concepts under investigation of sustainability reporting within the oil and gas industry. In a similar fashion, I used the terms, categories and some GRI concepts to develop a list against which the NACI were benchmarked. However, not every variable to be explored was known: the conceptual framework provided some initial structure that guided what could be could be collected, synthesized, and distilled at a minimum.

Table 11

Search Words/Method Used to Locate Text

Methods of Text Location	
Variable	**Keyword/information Searched**
Dedicated SE section	Stakeholder engagement, stakeholder, engagement, community, community engagement, community investment
Objectives of SE	Letter from governing entity
Definition of stakeholders	Define, defined
Oversight of ESG Issues	Director of sustainability, governance, director, chief, board, chair, committee
Internal report assurance and/or stakeholder panel	Assurance, review, advisory committee, committee, panel, input, internal, audit, report assurance
Approach to stakeholder engagement	Sustainability, environment, contained within a stakeholder section
Defining report content and topic boundaries	Scope, purpose of this report, purpose
Opportunity for feedback	Feedback, @, contact
External Verification of CSR Reporting	External assurance report,
SE Methods	Specific to community and employees, each method was a keyword
SE Frequency	annual, year, yearly, monthly, weekly, often, daily
SE Measurable Goals & Objectives	measured, findings
SE guidelines (a strategy or plan) used to guide engagement	AA1000, strategy, guide, objective, goal, GRI
Involvement in decision-making beyond reporting process (regular assessments)	Annual, monthly, weekly, feedback, input

Material topics	Materiality, material, “what matters most” (Norfolk, 2016), “important to our community” (Norfolk, 2016), “value tracks” (Union Pacific, 2015) or “material aspects” and “key topics” (BNSF, 2014).
Compensation tied to ESG performance	Compensation, bonus, commission
Reporting to CDP	CDP, carbon disclosure
Infrastructure investment	Infrastructure, investment, capital expenditures
Indirect +/- impacts of economics and infrastructure on stakeholder priorities	no keywords, only GRI
Women in management or board of directors %	women, female, BOD, board of directors, diversity
Salary ratio	Salary, ratio, average worker, average worker ratio
Programs to increase management diversity	diversity, non-discrimination, fairness, fair
Local communities’ engagement and impact assessment	assessment, assess
Significant actual and potential negative impacts	Effect on community, negative, challenge, issues, community, findings specific to local communities. Search terms: Corporate social responsibility: environmental/social governance; environmental health Sustainable development/sustainability; Toxic leaks--workplace/safety health issues; Environment/waste management and synonyms for infrastructure such as "Tracks", "rail lines", "track expansion", "rail capacity optimization", "at-grade crossing", "railroads" "local groups", "residents", "proximity"; society, community, environment, and the following only in conjunction with one of the others: "infrastructure project".
Society and Community Related Controversy or Incidents	Factiva used to acquire newswire articles
Programs to reduce key environmental impacts (water, waste)	Reduce, reduction, management, waste, water
Programs to reduce GHG emissions	Emission(s)
Programs and targets to increase use of clean, renewable energy	Renewable, solar, wind, green, clean, co-generation, geothermal

Additionally, for new variables to be revealed, each report was re-read, and content analyzed by first identifying emerging themes that were consistent with the dimension of social sustainability and related to other already identified variables of interest (cross-referencing with the content of the NACI sustainability reports, as discussed in the previous section). The initial round of reading allowed a general appreciation of the operating context and reporting style, insight into organizational culture, and any progress on social sustainability reporting. With respect to question two, I looked to determine their general, but then later, specific engagement approaches with LCs. This framework is similar to some of the rating schemes used in previous research on sustainability (Yang, Yuan, Yigitcanlar, Newman & Schultmann, 2015), social sustainability (e.g., Shen, Wu, & Zhang, 2011), corporate social responsibility,

stakeholder engagement and reporting (e.g., Herremans, Nazari & Mahmoudian, 2016; Siriwardhane & Taylor, 2013; Yang, Shen, Drew & Ho, 2010), and environmental management (e.g., Plaza-Ubeda, Burgos-Jimenez, Vazquez & Liston-Heyes, 2007; Sharma and Henriques, 2005; Dam & Petkova, 2013). Each NACI received a score of 1 for evidence that supported the variable. Scores were assigned as follows: 0=criteria not met; 1=criteria met; 2=criteria surpassed. Table 13 (page 119) provides the investigated variables for both research questions one and two. Ultimately, themes (based on the coded data) were grouped into broader categories suitable for providing evidence on the variables expounded through the literature where those with greater transparency, frequently on more objective measures (based on set criteria), received singular scores, while factors such as SE or relationship type were associated moreso as a part of composite or "aggregated" scores.

Thematic Coding (v). Coding was the key method used for extracting relevant text. The following techniques comprised important elements of the process.

***Approach to Coding*.** Information was coded using two different approaches in combination to maximize retrieval of important concepts—emergent coding (inductive) and apriori coding (deductive)—for recognition of specific codes, but with the flexibility of incorporating newly emerging ones. Emergent coding occurs when there are no preconceived ideas about codes/themes/categories of interest, and so they are developed as one proceeds through and examines the material, thereby allowing for full exploration of the data theory (Marshall & Rossman, 2016). Creswell and Creswell (2018) described an approach that begins with coding using inductive methods from the bottom up, whereby patterns and themes organize the data in abstract terms, working back and forth between themes and database until there is a full complement of themes. Subsequently, given the themes, the sufficiency of the extent of the data is examined to determine the need for additional information. Therefore, the process begins inductively, but deductive thinking becomes increasingly important with progression of the analysis (Creswell & Creswell, 2018). Apriori begins with terms and themes derived from the literature review and

associated with a theory that focuses one's attention for the reduction of information (Wilson, 2014). Additionally, both open coding and axial coding allowed for more detailed understanding of variables (e.g., tools, techniques, and relationship types) while associating them with larger categories such as stakeholder engagement. (For apriori themes under consideration, please refer to Figure 8, the Conceptual Framework, p. 88). To gain an understanding of the stakeholder engagement concepts that should be focused on based on relative importance across the guidelines and standards, a comparison was completed. This guided the key concepts that informed the variables for analysis.

As a result of the coding of several reports using the aforementioned methods, a comprehensive codebook was devised and codes distilled into a list of focused variables of interest (the Codes of Data Reduction, Table 12, page 115) based on highlights from the literature review, cross-references with rating agencies' data (e.g., Sustainalytics, Eikon) and guidelines (such as GRI and AA 1000) and retrieved for exploratory analysis through the combining of codes into patterns, themes and categories. I conducted preliminary exercises to ensure that categories had both conceptual and empirical fit. This was achieved by examining the indices and constructs within reports, comparing them with my categories, and moving back and forth between known reporting standards and guidelines previously noted (e.g., GRI standards, ISO 26000, IFC's Stakeholder Engagement Handbook, etc.). Key concepts investigated are outlined in Table 13 (page 119).

***Interrater reliability*.** A research assistant, or second coder, was brought on to address the volume of work. Coder #2 and I (the "coders") worked in a side-by-side fashion. Several of the reports were coded in NVIVO prior to the onboarding of coder #2. As such, coder #2 read through several of these reports, and the highlighted coding used, to become acquainted with the criteria for each distinguishing feature of similar codes. The codebook and ongoing discussions were used to enable coder #1 to bring coder #2 up-to-speed. In this second phase of coder #2's onboarding, to achieve good interrater reliability we began by independently coding the same document (i.e., CN 2018 Delivering Responsibly) and compared codes

chosen. If there were any conflicts, we explained our respective choices and clarified the context of the paper and the scope of the node-in-question and came to an agreement along with a rationale that formed the basis of a definition for future reference. This continued until decisions regarding code selection were unanimously chosen to ensure that communication around definitions and choices was readily accessible. This approach to achieving reliability was adopted rather than the use of quantitative tests because they rely on the presence of words, patterns in text, and frequencies rather than the meaning behind phrases (personal communication, Laura Larendyk[61], March 2020). A secondary, but crucial aspect of the process involved coder #2 randomly reviewing segments previously coded (by me), starting with the most frequently used codes and through that process developing a mental map. As coder #2 progressed, an understanding of the more granular "child nodes" occurred. Although these would later support the furtherance of data collection, they were eventually collapsed into the codes listed (see Table 12, *Codes of Data Reduction* below). If a code had information better represented elsewhere, it was amalgamated and reported elsewhere (e.g., "stakeholder engagement and approach"). Codes such as "diversity" were only addressed from a component such as gender diversity in order to align it with the factor (e.g., "gender diversity") from the evidence found in the literature review.

[61] Laura Larendyk is a researcher and certified trainer of the NVIVO software. She has supported multidisciplinary teams in their investigations across many research studies and sectors.

Table 12

Codes of Data Reduction

	Recognitions and awards	Aboriginal Rights & Relations
Accident	Diversity	Risk management and infrastructure
Philanthropic aid	Future Orientation	Collaboration
Local communities	Emissions	Supply chain social impacts
Stakeholders & engagement approach	Material topics	Infrastructure and technology
Environmental stewardship	Recycling and modern resources	Sustainability rating
Geotechnical events	Noise reduction	Advisory board's role
Infrastructure build strategy	Sustainability management	Permitting
General organizational philosophy	Success hallmarks	Report authentication

Highlighted green areas represent topics of importance resulting from the materiality assessments of NACI that were then investigated thematically.

Given the breadth of the nature of most of the sustainability reports, the coders needed to develop a way to determine which topics were irrelevant and which topics were paramount or specific to the variables. Each report was coded manually; NVIVO's automatic coding function was not used to control for the integrity of the coding process. As the breadth of less popular codes (e.g., organizational structure) became clearer, coder #2 revisited previously analyzed reports to locate information that fit that specific code. Once all reports were coded, the coders proceeded to the assessment phase.

Numeric Content Analysis (vi). I created a rating system or checklist independent of the rating agencies. The purpose of this list (Table 13, p. 119) was to provide a parallel approach or secondary method to the qualitative coding already described. This composite list allowed for numeric ratings to assess the factors of quality disclosure and stakeholder engagement considered important by the standard and guidelines that inform this study (AA 1000, ISO 26 000, GRI, OECD and IFC). Additionally, I

borrowed quality benchmark variables for reporting from reading reports external to the NACI (other industries, and same industry but other countries.) This list and the resultant ratings would be used in the analysis to determine directional trends within the NACI, as well as over time, for each railway for which data was available for the year(s) under review. Some variables were the same as Eikon/Refinitiv and Sustainalytics. For each criterion, the coders brainstormed for keywords that would help coder #2 to locate information to complete the checklist for each NACI. For a variable to be used, it had to not only answer the research question, but link back to a specific GRI reference (e.g., Section 405-1 pertains to Diversity) to augment the relevance of the findings and utility beyond this study for managers and decision-makers.

Review of Most Salient Themes (vii). The diversity of reporting by NACI led to many codes which required reducing so that comparisons could be made with rating agencies. These codes were then compared against the guidelines and literature review to answer the research questions. The themes were determined based on saliency or amalgamation. Additionally, themes that were most reported and aligned with the common results of materiality assessments were addressed.

Based on the premise that reporters will increasingly produce better quality documents over time, the reports were evaluated in reverse chronological order, starting with 2018 report so that the data could provide a benchmark for each company. Beginning with the assessment of disclosure related to stakeholder engagement, it was a matter of locating and reading the section of the report on Stakeholder Engagement, titled, for example, “Connecting with Stakeholders” (Norfolk, 2015), “Community Engagement”, “Community Investment” or something similar. Most information could be found there; however, if not present, the document was searched for other instances of keywords, and then a check for a GRI reference, if available. A ‘no’ indicated by a ‘0’ was only assigned after exhausting all resources to locate the pertinent information.

The stakeholder engagement list of methods, and the material topics checklist developed as the coders read each paper:

- The *methods list* includes strategies each railway company used to engage community members and employees. It was adopted from their presented lists; alternatively, searching for keywords revealed whether the criterion was satisfied or not.
- In more recent reports, it became easier to recognize the material topics which were better described because Materiality Reports were common. In the case that a company had not conducted a "materiality assessment," a search was necessary for unique language, such as: "What Matters Most" (Norfolk, 2016), "Important to Our Community" (Norfolk, 2016), "Value Tracks" (Union Pacific, 2015) or "Material Aspects" and "Key Topics" (BNSF, 2014).

Assessed variables were those considered to be more composite in nature, such as those "aggregated variables" (found at Table 13, page 119, lines 48-53,). To determine whether the criteria were fulfilled (and at what level), information from earlier variables (specifically the dedicated SE section), and approach to stakeholder engagement (e.g., what is the stated connection between SE and sustainability) provided for an overall impression of the report.

To ensure that none of the GRI referenced sections were missed, the GRI index provided emphasis in areas such as SE, materiality, and other dimensions of social sustainability. Text was streamed into categories. With each new document, attention was paid to whether it required new codes to organize its themes. Once a plateau of codes was reached (i.e., no new codes were necessary to reduce the information), the codes were reviewed to reduce them to only essential ones and to determine any need for amalgamation (i.e., child codes were rolled into mother codes). To establish optimal coding, a secondary approach was used which involved a list of keywords (Refer to Table 11, page 110). This represented the apriori analysis. Word counts were not used as a sign of quality of the disclosure. High frequency words were valued in a manner commensurate with the quality of information provided from

examining their context in a holistic manner. Again, content was coded if relevant to any of the variables under study. This process was revisited for all 50 sustainability reports of the NACI (used for analysis of both stakeholder engagement and disclosures); and the newswire articles accessed through Factiva, a newswire database, were employed to elucidate disclosure information (research question one) with the outlined research question and objectives in Chapter 1. A University of Calgary research assistant obtained NACI data for 2016, 2017 and 2018 using a filter of the following terms:

> "Corporate social responsibility", "environmental/social governance", "Environmental health", "Sustainable development/sustainability", "Toxic leaks—workplace/safety health issue, "Environment/waste management", and synonyms for infrastructure such as "Tracks", "rail lines", "track expansion", "rail capacity optimization", "at-grade crossing", "railroads", "local groups", "residents", "proximity", "society", "community", "environment", "infrastructure project".

The textual data were graded and converted to numeric values for quality of disclosure and stakeholder engagement, which are presented in summary tables to address differences based on time and railway. Additionally, data representing the score attained by each NACI on 21 select variables (as collected by Sustainalytics and consistent with social sustainability for the ten-year period) were stored in Excel. Stacked graphs represent the findings visually. The use of stacked graphs readily allows the variable scores to be compared both simultaneously as part of a railway's total score and over the ten-year period so that ease of recognition of directional trends, and appearance or disappearance of certain variables, are picturized.

Table 13 (page 119) is the checklist of social sustainability variables investigated. Alignment with GRI's Standards are noted as such; and alignment with Sustainalytics according to their unique labels.

Table 13

Variables of Disclosure and Stakeholder Engagement

Stakeholders and engagement
1.Dedicated SE section (0-no, 1-yes)
2.Objectives of SE (0, 1-strategic objectives, 2-define report content)
3.Definition of stakeholders
4.Oversight of ESG Issues (Q) (e.g., Director of sustainability-governance) GRI102-20 G4-36
5.Internal report assurance and/or stakeholder panel (0, 1, 2) (advisory committees) GRI102-32 02 21, G4-48
6.List of stakeholder groups GRI-102-40, G4-24 then lines 50-55
7.Approach to stakeholder engagement (is SE related to sustainability) GRI-102-43 G4-26
8.Defining report content and topic boundaries (do they report any clear exclusions) GRI-102-46 G4-18
9.Opportunity for feedback: Has a contact point for questions or other types of feedback regarding the report and its contents been provided? GRI-102-53 G4-31
10.External Verification of CSR Reporting (P) (External Assurance Report) GRI-102-56 G4-33
11.SE Methods - specifically with community and employees
12.- Surveys
13.- President and CEO town hall meetings
14.- 24/7 Community connect online platform
15.- Employee-led fundraising or volunteerism
16.- Community advisory council--see line 7
17.-Training first responders
18.- Active Outreach/Government relations and public relations team outreach
19.SE Frequency
20.SE Measurable Goals & Objectives
21.SE guidelines (a strategy or plan) used to guide engagement (Ex. AA1000) 3.5
22.Involvement in decision-making beyond reporting process (regular assessments) 4.1
23.Material topics GRI-102-47 - checklist
24.- Public Safety & wellbeing (Grade-crossing safety, trespasser prevention, safe hazmat transport)
25.-Emergency Preparedness
26.- Indigenous Relations
27.- Community Engagement (company participation in communities of operation)
28.- Diversity and Inclusion/Equal opportunity/Non-discrimination
29.- Customer Service
31.Compensation tied to ESG performance (R)
32.Reporting to CDP (0, 1, 2=B rating or above) (AM)
33.Economic and infrastructure
34.Infrastructure investment GRI-203-1 G4-ec7

35.Indirect +/- impacts of environment and infrastructure on stakeholder priorities GRI-203-2 G4-ec8
36.Social sustainability
37.Women in management or % of board of directors GRI-405-1 G4-LA12
38.Salary ratio GRI-405-2 G4-LA13
39.Programs to increase management diversity (V)
40.Local communities' engagement and impact assessment GRI-413-1 G4-SO1
41.Significant actual and potential negative impacts GRI-413-2 or G4 SO2
42.Society and Community Related Controversy or Incidents (AB)
43.Environmental Sustainability
44.Programs to reduce key environmental impacts (AK) (water, waste)
45.Programs to reduce GHG emissions (AO)
46.Programs and targets to increase renewable energy (AR)
47.Aggregated variables
48.Disclosure Quality
49.1) directness of communication
50.2) clarity of stakeholder identification
51.3) deliberateness of collecting feedback
52.4) broadness of stakeholder inclusiveness
53.5) utilization of SE for learning
54.Relationship Type: 1) Transactional (1-way communication 2) Transitional (predominantly 1-way with some 2 way) 3) Transformational (predominantly 2-way)
55.Project Management Maturity (1-compliant; 2-reactive; 3-proactive; 4-purpose)
Blue Colour=Factor is common to both this study and Sustainalytics 13 variables Table 17

Table 13 represents variables used to determine LC-relevant social sustainability performance characteristics. The total score for each NACI is found in Table 16 (page 135).

To explore trends (across the industry) and any changes in the style, content, and quality of reporting for each railway over the period of disclosure, select variables were used. Contributing to the conceptual framework, and based on the work of Herremans, Nazari and Mahmoudian (2016), the additional quality variables were adopted: a) directness of communication; b) clarity of stakeholder identification; c) deliberateness of collecting feedback; d) broadness of stakeholder inclusiveness; and e) utilization of SE for learning.

Additional support for stakeholder identification was borrowed from Siriwardhane and Taylor (2013), who applied the process by Mitchell et al (1997), but also acknowledged the views of local

government authorities (i.e., the public sector) on infrastructure asset decisions. They acknowledged them differently from the private sector, where SE is viewed as antecedent to inform the content of quality reports (and post-reporting feedback); however, discussion regarding quality reporting used as an approach to SE is also incorporated (e.g., legitimacy, corporate capture, trust-building, power dynamics).

Using existing rating scales adapted from Sustainalytics (2010-2018), reported ratings of the NACI railways on select social sustainability indicators were transformed into a four-point scale. For example, areas of stakeholder engagement, policies and strategies, patterns across the industry, trends based on variables such as engagement practices, involvement of executive members, size, and board diversity, etc. were used. Resultant trends were then broadly contrasted with three Eurasian railways—DB (Germany), Network Rail (UK), and MTR (Hong Kong). These Eurasian railways have mandatory reporting requirements for social disclosure that are neither required nor standardized for North American railways.

Chapter IV: Analysis and Findings

This section commences with a description of the data, what documents were found and used, and then presents this study's findings, resultant of information synthesized from these multiple sources of secondary data and then analyzed. These sources included: sustainability reports of the seven NACI railways (Burlington Northern Santa Fe (BNSF), Canadian National (CN), Canadian Pacific (CP), CSX, Kansas City Southern (KS), Norfolk Southern (NS) and Union Pacific (UP)); Factiva (for news articles and reports); select ratings from two different agencies (Sustainalytics and Eikon/Refinitiv); field observations; railway and industry reports; environmental impact assessments; railway disclosure records and reports to regulatory agencies; court documents, and hearings' transcripts.

A census of references (in the data) to the GRI indices was not practical because GRI standards were not strictly or consistently followed by the NACI. The preliminary list of codes and frequencies (found in Appendix A, page 273) referenced was utilized as an antecedent to a frequency matrix.

The findings are presented sequentially for research questions one and two. Sustainability disclosure is treated as the dependent variable and stakeholder engagement as one of its primary independent variables. In so doing, a positive feedback loop between quality SE and quality disclosure is revealed. In laying out the findings, disclosures are first discussed because they are readily available. This is then followed by the stakeholder engagement that, in part, gives rise to it and strengthens it when quality is good. Industry themes are distilled and then highlighted using specific NACI examples—with an emphasis on the experience of CN. The reasons for this are manifold:

1) CN is arguably one of the most recognized (if not the most) of the NACI for its consistent appearance on sustainability ranking and indices such as the Dow Jones Sustainability Index, RobecoSam and CDP, etc.;

2) CN is the only NACI to have a presence on the Corporate Knights 2020 Global 100 ranking (at #54 with a score of 67.11%) and, at the time of writing in January, 2020, was the largest positive contributor to the performance of the Jantzi Social Index[62] (Sustainalytics, 2020) at 51.13 basis points;

3) I was able to observe CN's sustainability activities within the scope of this research with access to its railside LCs (e.g., the Milton Hub, and Prince Rupert Intermodal Terminal);

4) CN was the NACI with a highly publicized acquisition of a Class II railway, EJ & E lines (see Appendix J). This acquisition was precedent-setting in many ways (scope of environmental mitigation and anticipated impact on many local communities—defined by at least 35 distinct ones) for the busiest rail region (Chicago) of North America (world's largest rail network), which also proved to be contentious and provided many opportunities for learning;

5) CN, (serving trans-Canada and 16 US states), is the only truly transcontinental NACI, with an infrastructure that spans three coasts, operations that intersect with all other NACI (30 percent of its rail network is in the US), and provides a good cross-sectional view of North American challenges and opportunities.

6) I am a Canadian researcher and, therefore, hold a special interest to better understand the work and possibilities for a Canadian enterprise.

Approach to Analysis

In presenting the NACI findings on both disclosure (question one) and stakeholder engagement (question two), I juxtapose them with insights drawn from the performance of three Eurasian railways—each for its area of strength—and global guidelines. For exemplars on disclosure, I drew from Deutsche

[62] The Jantzi Social Index (JSI) which launched on Jan. 1, 2000 and is now part of Sustainalytics "is a free-float market capitalization-weighted common stock index consisting of 50 Canadian companies that pass a set of broadly based ESG rating criteria". (Sustainalytics, January 2020).
The purpose of the JSI was to be used by "institutional investors in benchmarking the performance of socially-screened portfolios and by financial institutions in developing investment products…". In its 20-year history, the associated annualized return was 6.53% while the S&P/TSX Composite and S&P/TSX 60 achieved 6.32 and 6.36, respectively (Sustainalytics, January 2020).

Bahn (DB) of Germany; for engagement, I relied on Network Rail (NR) from the United Kingdom; and for projects, MTR of Hong Kong demonstrated exemplary reporting practices. My rationale for using these three railways as exemplars will be self-explanatory. Each of these foreign railways share practices that could strengthen NACI performance in the area, creating shared value for sustainability.

As previously indicated, the social sustainability data were reduced using two different approaches: codification text used to understand the nature of the NACI-LC relationship based on themes of disclosure (question one) and the ways in which SE is used by NACI—its approaches, technique and goals (question two) as compared to three Eurasian railways; and transformation of specific information of interest into scores that were used to appreciate directional change in disclosure-related activities (question one).

As railway industry leaders, NACI are believed to provide valuable contributions; however, what is disclosed by the railways is frequently disparate to the lived experiences of local communities, and indeed, the verifiable activities in documents published external to the railway companies.

Organization of Chapter

This chapter delivers the findings for both research questions. First, I discuss overall findings for the seven case study companies based primarily on disclosures of their sustainability reports, which at times are contrasted with findings from other sources in the public domain (e.g., news articles, industry reports). Prioritization of each topic covered is based on the salience of the variables as determined by the materiality/issues assessments of the industry; the relative focus the variables received within the CSR/sustainability reports; alignment with factors linked to social sustainability that were ascertained from the literature review; and what I perceived as important to appreciate the NACI-LC relationship as it relates to infrastructure projects. Based on this process, the following 10 topics were prioritized for discussion: safety, accidents, philanthropic aid, environmental stewardship and remediation, gender diversity, infrastructure build strategy, emissions, noise reduction, Aboriginal rights and relations, and

geotechnical events. Several other themes that became evident were excluded for reasons such as if they are typically discussed with an environmental or economic focus; or if, as the analysis progressed, they did not add significantly to understanding elements necessary to answer the research questions. For each topic, Disclosure Analysis is presented, then specific examples within NACI at times are provided, followed by expectations based on indications from guidelines and/or exemplars from another jurisdiction.

General Findings

NACI described various sustainability activities, but not linked by a well-developed, comprehensive strategy. A crucial observation was the lack of a documented sustainability strategy and, therefore, the absence of a social dimension within said strategy. This finding was consistent with the data from Sustainalytics, but contradicted Refinitiv's almost unanimous grades of A or A+ on sustainability strategy for all NACI. This is likely a reflection of the challenges related to the integration of sustainability throughout all aspects of the organization and the variability among criteria for the ratings agencies, which is a documented concern (Doyle, 2018). While NACI sustainability reports in some instances provided valuable information on specific metrics, it was clear that this information was neither organized in accordance with, nor driven by a vision on sustainability identifiable by the public. A fragmented or siloed perspective taken by NACI was evident for specific areas such as environmental sustainability, where the focus might be stewardship which involved activities such as tree-planting or recycling of railway ties.

Railways that performed higher on stakeholder engagement (Refer to Chapter V: Discussion) were more diverse, had a higher score in their reported social sustainability factors (e.g., CN and CP), and had elements of a strategic focus with sustainability at their core—although a sustainability or stakeholder engagement strategy, or one that connected both, per se, did not exist. In the absence of quantitative analyses (which were not possible because of the small sample size), high disclosure scores alone were not linked to high stakeholder engagement performance with local communities or overall social sustainability measures—two factors that are used to signal the nature of the NACI-LC relationship.

There was a lack of a publicly available policy (or charter) relating to social sustainability for each NACI that could be used by managers and LCs to guide stakeholder engagement or to determine what appropriate actions might be expected of a NACI—either as part of an infrastructure project or during daily operations. There was a lack of transparency that also flowed through to the characteristic nature of the reports.

The sustainability reports frequently used the term "community," which was not defined. Also, the definition of "controversies" or even "impacts" involving community, which is crucial for appropriate identification by externals (such as rating agencies or others interested in ESG performance), was vague in every instance. For example, the term "controversy" seems to have been limited to an event such as "accidents and spills" or anti-competitive business ethics, intellectual property, public health, and industrial accident controversies by Sustainalytics. Therefore, it is important to recognize how the attribution of labels (by organizations that influence investor decision-making) can in turn influence disclosure by NACI. Additionally, I found that the need to set down clear industry-wide definitions would naturally support more consistent interpretation and reporting of sustainability-related performance. By broadening the scope of controversy, NACI might be encouraged to do the following: a) report on issues prior to them becoming adversarial in nature or litigious in scope, thereby signaling to communities that they acknowledge, validate, and respect their differences of opinion; b) listen to the various concerns as a sign of goodwill; and c) find ways of demonstrating their motivation to perform.

There appears to be a disconnect between the types of variables for which data are being collected by some ratings agencies (e.g., Sustainalytics and the social dimension issues to be addressed) and that which adequately describe the relationships between NACI and LCs. Human rights and any violations in North America are generally assumed to be covered by various laws enforced by different levels of government. My findings indicate, however, that much of the controversies and benefits of

greater quality disclosure and effective stakeholder engagement between NACI and LCs occur in seemingly a grey area where the confluence of value creation for both parties resides.

A consistent theme was the ambiguity of jurisdictional responsibility of NACI to LCs (for example on noise reduction). Attempts to bring clarity to the currently nebulous pathway leading to sustainability and activities geared at the sustainable development goals indicate that while collaboration between the different tiers of government is lacking, the LCs are paying a significant price. The need for better or optimal collaboration and the net impact on LCs when these goals are not met has been highlighted most notably in relation to many factors tied to infrastructure projects such as: safety (e.g., findings of the 2018 Railway Safety Act Review Panel), proximity (reference Railway Association of Canada and Federation of Canadian Municipalities Proximity Guidelines), noise and its abatement, Aboriginal rights, and environmental justice and mitigation etc.). Broader social topics and their ratings covered by agencies such as Sustainalytics might be currently more geared to uncovering concerns along the social dimension geared at emerging economies. Findings consistently demonstrate that some of the most troubling effects felt at the level of the LC are under federal jurisdiction, but the provinces or municipalities are not imbued with the authority to resolve these issues (e.g., Bridges Act; Canadian Environmental Protection Act). At the same time, there is an expectation that LCs and their representatives will have the necessary resources to accommodate the monumental shifts required to support the balancing of safety with operational efficiencies as volume increases continue to press the boundaries of rail capacity. Concepts such as anti-competition controversies, business ethics, intellectual property, public health, and industrial accidents are all relevant, but might require a different approach.

With the number of NACI derailments and accidents that result in spills, explosions, and deaths (and those with the potential to impact human life and health), their documentation in annual reports, sustainability reports, community reports, and websites do not reflect these circumstances and would be considered not consistent with the expectations set by GRI standards (GRI-413-2). These standards call

for the reporting on significant actual and potential negative impacts. Information related to these incidents would be picked up by rating agencies as part of their risk data and should therefore not be ignored. At the onset of analysis, I vigorously searched the Factiva newswire system information on themes of interest. Frequent reports included derailments, accidents, and spills, but results of searches for related information in the sustainability reports of the NACI were substantively lacking.

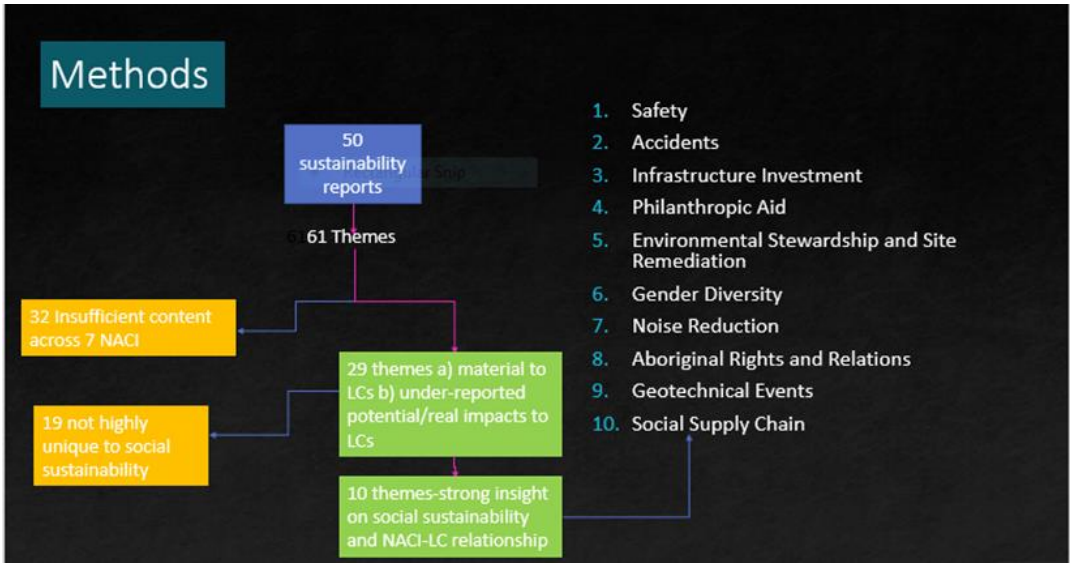
NACI do not possess social sustainability benchmarking, and on occasion, their representatives warned me that railroads should not be compared stating, “Some people make the mistake of comparing railroads. This is not a good idea since the railroads operate over different terrain, different climate [snow, hurricanes, etc.], and have different customers” (personal email communication, AAR representative, September 26, 2018). However, comparative analyses are relevant for financial/economic, governance and environmental dimensions, and therefore the social dimension would also benefit from improved assessment, accountability, and disclosure.

Following the completion of the thematic coding, as described in Chapter III, Methodology, the textual data pertaining to referenced codes were collated to develop a broad understanding of key disclosure factors from the 50 sustainability reports. For a list of the initial themes and frequency references based on the first read of sustainability reports, please refer to Appendix A (page, 272). This list was reduced to 61 themes through amalgamation of repetitive themes and then ultimately down to 10 for reporting purposes using the following process.

Figure 11 (page 129) demonstrates the derivation of 10 reported themes based on sufficiency of content across the majority of NACI and relevance to LC-specific social sustainability that was titrated from 61 major themes.

Figure 11

Derivation of 10 Reported Themes



Because of the broad areas of reporting in the sustainability reports that impacted local communities in some way, a three-stepwise reduction process was necessary to make the scope manageable. A comprehensive set of 27 codes (Table 12, page 115) was used to thematically reduce data for the 2009-2018 reports. The final list was comprised of variables drawn from this study's conceptual framework (Figure 8, page 88), some of which were adopted from the Literature Review section, guidelines and standards and rating agencies. Only data related to variables of interest were used to transform the narrative into scores for 2014-2018 as available (question one); however, CSX and BNSF did not have any reports for 2018 available at the time of writing. To accommodate for these gaps, and still compare within-railway change, the oldest and newest data were used to obtain a percentage improvement score (most recent score—oldest score/oldest score x 100).

The reporting inconsistences across the industry were stark, with the publication of a sustainability reports from all NACI occurring only in 2014, the year following the Lac-Mégantic tragedy. This could be seen generally as an attempt at legitimation. Overall, based on the scores (Table 16, page

135) there has generally been small positive change, on average, across the sustainability reporting within the NACI industry. A consistent upward trend is not yet evident, nor is the type of consistency that might be expected among some reporting railways that have done so for over a decade.

Materiality Assessment and Matrices

The materiality matrix is a key aspect of reporting quality for the GRI Standards. As a result, this study placed significant emphasis on the materiality assessment and its use in guiding disclosure reporting in accordance with the outputs of that process as determined by stakeholders. NACI referred to the materiality process and its output using different terms—presumably because of the heavily loaded legal implications of "materiality," which has been borrowed from accounting and defined as information so relevant that its absence would lead a reasonable party to alter their decision based on financial statements. Beyond their significance for inclusionary requirements of stakeholder input, materiality matrices have recently come under scrutiny for purportedly being used by companies that perform well environmentally to exaggerate their positive performance—otherwise known as greenwashing (Ferrero-Ferrero, León, Muñoz-Torres, 2020).

Given the impact of geography and politics on what the stakeholders of NACI might consider material, their respective places of operations are reviewed in the following table:

Table 14

NACI and Their Operations

Railway	Geographic Scope of Operations	Year Founded
Burlington Northern Santa Fe (BNSF)	Western two-thirds of the US; Intermodal seaports—Pacific and Gulf of Mexico ports	1995
Canadian National (CP)	Canada and US (20% operations in US)—three coasts—Pacific, Gulf of Mexico, and Atlantic ports	1919 (resulted from the bankruptcy of several other railways)
Canadian Pacific (CP)	Canada and Eastern US. Pacific and Atlantic ports	1881
CSX	Eastern one-third of US and Eastern Canada; Gulf of Mexico and Atlantic ports	1987 (amalgamation of Baltimore & Ohio and several other railways)
Kansas City Southern (KS)	Eastern US and Mexico; Gulf of Mexico	1887
Norfolk	Eastern US; Gulf of Mexico, and Atlantic ports	1990

Union Pacific (UP)	Western two-thirds of US; Pacific and Gulf of Mexico ports	1862

This chapter addresses the material topics (Table 15, page 132), a significant output of stakeholder engagement. The process of determining material topics or issues of importance to stakeholders is an enterprise activity (within the scope of sustainability reporting) and is an important expression of stakeholder inclusivity, which is one of the key GRI qualitative characteristics.

Table 15 **Materiality Topics (2016)** **"TRUE"=topic considered material**	**RATED by THIS STUDY (Table 12)**	**CP, "Materiality assessment"**	**CN, "Prioritization matrix"**	**CSX, "Focus issues"**	**Kansas, Stakeholder "Survey priority material topics"**	**Norfolk, "Issues that matter most"**	**Union Pacific**
Safety Culture	TRUE	TRUE	TRUE	TRUE		TRUE	TRUE
Dangerous goods risk management (CP), risk and crisis management (CN), hazardous material transport risks (CSX), hazardous waste transport (KCS)		TRUE	TRUE	TRUE	TRUE		
Emergency Preparedness (CP)	TRUE	TRUE		TRUE			
Energy and Emissions (CP)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
On-time performance (CP)		TRUE					
Supply chain innovation (CP)		TRUE					
Infrastructure resiliency (CP), infrastructure protection & security (CSX)	TRUE	TRUE		TRUE			
Socio-economic impacts (CP)	TRUE	TRUE	TRUE				
Skilled and diverse workforce (CP), diversity and inclusion (CN), diversity in the workforce (CSX), non-discrimination (KCS)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
Growth and capacity		TRUE					
Stakeholder engagement	TRUE	TRUE	TRUE				
*Aboriginal relations	TRUE	TRUE	TRUE				
*Remediation and cleanup (CP), Biodiversity, land management and remediation (CN)*through thematic reduction only	*TRUE	TRUE	TRUE	TRUE			TRUE
Customer service and satisfaction, delivering excellent customer service	TRUE		TRUE	TRUE		TRUE	
Responsible procurement (CN), responsible sourcing (CSX), anti-corruption (KCS)			TRUE	TRUE	TRUE		
Cost efficiency			TRUE				
Innovation and technology, disruptive innovation			TRUE	TRUE			
*Sustainability policies			TRUE				
*Business ethics and integrity; corporate integrity (NS)			TRUE			TRUE	
Waste and spill management, responsible waste disposal & reuse (CSX), waste type and disposal method (KCS)			TRUE	TRUE	TRUE		
Employee Engagement			TRUE				TRUE
Attracting people, talent acquisition			TRUE	TRUE			
		CP	CN	CSX	Kansas	Norfolk	UP

Community investments (CN) Local economic impact (CSX)			TRUE	TRUE			
Long-term company strategy				TRUE			
Developing people, Employee training & development, employee training and education (KCS), healthy well-trained workforce (NS)			TRUE	TRUE	TRUE	TRUE	
Health & wellness in the workforce (CSX), occupational health and safety (KS), workplace safety (NS)				TRUE	TRUE	TRUE	
Legislation, regulation & government relations, Legal, regulatory, and environmental compliance (KS)				TRUE			
Corporate governance & ethics, anti-corruption practices (KS)				TRUE	TRUE		
Collective bargaining				TRUE			
Workforce compensation & benefits				TRUE			
Cyber & information security, security practices (KS)				TRUE	TRUE		
Accessible and transparent communication	TRUE			TRUE			
Enterprise risk management				TRUE			
Relationships with affiliate organizations				TRUE			
Global energy mix				TRUE			
*Community involvement & philanthropy	TRUE			TRUE		TRUE	TRUE
Clean air (CSX), air emissions and climate change (KS)				TRUE	TRUE		
Health & wellness in the workforce				TRUE			
Clean water, water consumption efficiency conservation (KS)				TRUE	TRUE		
Human rights				TRUE			
Economic, financial performance (KS); Shareholder value (NS)					TRUE	TRUE	TRUE
Locomotive fuel efficiency (NS)						TRUE	
Environmental partnerships						TRUE	
Resource stewardship						TRUE	
*Yellow-filled cells represent variables in common with Sustainalytics. "TRUE" indicates that this topic was considered material for the respective railway.	12 topics	13 topics	19 topics	30 topics	12 topics	12 topics	5 topics

The year 2016 was the last year that all NACI disclosed using structured sustainability reports (BNSF publishes on odd years and CSX subsequently only publishes a supplementary data report). It should also be noted that because materiality matrices are stakeholder-dependent, these topics fluctuated with each reporting period because of each company's respective engagement. For example, emergency preparedness was a priority topic for CN in 2016, but not 2018. Also, sometimes definitions changed within the railways and this impacted how they relayed what was considered material. Topics acknowledged by five or more materiality assessments and incorporated in my analysis with LCs included: safety culture, energy and emissions, and skilled and diverse workforce (in the spirit of diversity this was extended to include board diversity because their governance impacts LCs). Four of the six NACI saw remediation and cleanup, as well as developing people (i.e., employees) as material. These topics were therefore included in this study's analysis. Consistency between the outcomes of the materiality assessment (resulting from structured stakeholder engagement and each railway's reliance on it for reporting) was crucial to the analysis because this study did not focus explicitly on sustainability performance but disclosure and the interplay it has as a key relationship-defining feature with LCs. It was noted that, in many instances, railways reported on public relations-type activities that were neither part of a well-laid-out strategy nor connected to their materiality assessment, strategic imperative or a functional unit.

The timelines of disclosure also presented issues, as some railways produced biennial reports (BNSF, CN, and CP), while the rest were generally annually. Biennial reporters attained better average improvement of disclosure scores than annual reporters (59.17 vs. -1.7, where Kansas' score was treated as an outlier and not included). There was also variability regarding the reporting periods that could differ significantly ranging from one to three years (e.g., CP's "2014" reported on 2011, 2012, and 2013; and their 2011 report shared 2010 and 2011; 2016 was for 2015 and 2016 etc.). This made comparability of reporting—even within one railway—difficult to achieve. The greatest positive change occurred for

Kansas City Southern, a 485.71% change. But their earliest report was lacking in so many ways, with an initial score of only 7 when the average of the other railways was 27.17 (with a range of 20-35). Norfolk has lost a lot of ground over the five-year period, decreasing from 23 to 12; whereas, UP's score has only been slightly reduced.

Table 16

Total Disclosure Scores (for NACI, 2014-2018 based on variables listed in Table 13)

Railway	2018	2017	2016	2015	2014	% Improvement
CN	42	--	33	--	30	40.00
CP	44	--	40	--	32	37.50
CSX	--	--	39	35	35	11.43
KS	41	40	31	8	7	485.71
NS	12	--	33	31	23	-47.83
UP	21	24	26	25	23	-8.70
BNSF	--	40	--	22	20	100.00
For degree of change for each NACI, percentage improvement was calculated as follows: (most recent score-oldest score/oldest score) x 100						

Table 17

Quality of Disclosure Scores

Railway	Most recent year of reporting	Most recent score	Earlier scores	Earlier scores	Earlier scores	Earlier scores	Percentage Improvement
CN	2018	10	6	5	-	-	100
CP	2018	9	6	8	-	-	12.5
KS	2018	10	9	4	2	2	400
NS	2018	2	5	7	3	-	-33.3
UP	2018	3	3	4	5	5	-40
BNSF	2017	9	5	4	-	-	125
CSX	2016	10	6	6	-	-	67
For degree of change for each NACI, percentage improvement was calculated as follows: most recently available score – oldest available score/oldest available score) x 100							

Quality of Disclosure scores (Table 17 above) were based on author's rating for the variables labelled under "aggregated" (Table 13, Variables of Disclosure and Stakeholder Engagement, lines 48-55, page 119). Quality of disclosure, as it relates to social sustainability, and as illustrated (Figure 6, page 79), is determined by and improved with several socially-oriented factors: Project Management Maturity (Silvius), level on the Local Community Involvement Continuum (author) and Developmental Stage of Stakeholder Engagement (AA1000).

Table 18

Summary of Stakeholder Engagement Scores (based on variables listed in Table 13 lines 1-22)

	2018	2017	2016	2015	2014	Percentage Improvement
CN	14	-	11	-	12	16.67
CP	16	--	11		12	33.33
KS	16	18	18	3	2	700
NS	4	-	13	9	9	-55.55
UP	12	8	15	9	9	33.33
BNSF	-	16	-	8	9	77.78
CSX	-	-	14	14	10	40.00
Average	12.4 (maximum score is 29)	14	13.67	8.6	9	

*(*For detailed scores related to all variables of Table 18, please see Appendix B, page 275)

The process for comparing information started with articles in the broad public domain and then moved to the sustainability reports of the respective NACI and year. There was an abundance of news articles with a focus on the derailments, and their essence was frequently litigious in nature.

The total scores for each NACI—and the degree of change—is not meant to imply any statistical significance because the small number of data points precluded this type of testing and analysis. These quantitative measures were, however, useful to compare the information that was found through the thematic coding to gain some understanding regarding directional change for progress and commonalities for the entire industry.

NACI, in a manner like other transportation companies, build their infrastructure (and subsequently refer to related construction) by the name of a particular project. The respective industry associations (AAR and RAC) do not maintain a database of these projects—nor does any NACI, as a matter of their sustainability reporting, share information on how these are progressing. There are exceptions, of course, where CN advised of the stakeholder consultation used to engage the local communities regarding the proposed Milton Intermodal Hub as part of an environmental assessment. This was only one of CN's 29 infrastructure projects of 2018, though, and the 2019 *In Your Community Report* makes no mention of this project. On Jan 27, 2020, the Canadian Impact Assessment Agency, with preparation by

the Review Panel for the Joint Process, released the 443-page Milton Logistics Hub Project report conducted in accordance with the Canadian Environmental Assessment Act and the Canadian Transportation Act.

To understand, systematically analyze, and report on topics of greatest relevance to disclosure among the NACI (following the coding activity), the coded themes were sorted by the highest to lowest number of references. Then, some codes were amalgamated when it was felt that they were synonymous—not only in description, but the overall combined meaning they brought to understanding the relationship of the NACI and LCs. Still, some other codes were not brought into the analysis because they were either chiefly environmental or were typically dealt with in the environmental dimension of sustainability. I elaborate on themes that had either the highest number of references within the chosen codes and/or those most aligned with principles of sustainability (i.e., the definition of sustainability, intent of the Principles of UN Global Compact and expectations of the GRI Standards of reporting). The analysis and findings for each area disclosed will be shared using the following structured headings as appropriate: a) Evidence and Disclosure Analysis (based on sustainability reports); b) Specific NACI examples (to illuminate and corroborate or refute findings based on reports, websites and other sources of data); c) Comparative Analysis (based on expectations of guidelines and standards and/or exemplars from other jurisdiction and/or what could be anticipated based on literature review); and d) Recommendations (if applicable).

Based on my investigations, the composite scores for each railway and their ranking (with respect to social sustainability disclosure that is LC-focused), quality of disclosure, and stakeholder engagement for the most recent available year are as follows:

Table 19

Social Sustainability Scores and Rankings of NACI

2018	Disclosure	Quality	SE	Total	Social Sustainability Ranking
CP	44	9	16	69	1
KS	41	10	16	67	2
CN	42	10	14	66	3
BNSF *(2017)	40	9	*16	65	4
CSX (2016)	39	10	14	63	5
UP	21	3	12	36	6
NS	12	2	4	18	7

Disclosures: Question One

Theme 1: Safety

Within the social sustainability dimension, safety, undoubtedly everyone's greatest concern, was the most referenced material topic and variable of interest reported by NACI. Of the seven NACI companies, all indicated safety as a material topic in their most recent report under review except for UP: Public Safety & wellbeing (grade crossing safety, trespasser prevention, safe hazmat transport). Below are the safety ratings from the full Disclosure Table in Appendix B.

CN	CP	KS	NS	UP	BNSF	CSX
2018	**2018**	**2018**	**2018**	**2018**	**2017**	**2016**
1	1	1	1	0	1	1

Disclosure Analysis. In an ad sponsored by the Association of American Railroads, the investment in technology is credited with making freight rail the "pillars of the US economy and the *world's model of safety,* [emphasis my own] sustainability and efficiency" (Jefferies, 2019). However, much of the reported safety (in the sustainability reports) is related to the safety of employees (e.g., injury frequency rate), training of first responders to manage HAZMAT (e.g., the TRANSCAER initiative), and educating local communities on the dangers of at-grade railway crossings or trespassing (e.g., this frequently involved Operation Lifesaver, a partnership of the two respective railway federal regulators, the national associations and the railway industries in Canada and the US). The NACI safety landscape is troubling, and therefore various pertinent aspects will be addressed in this section. One of the most overarching issues impacting safety is the degree of regulatory control by the respective governments. For example, AAR President, Edward Hamberger, in his message to the senate asked for "stopping unfounded regulatory efforts." Federal officials, however, echoing the concerns of LCs, have voiced the issue of even greater devastation if a train transporting crude oil were to derail in more densely populated areas, stating that:

> "There have been 19 derailments of trains loaded with flammable liquid - oil or ethanol - in the past six years. Those wrecks have caused 3,272 evacuations, spilled almost 2.8 million gallons, and

> cost an estimated $45 million. A remarkable percentage of those derailments happened in small towns - Plevna, Mont. (population 162), Tiskilwa, Ill. (829), Arcadia, Ohio (590), and Alma, Wis. (781)" (Washington Post, Dec 20, 2016).

Yet, the concern by federal officials for the safety of LCs continues unabated, with particular emphasis on oil trains that travel through densely populated cities. Locally elected officials have commissioned detailed evaluations of the impact should a train explode in various neighborhoods. This concern is validated by evidence from the next theme investigated, "accidents."

Compounding Effects. The compounding effects, whether simultaneous or accumulative from sequential impacts on LCs related to safety (or measures not taken) and infrastructure projects (whether relating only to railways or across industries such as in the case of the BC pipeline and railway but having dual environmental impacts for the First Nations LCs), need to be fully accounted for (CPL). But there was no evidence of this type of disclosure in any of the sustainability reports under study. The accuracy, quality, and timeliness of disclosure on key operational measures that impact a community can compound the potential negative impacts of infrastructure projects. The following example illustrates the point in a letter of August 16, 2017 to the FRA by Karen Darch, the Mayor of Barrington, Illinois. Barrington was one of the LCs impacted by changes in EJ&E's operations following its 2008 acquisition by CN. Darch requested that the FRA review "the failure of Canadian National Railways to update its Grade Crossing Inventory records to reflect accurately its post-2009 operation on the CN rail line running through my town and the potential adverse impact that failure has had." Darch went on to state that this failure,

> "may also have disadvantaged Barrington through the years as we sought to secure discretionary transportation funding for a grade separation project on U.S. Highway 14 (with an ADT [average daily traffic] of 30,000 vehicles) necessitated by CN's operation of approximately twenty 7,700-feet freight trains operating daily at an average speed of 28 mph." (letter to FRA, August 16, 2017).

This inconsistency of information, as indicated by Darch, was detected by accessing an interactive database of grade crossing delays. Information from FRA is accessed by Illinois Commerce Commission, and from there the information is used by Chicago Metropolitan Agency for Planning (CMAP) for key calculations that inform regional planning. It was further asserted that this information was not disclosed

in accordance with federal law that had been in effect since October 16, 2010. The referencing of the CMAP database by other agencies that support financial investment on infrastructure projects only adds to the relevance for accurate, complete, and timely disclosures to be made by NACI. Therefore, related to their interactions with NACI, there seems to be an additional onus on LCs to ensure that disclosures occur—and in a responsible manner. A poignant example relating to the EJ&E acquisition by CN is that CN's oversight by the Surface Transportation Board, which was supposed to be for five years,

> "was extended for one year in 2010 *as a result of CN's misleading reporting to the STB* on the number of times its freight operations blocked crossings on the EJ& E rail line from commencement of operations in 2009 [italics my own]. Oversight was further extended until January 23, 2017 by the December 16, 2014 Decision of the Board in response to a petition filed by the Village of Barrington and the TRAC Coalition *following a regional impacts forum* in Chicago hosted by US Senator Richard Durbin of Illinois" (Letter from Mayor Darch to FRA, August 2017).

The degree of discrepancy which led to the fine being imposed on CN was significant, with disclosed and actual blockages being reported at 14 and *1,400,* respectively, from which a fine of $250,000 USD arose. The official STB document stated, "the Board found that CN had knowingly underreported the number of blocked crossings" (Surface Transportation Board Finance Docket No. 35087 Sub No. 8, Decision of Dec.21, 2010). As a result, the period of oversight of CN by STB was extended an additional year to 2015. Occurrences of this nature demonstrate the information asymmetry and the potential long-term benefits of organized information-sharing platforms between LCs and NACI. Accountability and regular reporting impact transparency and social sustainability performance. Driven by a common strategy commitment to and among LCs could support the building of better relationships of trust and integrity with NACI by promoting transparency and accountability.

***Infrastructure and Technology*.** A common occurrence across the NACI reports was the attribution of their investment in infrastructure and technology coupled with community involvement as instrumental in their progress for safety (e.g., CN, 2018; BNSF, 2015). Three important industry-wide safety measures that have been introduced are the Positive Train Control (government initiative), the AskRail mobile app (railway industry initiative), which provides real-time information on railcar contents

to subscribed first-responders, and the use of virtual reality videos—for example by CN (2016)—that educate constituents on rail safety the year following the introduction of the technology by Deutche Bahn (2015: 112) for personnel development.

At times, the reports informed stakeholders on specific connections between infrastructure and technology used during operations that promoted safety (Norfolk, 2016; Kansas, 2014). As an example, Kansas (2014) informed on the use of distributed power over certain aspects of the network to improve the control and wear-and-tear on the tracks in certain areas that involve coupling (i.e., the joining of cars) issues and derailments in areas. These measures reduce the risk of derailment over certain terrains.

The challenges of infrastructure and its impact on LCs have not been as transparent in sustainability reporting. Even following inspections of 58,000 miles of track (which revealed 24,000 defects) along oil train routes, a good portion of the derailments impacting LCs are connected to worn rails and other equipment; broken, loose or altogether missing bolts designed to hold tracks in place; and cracks in steel bars joining sections of track, as noted upon federal inspection. Following from these is the frequent failure of railroads to fix the identified problems in a timely manner (Canadian Press, April 5, 2017).

A general concern around the infrastructure and its impact on LCs is the increased, unpredicted, and unrecognized stress that has been placed on tracks because of significantly longer and heavier trains. In a March 4, 2020 letter from the TSB [Transportation Safety Board] to Transport Canada, Dan Holbrook, acting director of rail/pipeline investigations, said “As train operations have evolved, the TSR (track safety rules) have not kept pace . . . While the TSR establish minimum standards for track infrastructure, there are no provisions in the TSR to address the need for enhanced track standards for key routes despite sometimes significant increases in DG (dangerous goods) traffic volumes.” (Lester, April 24, 2020).

NACI also reported on a broad range of activities with indirect rail impacts on safety. For example, they support general safety measures for youth in the community, such as National Safe Place (CSX 2009).

CSX, in its Corporate Social Responsibility report, made specific mention linking their safety measures to their social license to operate: “Ensuring that the communities in our network do not experience unsafe conditions due to CSX infrastructure is crucial to maintaining our license to operate.” (2012: p.64). While many indicators of safety could be considered, NACI accident rate would be one logical benchmark for appreciating the actual success of safety measures within local communities—irrespective of their actions. Comparing accident rates is challenging because of a lack of definition conformity across the industry.

Concerns around safety and a railway’s acceptance of responsibility or resolution of a concern brought by an LC is rarely reported—if at all. In relation to a set of five fires, of which one was caught on security camera footage from a golf driving range, the railway responded to its initial statement that they only respond to “legitimate" claims. CN had allegedly set five fires and was in litigation around three of them. Unfortunately, the Winnipeg Free Press, in implicating the role of Transport Canada, stated, “CN's inclination to litigate rather than accept responsibility is reflected in the caseload of its lawyers, who currently are defending at least three lawsuits in Manitoba involving damage from fires allegedly started by trains. (Winnipeg Free Press, May 10, 2018). They went on to state, “Railroads are unlikely to put the interests of citizens ahead of the interests of corporations. It’s up to Transport Canada to force them to be more publicly accountable when it comes to such issues as starting fires and moving dangerous chemicals.”

This concluding opinion on the unmet responsibility of Transport Canada in appropriately regulating safety measures for the railways was a major finding of the 2018 Railway Safety Act Review and is a common driving concern of many citizen groups (Transport Canada, 2019; Saferail, n.d.).

In the interest of safety, most NACI advised of a 24/7 system for receiving and responding to safety-related calls involving a variety of concerns for LCs, such as blocked crossing, crossing accidents, signalling malfunctions, release of materials, unsafe driving, etc. Safety was also promoted during town hall meetings (Kansas, 2018), in addition to the regular programs and initiatives. Norfolk, in its (2016)

sustainability report, credited itself with leading the redevelopment of a tank car construction that could lessen the probability of an explosion upon impact (derailment, accident, fire, etc.).

Periodically, newswire services reported on rail safety based on information contained in sustainability reports of the NACI. In 2015, for example, among its chief sustainability accomplishments, Union Pacific, the safest performing NACI in America that year, included "Promoting rail safety in communities, resulting in a three-percent crossing accident rate improvement to 2.28 accidents per million train miles," while citing the railroad's seventh year of sustainability reporting (prnewswire, 2016).

Specific NACI Examples.

***Shared Responsibility*.** Safety was viewed as a shared responsibility with LCs (e.g., CN In your Community, 2018: p. 12; CN Delivering Responsibly, 2018). As stated, "Our significant investments in infrastructure and technology, combined with a structured community engagement program, are helping keep the public safe and continuously improve our performance" (CN, Delivering Responsibly, 2018: p.29). LC-involved exercises, such as a simulated emergency response test (e.g., Swift Current derailment at Manistique Bridge in Minnesota), acknowledge this at scale (CN In your Community, 2019: p.11).

Equipment. Additionally, railways frequently reported the use of new equipment that enhanced safety with respect to infrastructure. For example, BNSF noted the use of "smaller UAVs [unmanned aerial vehicles] to supplement visual inspections of track and bridges required by the Federal Railroad Administration" (BNSF, 2015: p.10). The lack of reporting on negative impacts to the safety of LCs results in ambiguity and is, therefore, concerning. For example, in the same report, BNSF stated, "In 2015, BNSF experienced the lowest number of main-track rail-related derailments ever, however we have experienced an increase in accidental releases and non-accidental releases" (BNSF, 2015: p.16). Speaking to the impact to even one LC could provide one of the following—known to be useful in relationship-building with communities: transparency; consistency in reporting across multiple media; signal that the relationship is a valued aspect of doing business; and that a desire to fulfill corporate responsibility exists.

Equipment and inspection vehicles that promote technical safety of the infrastructure were frequently shared, including track geometry cars (collect track conditions data across the network); NXGEN (cars that detect all manner of defects on track components); ultrasonic vehicles (find, inspect and removal of defects); ground-penetrating radar (assesses fouled ballasts); and aurora-tie inspection vehicles (report condition of cross-ties for replacing/repairing). A focus on the elimination of track defects and "investing in infrastructure and technology to enhance safety and to improve reliability for our customers" (Delivering Responsibly, CN, 2012: p.38) was a common and most basic goal across the industry. In the absence of the effectiveness of these measures, or if for other reasons safety was compromised, there was no evidence of disclosure that NACI were consistent in providing numeric report of the frequency of accidents spills and changes by disclosed percentage. This information, unfortunately, does not capture the *experience* of safety for local communities. There is a difference between preparing for safety and the reality of how the response to a potentially threatening event is managed by NACI. This dissonance is further exemplified by the fact that derailments and major accidents with undeniably negative impacts to local communities (and not simply "biodiversity and land management," for example) were not reported as accidents (except for Lac-Mégantic) in the sustainability reports.

At-grade crossings. How safety is defined, and at times operationalized by NACI, is problematic. For instance, CN, in its 2018 *In Your Community Report*, stated,

> "While CN makes every effort not to block crossings, there are unforeseen instances and operational realities *while serving customers* that can cause a train to stop, resulting in a blocked crossing. CN crews are immediately aware when a train is blocking a road crossing and make every effort to clear the passage as soon as possible. When emergency vehicles require passage, railways must clear both public and private crossings as quickly as possible. For further rules surrounding blocked crossings, please visit the Transport Canada website at tc.gc.ca where this information can be found under the Rail heading. In the United States, the Federal Railroad Administration does not regulate the length of time a train may block an at-grade crossing" (p.58).

The 2019 report reiterated the absence of regulation: "In the United States, the Federal Railroad Administration does not regulate the length of time a train may block an at-grade crossing" (CN, In your Community, 2019). Correspondingly, on June 12, 2018, when a CN train, *for 56 minutes*, blocked all four

railway crossings (on its acquired EJ&E line north of Chicago in the suburb of Barrington) and access points to a hospital for ambulances that had responded to an automobile accident, this was not an incident salient enough to make it worthy of reporting by CN. As quoted on the website *Legally Sociable*:

> "Combining the issues posed by numerous at-grade crossings in the Chicago area plus the purchase of the EJ&E tracks by Canadian National, an afternoon rush hour situation arose June 12 in the suburb of Barrington because of a stopped freight train:
>
> *Among the thousands of vehicles caught in the jam were ambulances headed to Good Shepherd Hospital with two patients from a DUI crash at Ela Road and Northwest Highway…*
>
> *As first-responders quickly found out, all four CN crossings — at Main Street, Hough Street (Route 59), Northwest Highway and Lake Zurich Road — were inaccessible, and trains on an intersecting rail line also backed up…*
>
> *While traffic gridlock spiraled, Barrington police who had coalesced south of the tracks to handle the DUI crash reached out to neighboring departments. "Can you please let Lake Zurich PD, Lake County and Barrington Hills know on our northwest side we have no officers on right now. So, if we need assistance, we'll be calling them," a dispatcher asked.*
>
> *As she idled in traffic, Barrington resident Erika Olivares tried to troubleshoot how to reach her 8-month-old son, Leo, before day care closed. "Basically, I was panicking," she recalled Thursday.*
>
> *Some desperate commuters ducked under train cars to reach the opposite side. "There are numerous people who are actually crawling over the train that's stopped here," a 911 caller reported. "It's getting more and more dangerous — there are kids doing it as well."*
>
> The news reporter went on to focus on the implications for safety by stating,
>
> "…I would guess the winning issue on which to focus to solve this problem are the safety concerns. If people cannot make it to the hospital or police and fire units cannot make it to scenes, lives in the community may be endangered"…
>
> "The traffic caused by such an incident is experienced by numerous Chicago area suburbs. Lots of at-grade crossings add up to the potential for outraged drivers…"

The ongoing challenge remains just how to balance the interests of all stakeholders involved when specific local communities bear the brunt of the railway-societal challenges in terms of compromised safety in support of the greater economic needs of the continent.

> "The fallout of the Canadian National purchase of the EJ&E tracks continues. What is potentially lost in stories like this from Barrington about changes in communities are the effects on the entire

> region. One of the outcomes of the purchase was to be that more freight traffic would be rerouted around the region rather than to areas closer to the city with further inconveniences to those communities. The Chicago area has long had problems with too many trains yet it is a vital part of the local and national economy." Source: Legally Sociable, (2018)

Safety concerns related to railway crossings have been recognized by railways, civilian groups, and many levels of government for a long time. As part of the Rail Safety Improvement Program, the Canadian federal government's intention to allocate $3.3 million for Alberta's 18 projects ($163,800 to upgrade a rail crossing) on September 3, 2018, was announced in the Hinton Parklander. The MP, Eglinski indicated, "While I welcome the funding announcement, for years our communities in Yellowhead have experienced safety issues in which trains block crossings for unacceptable amounts of time." Eglinski also reminded residents that the Canadian Transportation Agency (CTA) had launched a consultation on rail-related regulations and was requesting the feedback of Canadians. That consultation, the 2018 Railway Safety Act Review, culminated in *Enhancing Rail Safety in Canada: Working together for safer communities.* A grade crossing is defined as "an intersection where a road or path crosses railway tracks at the same level" (Transport Canada, 2018). In Canada alone, there are 23,000 grade crossings that are federally regulated, of which 14,000 are public and 9,000 private (Transport Canada, 2018)—which require the cooperation of 3,000 municipal, provincial, territorial, and federal authorities, and Indigenous Groups.

The efforts to take concerted action to develop grade separations instead of level crossings or to eliminate them altogether is slow. In 2016, the Standing Committee on Transport, Infrastructure and Communities recommended signage, other safety measures at passive railway crossings, and that the transfer of costs related to modification not be solely the responsibility of ratepayers and local governments. In responding to the call for transparency at grade crossings, the Ministry of Transport developed an inventory of grade crossings for public access.

According to the 2018 Railway Safety Act Review, international railways have trended to the closing of grade crossings and replacing them with grade separations when possible. The specific metric

around reduction of crossings in the US was seemingly reported only once by CSX (CSR report, 2012: p.65). This metric, or an equivalent one related to altering grade crossings, did not catch on across the industry despite the widespread acknowledgement of their impact on safety and the associated investments in educating local communities around the dangers of grade crossings.

As recently as September 24, 2019, Canada Newswire released a report of the Transportation Safety Board of Canada (TSB) in response to the trespassing issues. The report called for greater involvement of "stakeholders to develop and effectively implement collaborative engineering, enforcement, and public education strategies. A comprehensive geographic and demographic dataset for trespassing occurrences would also help maximize the effectiveness of such strategies…" (Transportation Safety Board, 2019). Interestingly, in what I consider a best practice move, some railways like Network Rail in the UK forbid the creation of new grade crossings, except in very exceptional circumstances, and have closed 1,000 high-risk crossings and made safety improvements to an additional dozen grade crossings. A similar intensive approach has been undertaken in Germany by Deutsche Bahn. Yet, despite the consensus among stakeholders that new and augmented public funding is needed to improve grade crossing safety by closing the grade crossings, upgrading existing ones and the construction of grade separations, the disclosure by NACI regarding these possibilities and inviting local communities to consider active engagement in related initiatives was rarely reported in sustainability reports. When this did occur (for example, in BNSF's 2017 sustainability report), wherein it was stated that, "Working with communities and landowners, we have been able to close more than 6,300 grade crossings since 2000", determining recent efforts—or the extent of any ongoing efforts—is difficult.

Industry media such as American Shipper, in its October 14, 2016 issue, for example, informed of industry-government initiatives such as the Rail Safety Improvement Program (RSIP)—the successor to previous initiatives such as the Grade Crossing Improvement Program (GCIP), the Grade Crossing Closure Program (GCCP), and Operation Lifesaver. At that time, Transport Canada, through RSIP, was funding over

380 existing grade crossing improvement projects. In 2018, an estimated 272 deaths and 805 injuries resulted from individuals crossing tracks. Empowering communities to even consider the possibilities of what changes to rail lines might entail was stated in CP's Corporate Sustainability Report:

> "If a community would like to conduct a study into moving certain rail lines out of their municipality, we may participate. However, relocation of rail lines and yards is a complex and serious issue that also involves local and national customers, regulators, local community organizations and all levels of government. An extensive review is required to determine the impact on customer service and the full cost to all stakeholders, which is often prohibitive" (Source: CP Sustainably Driven, 2016: p. 20).

Theme 2: Accidents

Flowing from issues around safety is the impact to the NACI-LC relationship based on a significant gap between the occurrence of accidents and derailments as experienced by LCs and reported in the media, with the incidents of reporting in the respective sustainability reports of the NACI. The reporting on accidents as submitted by the NACI was not a disclosure to LCs that used relevant community-based data and was not rated in the same manner as other themes. For example, those that directly impact LCs, such as derailments that result in explosions, toxic spills, and the like, were not reported in a clear manner. This will be explained in the following section.

Disclosure Analysis. NACI generally reported on accidents that align with one of the following categorizes: 1) those related to employee health, injuries, and well-being, including casualties; and 2) those with direct consequence to constituents of local municipalities. For this study, I focused on the latter, as those are most relevant for LCs. These accidents were sometimes disclosed using the metric of accidents per million path miles (as a requirement of the Federal Railway Administration (US), but these disclosures were not always comparable. CP, in their most recent sustainability report (2018), which was an integrated report[63] (additionally, it followed GRI and Sustainability Accounting Standards Board (SASB),

[63] The International Integrated Reporting Council (IIRC) indicates that an integrated report is "a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short-, medium- and long-term.

did report on accidents and spills. The challenge with these metrics, however, is that they do not provide the reader with a qualitative sense of or the impact on those affected—contrary to GRI standards. This approach appears to be quite institutionalized across the NACI, and it should also be appreciated that each million-path mile traveled is not the same, having regard for the various challenges associated with geography, terrain, the commodities transported, composition of unit trains, and the number of other railways operating within key segments of a network (e.g., going through Chicago can take a train two to three days, etc.).

Specific NACI Examples. I determined that inconsistencies between performance and reporting across several areas of concern were evident. For example, although Union Pacific Railway had been recognized as the safest NACI with respect to grade crossings (Union Pacific CSR report, 2016), this achievement was not corroborated by reports when targeted inspections were completed. Accordingly, because the research is limited and the reporting not specific enough, it is not possible to determine causality between enhanced community awareness through effective safety training measures and at-grade crossings accidents.

Yet another example involved CN's goal for safety, "a deeply held core value." Their 2016 sustainability report stated: "Nobody gets hurt, and there are no accidents that negatively impact our communities, our customers or the environment" (CN, *Delivering Responsibly*, 2016). For that year, the occurrence rate according to FRA criteria was 1.42 accidents per million train miles. The target for the following year, 2017, was 1.50, based on a four-year trend. By 2017, however, this rate had increased to 1.83, and then to 2.02 by 2018 (CN, *Delivering Responsibly*, 2018). Therefore, this previously set target had not been attained, but rather the incidence rate increased by over 42% in a two-year period—and in only one year (i.e., by 2017) had overshot its target by 22%. Additionally, this was dually problematic for sustainability disclosure because CN is a biennial reporter (i.e., did not report in 2017). GRI's guidelines and transparency would require that CN's management approach be shared regarding both what

occurred and any corrective action to be taken within a specified timeframe (GRI 403-2 [occupational health & safety]; and GRI-413-[local communities]). In 2018, the CSX rate for the same metric was 3.57, an increase of 25.26% over a two-year period.

In 2007, the Association of American Railroads reported that *5,912* carloads of crude oil were originated on US Class I Railroads, but that number increased exponentially *to 407,761 carloads in six years (or a 6,898% increase) by 2013* (AAR, 2014). AAR's US Rail Class I crude oil traffic was the highest in 2014, at 540,383 carloads (or 10.5% of total US production). Therefore, the nature of the devastation with any potential accident has significantly increased ramifications for risk management and community response preparedness.

History has taught us that often it takes a tragedy to create change. A bill, known as the Mandate Oil Spill Inspections and Emergency Rules Act (MOSIER), was introduced by Senators Merkley and Wyden, who found *too much control of the investigations by UP instead of in the hands of NTSB*. The Act would: require NTSB to investigate large oil train derailments and provide $2 million in additional funding for staff; give authority to the FRA to initiate moratoriums following a derailment; and require the United States Department of Transportation to set a standard for the volatility of crude oil because of the flammability of its gases.

Although there have been hundreds of derailments over the timeframe relevant to this study, several deserve mention because they were significant for the LCs impacted.

Comparative Analysis. The extent of the impact of accidents on LCs—both short- and long-term, the severity of the consequences to the environment, and information important to developing an understanding of the relevance to a sustainability strategy, although they were not reported by the respective NACI), did often appear in the news:

1) "June 3, 2016, along the Columbia Gorge in Mosier, Oregon a Union Pacific train carrying crude oil, 16 derailed and four caught fire. UP instituted increased phased inspections on rail lines and replaced lag bolts with spike fastening systems across our network along with

walking inspections on tracks with lag bolt fastening systems" (Union Pacific, *Building America Report*, 2017).

The April 5, 2017 issue of Canadian Press indicated that Union Pacific received "most of the violation recommendations issued under the targeted inspection program, with more than 800. A breakdown for violations involving other railroads was not available."

2) March 7, 2015, near Gogama, Ontario, a CN train derailed carrying crude oil (there had also been a previous derailment on February 14, 2015. The emergency response plan was activated which engaged "the Mattagami First Nation, the Gogama Local Services Board and CN's Dangerous Goods and Public Affairs teams to handle issues, including safety and communication" (CN Delivering Responsibly, 2014). This was first reported in the "Biodiversity and Management" and not the "Safety" section of CN's Delivering Responsibly report. Although the remediation efforts were mentioned, absent was any assessment of the negative impacts to the LC, as is a requirement when following the GRI Standards. On April 29, 2016, Reuters reported that infrastructure issues continued to plague the CN tracks and that, although Transport Canada lifted the March 15 notice on December 15, 2015, the government had not, in fact, performed an inspection since the previous July (five months earlier). The Gogama Citizens' Committee attributes some responsibility to the lack of follow-through by Transport Canada: "If Transport Canada were more hands-on, more often, I think they wouldn't have as many problems" (Martell, 2016). Subsequently, CN advised that, "Clean-up and remediation of Gogama is an absolute priority for us" (CN Delivering Responsibly, 2014). In fulfillment of the five-year survey requirements, CN published an Environmental Update which indicated progress beyond governmental requirements and a continued monitoring of the Makami River to 2023 (CN, n.d.). CN acknowledged an improvement in their accident rate but stated that it was still below industry average. This

challenge with safety formed part of my observation while participating on a tour of a CN yard, as the tour guide told the group, “We might be the biggest, but we’re not the safest” (personal communication, CN staff).

3) June 2018, 31 BNSF crude oil tanker cars derailed in Iowa.
4) Unrepaired tracks in Lynchburg, Virginia led to a CSX Transportation oil train derailment and subsequent explosion along the James River in 2014.
5) On July 17, 2015, defective and missing fasteners used to hold the tracks in place caused a BNSF Railway train (when 22 of 106 cars derailed in Culbertson, Montana) to spill 35,000 gallons of crude oil (Reuters, 2017).
6) On July 6, 2015, CP was sued by the Province of Québec, which claimed $409 million in damages related to the cleanup costs of the Lac-Mégantic derailment of 2013. The Province alleged that CP exercised custody or control over the crude (which ignited following the derailment, thereby killing 47 people) because CP had performed the interchange of the train the previous day. The annual report of CP indicated that on July 6, 2013, Montreal, Maine, and Atlantic Railway (“MMA”) was operating on a section of track that it wholly owned and operated when one of the worst tragedies in Canadian rail history occurred. The claim argues that CP is solitarily (joint and severally) liable with third parties responsible for the accident. *This note was made in CP’s Annual Report, as it is required to do so because of the associated potential future financial risk to any investor. This information was not contained in any way in the 2016 Sustainability Report of CP, or any other report directed broadly to stakeholders or local communities*—a signal of the different standards of disclosure. By 2018, however, CP’s Sustainability Report, demonstrating a more improved move of transparency, reported on the death of six employees, three of whom were involved in the accident in Field, BC near the Alberta border. In the section on Indigenous Relations, reportedly, “CP also engaged

> Indigenous groups in response to a 2017 derailment of a coal train near Ashcroft, British Columbia. Following this incident, CP partnered with Bonaparte First Nation to construct a new fish habitat as compensation for impacts related to the derailment" (CP Sustainably Driven, 2018 Corporate Sustainability Report: p.105). This approach to recompense was clearly stated as such and presumably supports the (re)building of social capital with the local community.

There exists a lack of transparency regarding accidents—coupled with an inadequate level of acknowledgement of devastation experienced by LCs. The German railway, Deutsche Bahn (DB), showed that it was possible to openly report an accident without stating culpability. For example, the transparency of the advised:

> "On May 7, 2018, a passenger train operated by Bayerische Regiobahn collided with a freight train near Aichach station. Two people died in the accident and several were injured. We sincerely regret the consequences of this tragic train collision. Conclusive statements cannot yet be made about the causes and possible actions to be taken as the investigation of the accident has not yet been completed." (DB 2018 Integrated Interim Report, June 2018).

Theme 3: Infrastructure Investment

There is general disclosure among the NACI regarding the connection between their infrastructure investment and capacity to meet the increasing needs of their customers. The association between infrastructure investment and what that signifies for local communities, however, is not as well laid out in their disclosures. Prioritization of investment allocation is based on addressing areas of bottlenecks to increase throughput and to promote network capacity optimization and increase operating efficiency for customers. NACI disclosure scores for 2017/2018 demonstrates the inconsistency in information sharing. Disclosure scores as excerpted from Appendix B follow:

CN	**CP**	**KS**	**NS**	**UP**	**BNSF**	**UP**
2018	**2018**	**2018**	**2018**	**2018**	**2017**	**2017**
0	0	1	1	0	1	1

Disclosure Analysis. The NACI consistently, jointly, and independently voice their independent investments on infrastructure; however, there is little to no acknowledgement of government support or funding from sources other than the railways. The Association of American Railroads claimed that, "The freight rail industry is a welcome outlier, and its self-sufficiency gives policymakers room to address infrastructure challenges elsewhere. *Freight railroads pay their own way*, spending about $25 billion annually in recent years on equipment and infrastructure" [emphasis my own] (Jefferies, 2019). However, in fact, the support of many public-private partnerships with various governments enable the seven NACI to operate profitably. "Through these improvements and efficiencies, freight railroads have been able to do more with less—increasing volume approximately 90% over the past 40 years despite a smaller network" (New York Timer, n.d.). However, P3s, with multiple partners, in fact play a significant role—such as addressing multiple factors that drive the investment needs for new infrastructure.

> "The state has invested $287 million in rail projects over the past five years, a spokeswoman for Gov. Rick Scott said Thursday. During that time, $9.6 million has been spent on rail safety programs including improvements to more than 70 rail crossings and track infrastructure projects" (Palm Beach Post, Jan 19, 2018).

NACI have typically used vague language to report on their future infrastructure investments—with few exceptions. Over the last three years under review, only CN and CP (both in 2018 and 2016), as well as BNSF (2017) (Refer to Table 13, Variables of Disclosure Quality and Stakeholder Engagement, p. 119), reported plans regarding their network rail asset building strategy with specific metrics that would enable comparability either among NACI or future accomplishments. From an industry perspective, this is in sharp contrast to the level of detail seen in the disclosures of Eurasian railways such as DB (Germany).

Among the NACI, there was no evidence in the reports regarding future investments pursuing any aspects of their infrastructure that use non-renewable resources, including buildings or projects to support the generation of non-renewal resources for any aspects of their administration or operations. In Europe and Asia, however, the modernization and digitalization of the track infrastructure at an unprecedentedly rapid pace has been a reported priority for some freight railways (e.g., DB Cargo). DB

Group (based in Germany), for example, although a largely passenger railway, has DB Cargo as a component and presents specific products and services for their freight passengers and is specifically guided by its "Strong Rail" strategy as a framework for sustainability reporting (DB, 2019 Integrated Report). DB's infrastructure expansion is synonymous with its call to increase train path distance by 30% (or 350 million kilometers) to relieve the network in areas in which it is currently overburdened.

Comparative Analysis. In terms of this study's call to better understand the impact of infrastructure projects on LCs, the lack of reported project-specific information by NACI contrasted heavily with the type of reporting by other international companies (such as DB). The development of infrastructure, with more than 33,000 km of track, makes DB the largest network in Europe (DB, Integrated Report, 2019). The network's infrastructure operations are managed by DB Netze Track, the business unit whose economic success rides on the optimal capacity utilization achieved either through new construction or expansion. The business/logic model is clearly laid out, along with the progress on each major project, plans for the incorporation of renewable energy, and goals for emissions and climate change. The ability to achieve a clean future (for example, a two-degree climate target)—DB directly links rail infrastructure with clean technology—is seen as dependent on a strong rail system (DB Integrated Report, 2019), which is a significant aspect of DB's value proposition.

DB Eco Plus offers freight customers the opportunity to ship using electrified rail which is 100% carbon neutral. DB group specified in 2016 that they would be spending €7.5 billion for improvements, including 1,650 km for tracks, 1,800 switches and 4,600 command and control technology—specific metrics against which their performance could be evaluated (DB, Integrated Report, 2016). Specific alignments for their benchmarks were based on materiality of nine topics, of which four were assigned to SDG#11, Sustainable Cities and Communities—high performance infrastructure, digitalization, innovation, and noise reduction.

The Eurasian-examined reports had approaches and sometimes specific goals around relations

with LCs. For instance, besides the rail network and digitalization of technologies, DB specifically noted a drive towards energy supply and plans for the continued uptake of use of renewable resources—not just for their own operations, but also for train operating companies in Germany. Additionally, they relayed a specific plan for noise reduction, encompassing rail network modifications and upgrading through digitalization (2015). Also expressed was a willingness to use industry knowledge at DB, to be exported for worldwide benefit (2017). A significant feature was the incorporation of working collectively with cities on the design and creation of smart cities (SDG #11).

Specific NACI Examples. Interestingly, although a central aspect of sustainability is its future orientation, the sustainability reports of the NACI did not anticipate performance or disclose projected targets—particularly along the social dimension. CN, in their 2018 Annual Report, indicated their plan was for value creation through the reinvestment of approximately $3.9 billion in a capital program wherein an additional "1.6 billion is targeted toward track and railway infrastructure maintenance to support safe and efficient operations. A further $1.2 billion is expected to be spent on initiatives to increase capacity and enable growth, such as track infrastructure expansion" (p.7). While the NACI addressed reinvestments on capital programs, interoperability with other railways was not specifically emphasized.

Theme 4: Philanthropic Aid

Philanthropic aid is an ongoing provision by all seven NACI to support various safety, culture, recreation, and arts-related activities within the local communities. NACI generally gave financially to many non-profits through various channels. All seven NACI disclosed their philanthropic aid in financial terms as well as in-kind donations. Some railways, such as CSX and CN, have local councils or boards that are responsible for contribution decisions. NACI that have not established their own foundation tended to give to health-related, hospital and educational foundations.

Disclosure Analysis. Table 20 (page 159) shows philanthropic giving by NACI as a proportion of annual revenue. The following patterns of giving from 2010 to 2020 were discerned:

a) CN's highest proportion of revenue (.0026) occurred in 2010 and has declined steadily to an amount which represented .0009 of annual revenue for the year 2019;

b) Among the NACI, as a proportion of revenue, the highest amount of aid was given by CP, CSX, and Norfolk in 2014 (.003, .0014 and .0011, respectively), the year following Lac-Mégantic;

c) Following 2014, the next highest giving for Norfolk was in 2012 and 2017. Kansas City Southern has insufficient data for pattern recognition;

d) UP, over the last three years, has been consistently increasing its giving to .0009 as a portion of annual revenue through matching gifts and corporate support. Union Pacific helped more than 2,500 non-profit organizations by contributing more than $2 million to the United Way in 2010 and $14 million to 676 education leadership programs and community-based giving (Union Pacific, 2010: p.54).

NACI did not typically present a comparison of their giving across years, but this could be found in the table philanthropic giving as part of Table 20, adapted from Eikon/Refinitiv data.

The data reflect a general decline in philanthropy since 2009. The highest contribution percentage for each NACI is represented in the green cells of company revenue. Also evident are the high ratings (A and A+) for sustainability strategy, which is contrary to Sustainalytics' ratings and is also not reflected by this study's findings regarding NACI's lack of *social* sustainability strategy.

Table 20

Refinitiv Ratings (NACI Philanthropic Aid, Sustainability Strategies and Public Health Controversies

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
CN (portion of revenue)	0.0009	0.0009	0.0012	0.0015	0.0015	0.0015	0.0021	0.0019	0.0024	0.0026
CN Donations (1,000s)	--	12,900	15,500	18,200	18,300	18,300	21,900	19,000	21,750	21,750
CN public health controversies	--	--	--	--	--	--	--	1	1	1
CP (portion of revenue)	0.0006	0.0006	0.0008	0.0008	0.0007	0.003	0.0014	0.0009	0.0013	0.0006
CP Donations (1,000s)	--	4,416	5,080	5,257	4,461	19,917	8,663	4,933	6,513	3,009
CP Public Health controversies	--	--	--	--	1	--	--	--	--	--
CSX (portion of revenue)	0.0008	0.0008	0.0011	0.0015	0.0011	0.0014	0.0013	0.0012	0.0008	0.0005
CSX Donations (1,000s)	--	10,000	12,000	16,100	13,500	18,342	16,000	14,230	9,221	5,400
Sustainability strategy	**A**	**A+**	**A+**	**A+**	**A**	**A**	**A**	**A**	**A**	**A**
KCS (portion of revenue)			0.0003	0.0003						
KCS Donations (1,000s)	--	--	756	630	--	--	--	--	--	--
Norfolk (portion of revenue)	0.0008	0.0008	0.001	0.0011	0.0012	0.0011	0.0011	0.001	0.0007	0.0007
NS Donations (1000s)	--	8,832	10,159	11,010	13,048	13,150	12,826	10,700	7,824	6,831
Sustainability strategy	**A+**	**A+**	**A+**	**A+**	**A+**	**A**	**A**	**A+**	**A-**	**B+**
Public Health	--	--	--	--	--	1	1	--	--	1
UP (portion of revenue)	0.0009	0.0009	0.0009	0.0001	0	0	0	0	0.0007	0.0008
UP Donations(1000s)	--	20,100	18,400	2,300	1,000	--	--	--	14,000	14,000
Sus Strat	**A+**	**A+**	**A+**	**A**	**A**	**A+**	**A+**	**A+**	**A+**	**B+**
Public Health	--	--	--	1	--	--	--	1	--	--

Green highlighted cells represent the year of highest giving for each NACI as a proportion of annual revenue. Generally, a steady decline is evident including for those that peaked around 2014, and this is consistent with the information gathered from Sustainalytics and throughout the CSR/sustainability reports. Kansas and UP are either unchanged or marginally so.

Synthesized by author from Refinitiv's database.

2019	2018	2017	2016	2015	2014	2013	2012	2011	2010

It was common for NACI to aggregate the corporation's giving with employees' contributions, while others conflated their contributions with large NGOs on readily recognizable projects without denoting their unique gift. NACI would often "piggyback" on the altruism of their staff's volunteerism in their private lives. Variability in nomenclature and approaches to giving prevented a reasonable comparison of philanthropic giving, which was clearly significant for NACI. Others, in their expressed giving, detailed specific amounts given to categories of beneficiary organizations (e.g., culture-based institutions such as museums, food banks, empowering women) and matching the gifts already given by their employees. In the case of Norfolk, their foundation relies on volunteers (Norfolk Social Responsibility Report, 2018) because they live and work along the railway network and can provide insight regarding optimal assistance. Transparency is provided when an NACI, such as UP, indicates, "In 2010, Union Pacific as a company donated $14 million in community giving and supported 676 non-profit organizations" (p.54). Additionally, contributions and their amounts were specifically mentioned in the wake of a controversial issue with a community or project. The year 2014 (the year following Lac-Megantic) posted the highest donations among the NACI that reported (CSX, CP, Norfolk), except CN (KCS and UP did not report). Interestingly, CP, as if through an act of recompense had its year of highest giving the year after the tragedy at Lac-Mégantic. The Province of Quebec, in 2016, later brought a lawsuit for damages against CP regarding their alleged involvement.

Comparative Analysis. The Eurasian railways are not typically involved in philanthropic aid, presumably because they are state-owned entities. Additionally, the guidelines and standards for SE and social responsibility make no comment on this practice. Consistency was generally found between the disclosures related to philanthropic gifting in the sustainability reports and that found through Eikon/Refinitiv and other rating scales**.**

Theme 5: Environmental Stewardship and Remediation

Environmental stewardship has served as a proxy for sustainability within NACI, where much of their focus on sustainability is still almost exclusively rooted in environmental management systems (EMS) (e.g., emissions, and waste management). EMS are critical aspects of sustainability, but a holistic view of sustainability also requires increased attention to the social sustainability elements as well. Although not social sustainability, this theme is included, as it is foundational to firms. A firm that does not prioritize their strategy or performance in this area is probably less likely to dedicate resources to engagement with LCs that would obviously be interested in this material topic.

Disclosure Analysis. A significant amount of the work taking place that has been categorized as environmental stewardship is, in fact, remediation of decommissioned sites. There is little evidence of a proactive stance being taken, for example, in development of or use of renewable resources either in infrastructure construction, building maintenance or rolling stock operations. One exception to this would be the recycling of railroad ties. There was no evidence reviewed regarding a commitment to use or investigate the use of renewal energy in any aspect of the industry. Although information asymmetry is addressed throughout the Analysis and Findings, this section specifically utilizes the example of emissions to demonstrate the incongruence in information between that is which is provided by NACI—either as part of mandatory or voluntary reporting requirements—and that which comes from an independent source, such as the Environmental Protection Agency (EPA), Federal Railway Administration (FRA), Surface Transportation Board (STB), various newswire, expert reports, and court documents. All NACI reported on emissions in their sustainability reports—a mandatory requirement under various environmental acts with which they must comply. This was typically the only sections of the reports for which external assurance was sought and obtained by a third-party firm (e.g., usually a large accounting firm such as KPMG, EY). Notwithstanding the compulsory aspect of reporting, there was apparent discordance between perceived progress on emissions by the NACI and the information presented by the EPA (as

observed at the Railroad Environmental Conference (RREC) on October 23, 2019 at the University of Illinois, Urbana-Champaign, presentation). During that talk, Mr. Harrell (EPA) presented findings based on the National Emissions Inventory (NEI), which accounts for emissions in metropolitan areas on a national scale and is used by the EPA to perform air pollution evaluations. The NACI were advised that they represent 85% of national emissions—as measured by each railyard's representation as a point on the NEI. As reported by EPA, there were no disclosures on yard counts east of Chicago (i.e., UP, BNSF, and KCS had provided their information). Also disclosed was that the emissions of the NACI were 2.5 times that of all power plants in the Eastern US, and that EPA projections for rail emissions were far less than actuals—in part because the switch to tier 4 engines had not happened as quickly as anticipated. The next inventory was scheduled for 2020.

A significant part of the business model used by NACI involves the reliance on non-renewable resources—both as a source of energy in their construction of infrastructure, operationally with the use of diesel, and as a carbon-based commodity it transports. A common occurrence in the reporting of reduction of emissions was that they were not reported by year, with little direct disclosure for the most recent timeframes that would allow for an appreciation of current accomplishments.

Specific NACI Examples.

***Tree-planting*.** A commonly reported sustainability approach by NACI is tree-planting to reduce the net impact of greenhouse gas emissions. "CN is the leading private non-forestry company tree planter in Canada, with over 1.2 million trees and shrubs planted, and more than 600,000 additional plantings planned for 2016." For example, in this one report alone (i.e., *In your Community, 2018*), CN referred to tree planting 61 times.

Tree-planting, which has among its benefits carbon sequestration, biodiversity, minimizing soil erosion and many others, is undoubtedly good. But the industry's reliance on this highly visible and quantified activity begs of the need for new ways of engaging LCs that are consistent with the information

age in which we live. It is time to make way for new ways of helping LCs to create value. The impact of greenhouse gases and other emissions (e.g., particulates) on the health of LCs is a focus area for NACI, other forms of transportation, and globally for sustainably responsible businesses. It is well-recognized that rail offers a sustainable solution to reduce the environmental impact of transportation (Borda-de-Água, Barrientos, Beja & Pereira, 2017).

The transportation sector in Canada generates 28% of the country's GHG, of which rail accounts for one-percentage. In the US, this is essentially the same, at 28.2%—the largest of all contributors (Environmental Protection Agency, n.d.). The initiatives (e.g., reforestation and biodiversity) to reduce GHG emissions are frequently carried out in partnerships with not-for-profit organizations by NACI as part of their environment sustainability strategy and *along their rail lines*, although their physical and social impacts are experienced far beyond.

Environmental management of this nature is highly favoured by the NACI but is not always categorized as such. "Biodiversity" was the category of choice by CN for the clean-up effort related to mass oil spills in the wake of derailments such as Gogama.

***Innovation*.** At the same time, important innovations driven by CN, such as CanaPux ™, an alternative and safe way to chemically compose crude oil, are not adequately contextualized so that the significance of its meaning for LCs can be fully appreciated. Instead, it is simply stated that CN has been:

> "Developing an innovative transport option for bitumen: CN has made good headway with our environmentally secure process of transporting bitumen as a solid pellet that floats and *does not explode, leak or dissolve*. CN signed an agreement with Wapahki Energy Ltd., a company owned by the Heart Lake First Nation, to build a $50-million production plant capable of turning up to 10,000 barrels of bitumen per day into CanaPux™" (CN, In Community Report, 2019: p.18).

NACI have not typically been transparent about their past misdeeds which resulted in many contaminated sites. Resources that are now being applied to remediation sites are being applied in a more forthcoming manner. CP, for example, stated:

> "Our sustainability strategy also spans time—we are committed to cleaning up our past through voluntary and proactive remediation activities that continue to reduce liability associated with

> historic contamination; managing our present through diligent compliance with regulations and standards; and protecting our future through innovative technologies and operational plans that reduce our greenhouse gas emissions." (2012-2013 CP, CSR report).

Other noteworthy active and proactive efforts include CSX's work with the Wildlife Habitat Council to create, conserve and rehabilitate wildlife habitat so that the green space parallels the ecosystems of natural, undeveloped lands. The outcomes are sustainable by promoting local ecotourism, education, and the monitoring of wildlife. This type of SE involves all three benefit levels, as depicted by Mathur, Price and Austin (2008): strategic management, ethical and social learning, wherein diverse stakeholders share a common forum and the values reflected as a shared vision and shared objectives.

One example of a public-private partnership which hauls biomass to processors and producers is a cooperative entity of UP and Forest Management and Marketing Ltd. that has been working to decrease and insect infestation. This partnership provides another example of the collaboration and social learning occurring at a deeper level 3 of engagement, as described by Mathur, Price & Austin (2008) (Table 6, page 77).

***The Reality of Remediation Sites*.** Disclosure related to remediation efforts among the NACI has been tied to environmental stewardship, which has conflated two issues viewed as interconnected but are, in fact, separate: the responsibility of consistently working towards the restoration of sites contaminated from prior operations; and current and ongoing initiatives that recognize the fragility of the earth's ecosystems, as well as the present and potential impacts of our decisions and taking a proactive stance to minimize any future negative effects by developing and instituting compensatory measures and promoting conservatory, sustainable practices. The Global Compact, the corporate sustainability initiative which helps companies to achieve alignment between their "strategies and operations with universal principles on human rights, labour, environment and anti-corruption, and take actions that advance societal goals," defines environmental stewardship as " the comprehensive understanding and effective management of critical environmental risks and opportunities related to climate change, emissions, waste

management, resource consumption, water conservation, biodiversity protection and ecosystem services" (United Nations, n.d.: p.9). However, the extent of efforts disclosed in the name of remediation seem downplayed across the NACI industry. For example, BNSF, in their 2017 report, disclosed that $530 million had been spent in the last 10 years on the remediation of "legacy sites." In 2010, CN, in their Delivering Responsibly report, stated their commitment as, "We remain committed to the cleanup and remediation of our operations related to past and present ownership, operation or control of real property." By 2012, CN's Delivering Responsibly Report's statement had expanded slightly to describe what the causative agents in a remediation site might be (but also added their enhanced efforts to track liability) as follows:

> "We are committed to clean-up and remediation related to present and past ownership, operation or control of real property. Contaminated sites can result from railroad activities or accidental spills and releases. We continue to track our environmental liability performance and are proactively managing and reducing our risks." (CN Delivering Responsibly, 2012).

By the time of the 2014 Delivering Responsibly Report, CN had disclosed in its *Biodiversity and Land Management section* (not in a section on safety or accidents, as one might expect*),* regarding collaborative efforts being made with the Mattagami First Nation (regarding the Gogama derailment and crude oil contamination), to restore and bring in lost vegetation and soil on 10 acres of land.

However, it was not in the sustainability report, but rather in their 2014 Annual Report (punitive consequences would have resulted from neglecting to include this type of financially material disclosure) that CN disclosed:

> "The Company has identified approximately *255 sites* [emphasis my own] at which it is or may be liable for remediation costs, in some cases along with other potentially responsible parties, associated with alleged contamination and is subject to environmental clean-up and enforcement actions" (p.44).
>
> On the matter of unknown existing environmental concerns, CN advised:
>
> "The magnitude of such additional liabilities and the costs of complying with future environmental laws and containing or remediating contamination cannot be reasonably estimated due to many factors, including: (a) the lack of specific technical information available with respect to many sites;

> (b) *the absence of any government authority, third-party orders, or claims with respect to sites;*
> (c) the potential for new or changed laws and regulations and for development of new remediation technologies and uncertainty regarding the timing of the work with respect to sites; and
> (d) the determination of the Company's liability in proportion to other potentially responsible parties and the ability to recover costs from any third parties with respect to sites." (p.44-45).

Comparative Analysis. While it is reasonable to not expect accurate financial forecasting regarding remediation sites where information is either lacking or liability not yet confirmed, one can assume that because there are sites for which the liability is known that these negative impacts and contemplated *mitigation for proximal LCs* could be shared or addressed in a more transparent fashion. Yet, contrary to the framework set by GRI (and adopted by CN and most of the NACI, for that matter) for sustainability reporting, these impacts were not mentioned.

On the other hand, CP disclosed in a more transparent fashion with specific metrics, indicating in their 2016 sustainability report that they spent "$313 million in remediation activities to address pollution at over 355 contaminated locations throughout our network." CP relayed specific outcomes: "returned various portions of First Nation land and worked closely with a First Nations subcontractor to perform land remediation" (CP, Sustainably Driven, 2016).

They also detailed their proactive plan:

> "…to reduce liability and ensure the safety of any individuals who may come in contact with an abandoned well, CP's Environmental Remediation group is tasked with sealing off unused wells… approximately 30 wells each year" (CP, Sustainably Driven, 2016).

Sometimes, NACI used the reporting to share their positive sustainability performance, such as CSX's involvement with remediation projects where they were not the responsible party for the contamination, but rather completed a $3.5 million environmental remediation to transform a former third-party illegal dump into a clean, natural wetland and wildlife area in Tampa, Florida (CSX, 2014). They have also demonstrated collaborative work with multiple stakeholders:

"In 2012, CSX partnered with regulatory agencies and local communities on key remediation projects. Activities at the intermodal expansion project in Cleveland, Ohio, are an example of how creative development and assessment of options can lead to sustainable solutions" (CSX, 2012: p.78).

In other instances, NACI made it clear that they were attempting to compensate for a previous activity by "Restoring 172.3 acres of Louisiana bottomland hardwoods and coastal prairie habitat to mitigate construction project activities" (Kansas, 2016: p.4). Or, that they were exceeding the regulatory expectations: "CSX utilized state-of-the-art remedial techniques and exceeded restoration requirements during the remediation of the former Gautier Oil site in Gautier, Miss." (CSX 2012: p.81).

> "The remediation has been a long-term project for CSX with nearly $20 million invested to date. CSX worked closely with MDEQ to evaluate environmental impacts associated with the site and adjacent West Pascagoula River and Bayou Pierre. Studies determined that there were environmental impacts at the site including soil and groundwater contamination, as well as at near-shore sediments of the River and Bayou. A remediation plan was developed and approved by MDEQ in 2010. Remediation activities began in 2011 and resulted in the *safe disposal of more than 22,000 tons of contaminated soil and sediment from the site and adjacent Bayou*. CSX also installed a containment cap, made with multiple layers, on approximately 6 acres of near-shore sediments in the River and Bayou." (CSX, 2012).

As was evident at the Railway Environmental Conference (RREC) 2019, the industry's preeminent conference held at the University of Illinois Urbana-Champaign, significant resources are now being spent on remediation efforts which NACI view as synonymous with environmental stewardship. LCs should be aware, such as in the case of Norfolk Southern's efforts to assist a community with local and state economic development activities of "industrial redevelopment, bringing new jobs and tax revenue to the community," that it was actually a necessary last phase component of remediating a "100-acre former rail car shop facility in Lenoir City, Tennessee." In so doing, an attempt is made to disguise remediation as a new economic activity (i.e., development rather than clean-up).

Theme 6: Gender Diversity

Overall, NACI have reported an increased focus on gender diversity within their workforce. As a material topic, 50% of NACI listed gender diversity in their most recent sustainability report.

Disclosure Analysis. Of the railways reporting on board composition, 50% have identified gender diversity as a priority at the board level (CN, CP, CSX), while 33% have achieved their specific targets (CN

& CP). Others, including UP, Kansas and Norfolk, have simply stated their recognition of the importance of gender diversity among their workforce without any specific targets for women at the board level.

Specific NACI Examples. In Canada, CN "adopted a target to have at a minimum one-third of the Board represented by women" (CN Delivering Responsibly, 2014). CN executives also supported the *Women in Operations Council* and, by mid-2017, CN had reported that five of 13 (38%) of its board members were women. By 2016, CP reported having a board that was 40% women, and by 2018, five of its 11 (45%) members were women—with it also being the first NACI to have a woman chair its board. In 2014, CSX reported that two of their 12 (17%) board members were women. By 2017, Kansas had indicated that they were committed to advancing diversity within their workforce, though without specification. Three of 12 (25%) of its board members were women, while three of 14 (21%) of Norfolk Southern's board members were women. UP, however, expressed its challenge by acknowledging that only 5% of its workforce were women (UP, 2018), a fact that provides a great opportunity for the company for diversity. Aligning their goals with women diversity, CN expressed the industry's overall desire "to better understand and respond to the needs of our stakeholders, access a larger talent pool, and increase the effectiveness of our decision-making through a wider range of perspectives, experiences, and sensibilities."(CN Delivering Responsibly, 2018).

Comparative Analysis. The direction of efforts being made by the NACI regarding diversity at the middle management (tactical) and operational levels is generally challenging; however, the changes at the strategic or board governance level, except in a few instances already mentioned, is aligned with effecting social sustainability goals as indicated in the review of literature. In their report, *2019 Diversity Disclosure Practices: Women in leadership roles at TSX-listed companies*, MacDougall, Valley, Jeffrey, Aziz, Black, Cao, Dick et al., (2019) indicated that women hold 18.1% of board seats of companies that disclose this statistic, but this number escalates to 30% of the S&P/TSX 60 companies. With increased women representation

on boards[64], a concomitant increase in targeted sustainability experience is anticipated, as well as the presence of internal auditing committees and other measures of sustainability oversight. Herda, Taylor and Winterbotham (2013) found that board independence was also associated with a higher likelihood of producing standalone sustainability reports.

Theme 7: Noise Reduction

Noise reduction was not a material topic identified by NACI; however, because it has consistently been among the most prevalent complaints received by NACI from LCs, as noted on their websites and frequently asked questions, it was included in this analysis. Noise reduction is not only an issue for LC stakeholders, but is frequently a consideration of environmental impact statements, as it poses a significant concern for environmental health. Noise and vibration, along with air and water pollution and soil erosion, represent some of the main disturbances caused by infrastructure and railway operations (RAC; Lucas, deCarvalho & Grilo, 2017). Noise and its abatement, as indicated in the Proximity Guidelines (RAC), are significant concerns for local communities (Coulter & Associates, 2013); however, NACI rarely mention noise or any specific efforts to address it in their sustainability, corporate social responsibility, or community reports. Some concerns voiced by local communities go beyond the anticipated and actual noise associated with the railway to the *change* in functioning of the railyards that push the boundaries of acceptability because of changes to infrastructure, such as double tracking and the disassembling and assembling of railcars.

Disclosure Analysis. GRI's section 413-2-a-ii requires reporting on the "significant actual and potential negative impacts of operations" (Global Reporting Initiative, 2016). There is little to no evidence that this stipulation is being followed in the NACI's sustainability reporting. For example, the Vancouver Sun reported on a residential associations' concerns, stating that some trains operate within 100m of

[64] Herda, Taylor & Winterbotham (2013) also found that board independence was associated with a higher likelihood of publishing standalone sustainability reports.

residential dwellings. “Trains going by aren't an issue, say residents. It’s when they roll into the neighbourhood then conduct doubling operations[65]—often less than 100 metres away from many homes.” (Chan, Jan 23, 2019). “They've changed it from a corridor to a work yard” that operates 24/7, said Jane Henry, who lives near Lakewood Drive, about 50 metres from the Cut. “The Cut, which is a corridor, has *never seen this type of activity since the beginning of rail history in the early 1900’s”* (Chan, Jan 23, 2019) [italics my own]. Local communities recognize that the increases in traffic resultant of globalization and demands will require concerted collaborative efforts between civil society, railways, and all levels of government to solve problems and bring about the needed change.

To inform the LC, CN advised of the need for 24-hour scheduling to accommodate vessels at Port of Vancouver operations, but advised of their commitment to LCs to lessen the impacts. Vancouver Councillor, Pete Fry, a Strathcona resident, said he is also concerned about the impact of increased railroad traffic. Mitigation efforts to address impacts to the communities have not been systematically or broadly reported by any of the NACI. This was evident even on potentially contentious issues such as the EJ&E acquisition, where feasible alternatives were not required by the Surface Transportation Board. As a result, none were analyzed for the construction of double-track or yard operations (Surface Transportation Board, Draft Environmental Impact Statement, July 2008).

Specific NACI Examples. In CN’s most recent sustainability report (2018), noise was referenced only once, and it was related not to railway infrastructure or operations, but rather the *lack* of noise produced by electric trucks. In so doing, CN completely omitted addressing this concern—deemed material by the LCs surveyed—in a straightforward manner. In their 2012/2013 report, CP had noise and vibrations listed as “stakeholder importance,” and these concerns represented a significant cause of the increased number of complaints received. The reader was directed to proximity issues raised in the joint

[65] Also, in this context would be referred to as “coupling” refers to the dismantling and reassembling of trains as individual cars become linked to new ones prior to embarking on the next leg of their journey toward their final destination.

guidelines' effort with the Federation of Canadian Municipalities and Railways Association of Canada, along with a mere mention that new locomotives reduced noise and emissions. By 2016, CP was the only NACI reporting specific activities aimed at noise reduction such as including the removal of hump yard classification systems via connecting railcars and brake operations. Supplemental efforts included new efficient processes from the train building, composite brake systems and locomotives that adhere to noise source guidelines of the U.S. Environmental Protection Agency (p.37). Once again, LCs have been managed in highly disparate ways, even by a single NACI over time. Transactions have followed negotiations deemed part of a business strategy that involved various concessions e.g., instituting quiet zones[66] following application to the FRA and consistent reports of at least one NACI assuming the cost of engineering studies commissioned by LCs to support the quiet zone application—even when this could likely implicate and potentially signal liability.

Comparative Analysis. In sharp contrast to what has been reported by NACI, for example, Deutsche Bahn of Germany (2017) had established an office sustainability report and adhered to GRI guidelines by providing a direct comparable measure as a requirement in fulfillment of their future-oriented remediation plan:

> "We want to noticeably relieve residents of rail transport noise as a crucial prerequisite for raising acceptance of rail transport and shifting traffic from road to rail. We will therefore strive to reduce this noise by half by 2020. This target builds on two pillars: firstly, noise remediation through building noise protection walls and fitting homes with soundproofed windows on existing rail lines, and secondly, conversion of the existing fleet to quiet brake shoes and procuring quiet new freight cars. Under the leadership of the noise protection officer, the department for noise protection in our Group area DB Environment tracks and coordinates the progress of our actions, our collaboration with the Federal Government, and our communication with stakeholders." (p. 35).

DB reported on noise reduction as a track kilometers remediated metric, as well as a specific targeted reduction in decibels by half in 2020 compared to the baseline set in 2000. Additionally, they

[66] Quiet zones are federally regulated in both Canada and the US. They require special application—in Canada to Transport Canada and in the US to the Federal Railway Administration.

planned for an increase of quiet freight cars from 39,600 to 64,000 for 2017 to 2020; and remediation along 1,700 km of infrastructure (2017)—up from 1,600 with 2,000 km planned for 2020. This focused attempt to mitigate the effects of noise on LC with specific targets was a consistent theme for the Eurasian reports: DB (Germany), France (SNCF), Belgium (SNCB), Japan, MTR (Hong Kong).

Theme 8: Aboriginal Rights and Relations

It should be noted that although I prefer to use the conventional term of 'Indigenous,' the NACI reports still use the term "Aboriginal." As such, this term is used to be consistent with the style of these disclosures. Only two of the NACI, CN and CP have indicated that Aboriginal populations were a material topic. However, because of the political, economic, and social implications of effective engagement with Aboriginal peoples and land rights issues, I have prioritized this topic for analysis and discussion.

Disclosure Analysis. There has been no evidence unearthed in the respective sustainability reports of the NACI of these land rights and permitting issues—activities that would arguably challenge the success and/or sustainability of the relational work being done with Aboriginal peoples as a LC. This reality challenges the symmetry that would be evident in a transparent type of disclosing to promote relationship-building. It also is a recommendation to be considered for future reporting—that controversies of a substantive nature be reported in sustainability reports in a manner befitting of this priority topic. Pursuant to the materiality of this issue, NACI all have specialized teams with the capacity to address the rights and needs of Aboriginal peoples: BNSF-Tribal Relations Team, UP, CSX, Norfolk, CN, CP, Kansas City Southern.

Aboriginal relations represents one area where the NACI have consistently expressed an appreciation of the benefits of having continuous exchange with this defined population (i.e., the interface is not presented as retroactive and transactional in nature). This relationship, therefore, represents a desire for a deeper degree of involvement than what is generally seen with other LCs in general.

Specific NACI Examples. The extent of work with Aboriginal populations is vast, and this would presumably make relationship-building complex—owing to the diversity of belief systems, rituals, and how they are best satisfied. In 2014, BNSF disclosed that it directly served 86 American Indian nations via trackage rights or as a handling carrier in 19 of the 28 states in which BNSF operates, and had interfaced with "40 tribal communities through *direct meetings with tribal leaders and tribal citizens* concerned with rail safety, economic development opportunities and cultural and environmental" (BNSF, Corporate sustainability Report, 2014).

For example, the extent of economic development, education and initiatives that are not necessarily philanthropic in nature but are geared towards transformative and sustainable relationship-building with Aboriginal populations are more evident than with LCs in general. For example, with Aboriginal populations, there exists a more focused outcome of economic benefit with an emphasis on sustainable effects achieved through business development and employment-related initiatives. These activities, at times, were formalized with memoranda of understanding (e.g., CN, 2012) to address barriers to economic independence faced by Aboriginal individuals and communities. At other times, engagement was defined in terms of outreach efforts, membership on various councils, assemblies, and various programs. Of note is the acknowledgement by CN of the need for an informal process for dispute resolution and controversies, which is done presumably because it is respectful of the need for a culturally sensitive approach with First Nations/Aboriginal peoples as the first line of approach, followed by grievance and resolution mechanisms through more formal corporate channels (e.g., Ombudsman office).

It is not infrequent, however, that despite these engagement efforts, litigation interrupted the relationship-building when treaty rights and related issues arose out of conflicting goals or approaches taken on infrastructure projects. For example, the Portland Business Journal, on June 14, 2017, reported

the Columbia River Gorge Commission's denial of Union Pacific's rail expansion project[67] in the Mosier area after a period of litigation brought on behalf of the Confederated Tribes and Bands of the Yakama Nation and subsequent attempts by UP to pre-empt the Commission's decision at the federal level. There had been a derailment in Mosier the year prior, on June 3, 2016, when 16 tank-cars carrying crude oil exploded. The project was challenged on the grounds that the safety of rail traffic through the Gorge would be jeopardized, thereby upholding federal law that protects the Columbia River Gorge as a National Scenic Area.

Comparative Analysis. For a comparative analysis, it was necessary to go outside of the Eurasian railway experience to discover what social sustainability factors related to Aboriginal relations are being disclosed and the quality of disclosure to LCs. Lundin Gold, a Canadian company operating in Ecuador, South America, in their 2019 Sustainability Report, disclose their approach to and performance within social sustainability. This occurs over two chapters, entitled *Engagement and Partnerships* and *Impact Investment*. Lundin Gold, which has only been in the region and developing relationships with the LCs since 2015, openly shared the significant challenges experienced as they sought to engage with the "indigenous" people, many of whom are artisans that are impacted by or impact the firm's operations.

There are regularly scheduled community roundtables that serve as an ongoing opportunity to collaborate with the LCs on decision-making regarding community investment projects and programs. In a chart, the activities are clearly summarized, showing a comparison of proposals received, with needs and opportunities, approvals and delivering on supervision. Improving local livelihood through improving food security and supporting community health by addressing the social challenges of at-risk youth are consistent with the highest level on the Local Community Engagement Continuum (Table 8, page 85). A crucial component of their disclosures involves plan sharing by divulging their formal impact investment

[67] As purported by Union Pacific, the proposed project would have lessened the number of idling trains in Gorge communities and reduce the delays caused by train traffic. Opponents said the plan would result in more trains moving through Mosier at higher speeds, a prospect similar to the EJ&E plight and CN.

framework, determining impact, and evaluating for continuous program improvements. This transparency around their intentions promotes their accountability to LCs and serves as a best practice example for NACIs.

Theme 9: Geotechnical Events

Geotechnical events are generally not being documented in sustainability reports or other forms of disclosure meant to inform LCs. The materiality assessment completed by Railway Association of Canada did include "climate change adaptation" as a material topic. In addition to emissions, geotechnical events are, in part, one outcome of climate, and because of their significance to the safety and health of LCs, they are included in this analysis.

Anticipation of these negative events and adequate protocols, partnerships, and effective emergency preparedness are important considerations for LCs. An ever-present reality impacting NACI and LC is the unpredictable and devastating nature of geotechnical events. The premise underlying the concern around geotechnical events relates to the fact that railways are typically built on the ground or run their length on geotechnical structures (e.g., embankments, cuttings, and soil) and therefore impact the trackbed (Rail Professional, n.d.).

Disclosure Analysis. When geotechnical events occur, affected local communities have access points impeded for significant periods of time, posing safety and security concerns. Some of the geography where these mudslides and landslides occur is related to tracks having been constructed in the path of geological processes that became increasingly unstable because of erosion of sediment left by glaciers and other events.

Construction (of infrastructure) and operations mean that the landscape of surrounding areas will change the microclimate, soil, and hydrological dynamics, which eventually lead to degradation of wildlife (Lucas, deCarvalho & Grilo, 2017). Climate change is expected to increasingly have significant impact on the integrity of infrastructure—environmental, economic, and social. The costs for 2020 were predicted

to be $5 billion, and by 2050, they are estimated to be $43 billion (Louis Gravel of Genesee and Wyoming[68] at the Rail-Government Interface, Ottawa, May 15, 2019).

The damage and resulting need for mitigation efforts are caused by a combination of exceedingly old infrastructure (e.g., some bridges can be more than 120 years old), with severe events, such as heat, wildfires, drought, flooding, mudslides, landslides, damage to culverts, washouts (from heavy rainfalls necessitating evacuation of local communities), buckling and sun kinks (Louis Gravel of Genessee and Wyoming railway company at the Rail-Government Interface, Ottawa, May 15, 2019). These concerns were corroborated by Dr. Michael Hendry, of the Railway Ground Hazard Research Program (at the Railway-Government Interface, Ottawa, May 15, 2019), who is involved in the evaluation of landslide remediation methods and warned of more extreme weather trends that push the capabilities of existing technologies being adapted for use by railways.

Specific NACI Examples. When some of these tracks were erected in the late 1800s and early 1900s (e.g., BNSF tracks along Puget Sound that run between Everett and Seattle), they might have supported local economies; however, the weakness of these geological materials, deforestation, and paving, coupled with increased water flow, lead to devastating impacts to railroads—and ultimately local communities. The many causative factors at play not only require collaboration and cooperation between many entities for success, but a vision that encompasses sustainability and engagement with local stakeholders (e.g., railway, commuter transit, several federal and state departments, a county, two municipal and five city offices and a port authority) are essential.

The Landslide Mitigation Action Plan for Washington State Department of Transportation, in its final report, advised that, “Depending on the financial resources available, as well as factors such as permitting, design, and construction scheduling, the time required to achieve significant reductions in

[68] Genesee and Wyoming is a 121-year-old short-line freight railroad with operations in North America and Europe. As such, it is not one of the NACI, but experiences similar issues as the NACI.

landslide-related service interruptions will likely take *one or more decades."* Accordingly, at the top of their list of both short-term, low-cost strategies and long-term strategies were the following: a) "Develop education and public outreach to engage adjacent landowners to improve slope management practices; b-i) Continue community education and public outreach; and b-ii) Develop a permit process for improvements to private residential land adjacent to and/or above the track area and identify a funding source or sources to implement improvements" (WSDOT, 2014). In 2014 and 2015, the Washington State Department of Transportation spent $18 million in federal grants to prevent landslides and protect train tracks around Mukilteo and Everett. BNSF had spent approximately $10 million over a five-year period (until 2013) (Washington State Department of Transportation, 2014).

Comparative Analysis. A comparative analysis was not completed under this theme because NACI currently do not report on this topic.

Theme 10: Social Supply Chain

Although "supply chain" was identified as a material topic (e.g., in Canada, this was one of the top three topics of importance as determined on behalf of the Railway Association of Canada during a workshop held in 2014 at the Network for Business Sustainability), Social Supply Chain refers to the result of embedding social sustainability within the supply chain by platforms for information sharing, innovation and collaboration to achieve positive social impact.

Disclosure Analysis. Little information was discerned from NACI reports on connecting their supply chain to social factors. As a result, I relied solely on Sustainalytics data, which was transformed for the variable "Quality of Social Supply Chain Standards."

Specific NACI Examples. With a score range from 0-4, the following averages were derived from Sustainalytics for the 10-year period of data: CN, .855; CP, .2; CSX, .65; KS, .217; NS, 0; and UP, .65. The highest score achieved for any year was 1. Such poor performance on a variable tied to operations (and

related to standards of communications among their network of suppliers) is indicative of the types of obstacles to be anticipated with LCs—a group to which the NACI may not feel as obligated to acquiesce.

Comparative Analysis. In their 2016 report, Deutsche Bahn indicated that they distinguish internal social minimum standards with those of their supply chain while adhering to social principles such as the UN Global Compact.

This connectivity that draws together the NACI's supply chain to its daily operations and local community engagement is a crucial factor in stakeholder engagement. In the second part of this chapter, I will discuss the nature of the NACI-LC relationship from the perspective of the developmental stages of engagement and other defining characteristics that must be integrated for effective and long-term value creation.

Summary

In the previous section, discussions on the analyses and findings for question one were detailed. Evidence on disclosure by NACI regarding social sustainability issues relevant to LCs points to incongruence between what has been determined to be material—through stakeholder engagement processes—and the requirements of quality reporting which is not asymmetric. Additionally, although GRI is frequently referenced by NACI, they are challenged with reporting in accordance with requirements of said standards and guidelines.

Stakeholder Engagement: Question Two

This section presents the evidence related to Question Two: "What is the nature of stakeholder engagement (SE) with local communities (LCs) by the NACI?" and "What is the nature of relationships with local communities as disclosed by North American Class I railways?"

As previously indicated, both research questions are interdependent, and quality of disclosure, as just discussed, provides insight into the relationship. First, I will provide an overview, then detail specific elements of social sustainability as it pertains to key variables used as proxy for the NACI-LC relationship.

The development of this proxy was felt to be important because of the absence of any direct testimony (e.g., interviews) or the development of any instrument, such as a survey, that could provide inquiry into priority variables. Instead, using Stakeholder Engagement Framework, Table 21 (page 185), coupled with Table 22 (page 190) that were distilled from the various standards and guidelines and the literature review (e.g., Moratis and Brandt's checklist (2017); and Bowen et al, 2010) to inform the choice of SE concerns Table 23 (page 193) distilled from Sustainalytics' key variables that I felt underscored the essence of social sustainability.

Guidelines of Stakeholder Engagement and Social Responsibility

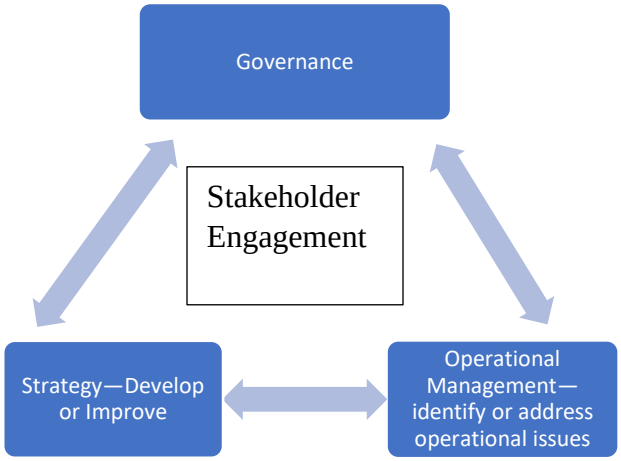
Several guidelines and standards exist that support our understanding of strategy development and guide tactical execution of many of the social aspects of sustainable development. For example, considering the different socio-political influences found in various LCs, it is prudent, and therefore recommended, that SE planning and implementation adopt a strong cross-cultural lens that is rich in principles of equity, diversity, and inclusion. See Appendix G for guidelines on how to assess the local context or environment and see Appendix D for *A Framework for Meaningful Engagement of Local Communities.* Beyond the strategy of a framework lies the tactical aspects or processes as outlined in Appendix C. FCM/RAC's Guidelines for New Development in Proximity to Rail Operations recommends collaborative approaches through mandatory requirements for provincial authorities when it comes to early consultations between railways, landowners, and municipalities in advance of projects. From a municipal perspective, the guidelines place a higher priority on information-sharing and both informal and formal working relationships that result from consultation protocols and procedures (Federation of Canadian Municipalities, 2013).

The integrative nature of sustainability, however, seems to require corporate processes that are well-ingrained and coordinated to promote cohesive responses and focused direction towards goal attainment. As depicted, SE can be a galvanizing concept with corporations, as it acts as a thread through

various divisions and procedures. The idea of principles that permeate the organizational culture greatly impact the execution of SE within projects and its follow-through to quality disclosure.

Figure 12

Organizational Integration of Stakeholder Engagement



Source: AA 1000 Stakeholder Engagement Standard (2015, p.8).

Figure 12 demonstrates the centrality and unifying aspects of SE for business; however, NACI did not present an integrated approach or strategy on SE with respect to sustainability. This was consistently evident across multiple data sources: practitioner feedback (employees and consultants during research background stage), Refinitiv data, Sustainalytics data, and this study's findings from the sustainability reports. In contrast, DB (from Germany), as a good practice example, has a sustainability competence centre with representation from all relevant departments. There, they manage and discuss topics and inter-divisional sustainability projects impacting multiple business units. A key input of the centre is not only its establishment of DB's sustainability obligations, but it fulfills an advisory role to DB companies on how to comply with international standards. Importantly, it is not a communications department or public affairs department, but rather *manages the dialogue with stakeholders.* DB has, therefore, devised a Stakeholder Charter, as has NR (UK), which has a Sustainability Development Strategy and Stakeholder Relations Code of Practice. The role of these documents is to provide an important and consistent thread in various levels of operations and to support the integration of sustainability throughout the firm.

A disconnect exists between NACI disclosure reports and what is either found in the media, in industry reports, or what is expected by reporting standards. Together, these inconsistences suggest that NACI do not take—and therefore are not benefitting from—opportunities to build genuine social capital with local communities. Instead, they are likely relying on substitution mechanisms that involve various communications tactics as part of their strategy. Moreover, NACI do not appear to leverage the relationship-building opportunities through transparent and clear reports.

While reviewing and analyzing the data, the findings for question two that became readily apparent were significantly dwarfed by that of question one. It was indeed quite perplexing, and it consumed my thoughts on how to bring about balance across this study. In the end, however, the way to resolve this discrepancy was simply to acknowledge that this disparity of findings is reflective of and accurately represents the reality of the NACI-LC relationship. That is, there is a great deal of information disclosed to stakeholders, but it is not necessarily of the type that speaks to issues of greatest relevance to local communities. Therefore, as a means of engagement, the reports generally are falling short because of the lack of transparency, non-adherence to guidelines, and other reasons already mentioned. As a potential approach to establishing and/or deepening their relationships with LC, NACI, in using their sustainability reports to engage stakeholders, do not define the term “stakeholders,” thereby making it challenging to determine parameters of responsibility and engagement. Refer to Appendix B for the context of the data shown below. A score of “0” means that the NACI did not indicate a specific role for SE within their report; “1”, SE was used to assist the NACI to determine their strategic objectives; “2”, SE supported the determination of report content.

All but one NACI (i.e., NS) had a section in their 2018 report that was dedicated to stakeholders, as shown in the excerpt on page 183. In their reports, two-thirds of NACI made it clear that stakeholders were important in helping them to define the contents of their reports (as shown in the chart below).

Stakeholder Engagement 2018	CN	CP	KS	NS	UP	BNSF
Dedicated SE section (0-no, 1-yes)	1	1	1	0	1	1

In all companies an opportunity for feedback was also provided. However, this engagement was short-lived, as there was no involvement in decision-making beyond the reporting process.

Excerpt from Appendix B

Stakeholder Engagement 2018	CN	CP	KS	NS	UP	BNSF
Objectives of SE (0, 1-strategic objectives, 2-define report content)	2	2	2	0	1	2

Only CP, as determined by this research, has a type of advisory council that supports LC efforts in responding to report content. Typically, NACI shared that their approach (5 of 6 NACI companies, as shown below) to SE was related to sustainability and this was done in accordance with GRI guidelines.

As will be pointed out in the subsequent section, sustainability governance has been heightened—as has board governance; however, when it came to internal report assurance and/or stakeholder panels, one-third of the NACI had nothing in place that was reported, and only one (i.e., CP) had both internal assurance as well as either a stakeholder panel or advisory committee.

Similarly, none of the NACI has a set of guidelines or plan that addresses its engagement with the LC, and only one, Kansas City Southern, had a Community Advisory Council that provides ongoing input to the company (Refer to Appendix A). CN's recently established Community Board is currently charged with "supporting local grassroots organizations with smaller grant funding requests" (i.e., philanthropic aid) (CN June 26, 2018).

As a driving incentive, however, the reports, as a product of stakeholder engagement and the materiality process, provide some degree of legitimacy for the NACI, who, through their engagement processes, can—with validation—indicate they have connected with the various communities. The quality of these relationships as reflected by the nature of the engagement with LCs—and through the examination of the work being accomplished by Network Rail (NR) of the United Kingdom (UK)—will shed some light on potential direction for consideration by the NACI. The NACI-LC relationship, as evidenced by stakeholder engagement practices, is the next issue to be addressed in this study.

To appreciate the NACI-LC relationship, the endogenous nature of sustainability disclosures and sustainability performance should be kept in mind (Mahmoudian, Lu, Nazari & Herremans, 2020). SE information under analysis was obtained from company disclosures in the form of sustainability reports (other means included personal communication, news articles and publicly available reports). Within the resources used for this research, direct independent interviews from the LCs were not undertaken. As such, the nature of the NACI-LC relationship is gleaned through understanding content characteristics of disclosure and its respective quality, as described in answering question one. As indicated in the review of literature, and as a theme within report disclosure, the stakeholder engagement of LCs approach is consistent across NACI. This supports the institutionalized view within the industry. However, some hallmarks of their approach to social sustainability are deficient in many of the features promoted by common guidelines (e.g., ISO 26 000; Figure 4, page 76; and OECD Stakeholder Engagement). SE, as carried out by NACI, has not been the implementation of a published plan or strategy. As such, there were no industry benchmarks against which to compare performance.

Overview

As previously indicated, the bulk of disclosure related to LCs involved safety-related training for responding to emergencies. Periodically, the NACI would report on achievements such as the number of communities, police agencies and village boards that signed resolutions in support of programs such as Rail Safety Week; however, *specific targets or goals for social sustainability, by which subsequent performance could be readily measured,* were absent across the industry. This omission could be indicative of either a lack of a clear path forward or a gap between strategic plan and transparent disclosure. Another possibility is the variability or insufficient resource allocation to sustainability-oriented activities already deemed material by stakeholders (e.g., the materiality assessments) and specific to social sustainability by the NACI. At the same time, much of the community-based reporting from year-to-year was repetitive, without adding new substantive insights. It was commonplace for railways to indicate what their

cumulative 10-year spending for supporting a region was without stating what their most recent progress was for the reporting period. This technique eliminates the possibility of comparability, the development of realistic expectations by stakeholders, or the ability to anticipate what performance could be targeted for the upcoming reporting period. Biennial reporting on social sustainability may prove to be a more practical approach (as opposed to annual) given the currently allocated resources and the better quality of reporting scores on social sustainability. This supposition would warrant future research.

NACI frequently described their relationships with LC in financial terms—such as the community investments and donations made, as well as taxes paid. This preoccupation among the NACI with philanthropic aid and an overemphasis in their reports, which seem to depict community events as publicity stunts, do an injustice to the potential of the NACI-LC relationship.

In many sustainability reports, the respective beneficiary community organizations of a railway are consistent from one year to the next. The sections of the report that pertain to these contributions have been largely repetitive, without verifiable information.

To establish a framework of what reasonable SE could be, I reviewed several frameworks (ISO 26000, and IFC's Stakeholder Engagement, as well as one exemplar for the mining and extractive sector, ArcelorMittal). The Stakeholder Engagement Framework, Table 21, page 185, provides the concept. It outlines a type of logic model for SE wherein alignment is made between three crucial aspects of SE: 1) the strategic priority, which is meant to guide the overall approach, tactics and the means by which the outcomes are measured; 2) the policy/role that supports the operationalization of the interventions; and 3) the techniques that must be decided on, planned and implemented in a structured and respectful manner by highly-trained personnel who understand and appreciate the culture, language and nuances of the LC.

Table 21

Stakeholder Engagement Framework

Stakeholder Engagement	Strategic priority	Policy/Role	Techniques
Stakeholder relations (value driver)	Integrating sustainability into the business	Maintenance of (social) license to operate	Ability to have a confidential grievance process at (project) site level
	Stakeholder involvement informs strategic framework for materiality;	SD outcomes mapped against the UN SDGs	Developing the trust and support of governments and communities who live near our operations.
	In-depth analysis used for sustainable development outcomes that provides framework for SE and reporting at corporate segment and site level		
	Stakeholder expectations assessed against framework as an ongoing materiality process of business which directly feeds strategic decision-making	Companies play an active part in their local neighbourhoods. – to see them not just as physical locations; --operate as part of the communities -- strengthen them over time; --beyond giving money to community projects --understanding the broader context and needs of each community; -- supporting and strengthening the local economy, and protecting the natural assets that people depend on, now and in the future.	
Outputs/outcomes	Infrastructure and/or community listed as a sustainable development outcome	If trusted by our local communities, we can work as true partners with local stakeholders. We can co-develop initiatives and solutions for the good of each community. -we will be able to run successful, responsive, and efficient operations, and protect and enhance our reputation wherever we are in the world.	Total community spend; tax contribution; awards from stakeholders; Level of scrutiny by stakeholder and circular economy/resource system
Disclosure requirements	IIRC; GRI; Directive 2014/95/EU lays down the requirement for disclosure of non-financial and diversity information by large companies.		Links report to website
			Recognition of localized reporting needs; differentiation by territory and what is material to stakeholders. Most of these used the GRI G4 guidelines in 2018; concision
	Stakeholders' expectations: local communities have higher expectations of the role companies should play—the media, governments, NGOs, and wider society all expect companies to behave as responsible corporate citizens, and to contribute positively to social and economic development. Not only this, but the health of communities is	The outcome we need: We want our communities to have confidence that we will anticipate and **address the impacts railways have on the local community** and environment, to see them as partners in their socio-economic development, and to **trust** them to have an **open dialogue** whenever challenges arise.	

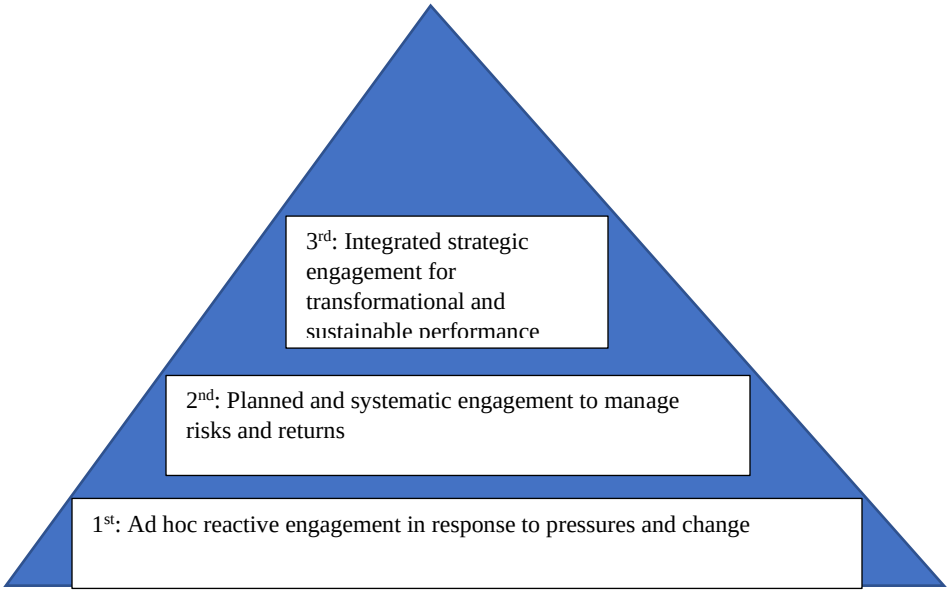
	increasingly linked to the level of emissions from transport, heating, and industry. The UN's Sustainable Development Goals (SDG's) have helped to crystallize an understanding among all stakeholder that good health and wellbeing (SDG #3) are inextricably linked to responsible production and consumption (SDG #12). The rise of social media has also given community stakeholders a more widespread voice, making the means of engagement more diverse and complex.		

Source: Developed by author based on various frameworks: International Finance Corporation, ArcelorMittal, and ISO 26 000

Additionally, it is helpful to keep in mind exactly at what developmental stage of SE each NACI might be at the time of reporting. For example, consider the following:

Figure 13

Developmental Stages of Stakeholder Engagement



Source: AA 1000 Stakeholder Engagement Standards (2015)
Figure 13 depicts the progressive stages of stakeholder engagement.

As an organization advances in stages, SE is increasingly used as a proactive strategy rather than reactive, and those with a right to be heard are heard. Stakeholder understanding promotes a smoother operating environment, and innovation is sparked from external to the organization. Based on current

performance across all NACI, and as demonstrated by the evidence herein presented, the industry, as it pertains to LCs, performs between Stages 1 and 2. The average scores for 2018, based on this study's SE checklist (Table 18, page 136, with maximum score of 29), was 12.4—slightly better than the 2015 score.

My findings presented herein are limited to information I found in the CSR reports, integrated reports, annual reports, and other company documents. I will discuss these in turn, beginning with the approaches, techniques, and outcomes for the local communities.

The following sections on engagement with LCs are presented either because the NACI practices are adequate, or they are lacking but present an identifiable and achievable challenge in meeting the requirements of the guidelines and standards.

To gain an understanding of the stakeholder engagement approach, firstly I examined both the disclosures of the NACI on SE (e.g., their general statements) and reviewed separately reported elements of their behaviours (how this compared with specific approaches and techniques). Secondly, in discussing SE in the context of research question two, there is *a lack of congruency* between the generally accepted guidelines for SE (e.g., OECD, AA1000 etc.) and NACI performance. This segment first addresses SE from the perspective of the NACI disclosures and then incorporates other evidence used to provide a more comprehensive view.

Materiality

The processes to determine materiality constitute important aspects of stakeholder engagement but are also considered as a key characteristic of report content when disclosing. NACI materiality topics are described in Table 15 (page 132); however, their nomenclature is different across the industry, which perceives quite different issues as worthy of inclusion as demonstrated by the collective list of 44 topics. NACI selected between 5 and 30 material or issues of relevance. Additionally, NACI have not been regularly performing formal comprehensive materiality assessments that could also directly inform a sustainability strategy (if one exists). CSX, for example, outlined their processes, resulting matrix, and

indicated its relevance to reporting; however, they no longer publish comprehensive CSR reports (only data supplemental reports) since 2016. One interesting finding was the discordance between the fairly high level of importance of local communities for business strategy compared to the degree of importance as assessed by the stakeholders. In other instances, some NACI were very unclear about their material topics, such as Norfolk, while others, such as Kansas City, simply developed a list of material topics and then requested feedback. Union Pacific did not detail material topics but provided a well-organized reporting structure. Stakeholders consulted for the purpose of reporting have frequently been specialists in environmental, social and governance activities, government representatives, suppliers, partners, investors, and customers. CP, for example, advised that their first materiality assessment occurred during the 2018 reporting period. Prior to that, resulting topics from the workshop sponsored by RAC were adopted by CP. CN, on the other hand, employed a comprehensive assessment process with a resulting matrix, which they termed a "prioritization matrix" after surveying over 205 stakeholders.

Sustainability Reports

The NACI, at times, use disclosures in the form of reports as a SE technique, but did not report on the use of engagement with LCs as a strategic management approach to exchange ideas (i.e., beyond input on materiality assessments), or to innovate and develop an understanding of crucial issues that could later be transformed into meaningful solutions. It is possible that feedback might be used in this manner, but again, it is not reported as such. Through various reporting channels (such as news articles and sustainability/CSR reports), LCs also reported feeling that solutions were pre-determined by the NACI and that the input of LCs was inconsequential.

Consulted SE guidelines (e.g., International Finance Corporation, ISO 26 000, Organisation for Economic Cooperation and Development, and International Association of Public Participation) unequivocally recommended LCs be engaged as early as possible in the project planning stages. They also stated that the intent of the interaction (and how information gleaned will be treated) be openly shared.

Additionally, the guidelines used (e.g., AA 1000 and Global Reporting Initiative Standards) recommend that it be made clear to LCs whether they will have an opportunity to review recommendations and provide feedback on the final report. GRI standardizes stakeholder inclusivity as a key determining feature of report quality.

As previously indicated, ambiguity exists between what is reported (in LC-targeted reports) and the engagement that occurs as part of the NACI-LC relationship. For example, the interface between an LC and NACI, other than through information technology, is oftentimes a formal process (e.g., advance notice is given, background information might be shared, participants may or may not be required to register, and a consultant or company representative facilitates the process according to an agenda, perhaps with approved talking points by legal counsel). The event provides an opportunity for the NACI to report to the community on planning, status of assessment, and pertinent findings regarding the way forward, and provides an opportunity for the two-way conversation/dialogue indicative of quality engagement.

As indicated in Chapter III Methodology, the variables selected from Sustainalytics that rest along the social sustainability dimension and linked to the experiences of LCs were analyzed. The following table provided the basis for analysis of the Sustainalytics data collected on six NACI (no data was available for BNSF) and across 21 variables. This data (found in Appendix C) was used to develop the stacked graphs (Figures 14 to 23, page 196 onward), which provide some understanding of the status of social sustainability and engagement of the LCs by NACI. It is noted that in eight of the categories (variables with grey cells) there is no data for NACI. These variables, along with their rationale for inclusion, follow:

Table 22

Disclosure on Select Sustainalytics Variables: An Indication of Social Sustainability

Reported Variable	**Rationale**	**Series # on Sustainalytics Stacked Graphs (Fig.12 to 17)**	**Series # on Social sustainability radar graphs—select 13 variables 2014, 2016 (Fig.22 to 33) & Cisco (34-35)**
a. Participation in carbon disclosure project	Used as an anchor for the environmental	1	1
b. Programmes and targets to increase renewable energy use	Future and intergenerational requirements	2	2
c. Guidelines and reporting on closure and rehabilitation of sites	Relates to remediation sites and environmental management systems; pollution and other negative impacts to LCs; intergenerational, commitment to life-cycle assessment and mitigation	3	
d. Sustainability related products and services	Balance of three dimensions of sustainability and intergenerational	4	3
e. Products to improve sustainability of transport vehicles	General commitment promoting sustainable transport; emissions impacting LCs, intergenerational	5	
f. Use of Life-cycle analysis for new real estate projects	Relates to principles of proactive environmental management and infrastructure permitting	6	
g. Signatory to UN Global Compact	Commitment to set of 10 principles aligned with sustainable development	7 (Cisco #4 + renumber)	
h. Business ethics related controversies or incidents	Governance decisions on sustainability that could impact LCs	8	4 (On Cisco's graph=#5 etc.)
i. Signatory to UN principles for responsible investment	Commitment to allocation of resources for principle-based socially responsible activities.	9	
j. CSR reporting quality	Direct rating on quality of reporting	10	5
k. External verification of CSR reporting	Commitment to principle of accountability (beyond CDP) as it relates to sustainability performance, strategy, and engagement	11	6
l. Oversight of ESG issues	Commitment to governance related to a balanced sustainability agenda	12	7
m. Executive compensation tied to ESG performance	Demonstration that sustainability is reinforced through incentive-based approaches within the organizational structure	13	8
n. Board diversity	A factor linked to quality sustainability performance through audit committee and internal mechanisms	14	9
o. Quality of Social Supply Chain Standards		15	10
p. Society & community-related controversies or incidents	Determination of negative impacts	16	11
q. Community engagement programmes	Indication of SE and maturity	17	
r. Policy on Indigenous people and land rights	Compliance with human rights, federal and GRI standards	18	
s. Local Community Development Programmes	Commitment to economic empowerment of local communities	19	
t. Guidelines for philanthropic activities and primary area of support	Organizational commitment to supporting communities	20	12
u. Corporate foundation	Level of commitment to social giving	21	13

It should be noted that the eight categories represented by grey cells in the above Table 22 represent variables with either no data or ratings of "0" consistent across all NACI. These variables are not

only relevant to SE but have specific importance to the local communities that are proximal to the rail networks. Many of these variables identified by Sustainalytics are incongruent with the current performance/perceived importance by NACI and their reporting based on terms of guidelines and policy associated with site remediation. This is meaningful for its impact on LCs. For example, Series 3, *Guidelines and reporting on closure and rehabilitation sites,* is data not collected from NACI and reported by Sustainalytics but is important to the industry and LCs. Similarly, Series 6, *Use of Life-cycle analysis for new real estate projects, is also not reported.* Site remediation (Series 3) is a highly significant topic to NACI, as evidenced by the attention given at industry-sponsored events such as RREC.

Sustainability Ratings (2009-2018)

The ratings on 21 variables (assessed as important to social sustainability) related to NACI for 2009-2018, and as reported by Sustainalytics, were synthesized (BNSF had no data with the rating agencies reviewed). Also, of the 21 variables, no more than 13 had clear and/or consistent entries. Algonquin, a non-railway enterprise (total score of 11 out of 21), and Kansas (total score of 8 out of 21), were the only two companies with escalating scores at 2018 (refer to page 197, 199). All others are experiencing a downward slope in their total sustainability scores (selected for their impact on LCs) from about 2015 onward[69] (some experience a plateauing effect first) for all NACI—and the additional companies from several different industries that were high performers on the Corporate Knights Index. Cisco, however, demonstrates the greatest diversity in the composition of their scores, the highest score attained, the most consistent in score maintenance over 10 years, and the lowest drop in their total score despite a downward trend which was common to all NACI except KS.

[69] Hatch (2018) indicated that 2015 marked a significant "fork in the road" for NACI when coal, the highest revenue generating commodity (accounting for 15%) plummeted and rail recovery had still not reached the volumes of 2006-2007. This marked the end of a "Super Cycle" with impacts to silver and steel. Hatch also noted an increasing interdependency between freight and passenger and issues around funding and infrastructure spending. In citing AAR Freight Commodity Statistics, it was also demonstrated that there was decline since 2014 in rail units originated among the NACI.

The following, Table 23, represents the 21 (reduced to 13 with data) variables on subsequent stacked graphs.

Table 23

Select Variables/Series Key (Sustainalytics' Social Sustainability Variables)

1.Participation in carbon disclosure project	11.External verification of CSR reporting
2.Programmes and targets to increase renewable energy use	12.Oversight of ESG issues
3.Guidelines and reporting on closure and rehabilitation of sites	13.Executive compensation tied to ESG performance
4.Sustainability related products and services	14.Board diversity
5.Products to improve sustainability of transport vehicles	15.Quality of Social Supply Chain Standards
6.Use of Life-cycle analysis for new real estate projects	16.Society & community-related controversies or incidents
7.Signatory to UN Global Compact	17.Community engagement programmes
8.Business ethics related controversies or incidents	18.Policy on Indigenous people and land rights
9.Signatory to UN principles for responsible investment	19.Local Community Development Programmes
10.CSR reporting quality	20.Guidelines for philanthropic activities and primary area of support
	21. Corporate Foundation

The stacked graphs (Figures 14-19 on pages 194-196) demonstrate the composition of the total sustainability scores for six NACI (BNSF was not available). As noted, not all 21 variables are represented, but only 13; however, Series/Variables 3, 5, 6, 7, 9, 17, 18, 19 contain no data. Here, we see several discrepancies in disclosure that NACI could consider addressing. Take, for example, Series 18, for which no data exists for all NACI (throughout 2009 to 2018) on *Policy on Indigenous People and Land Rights*. *Indigenous People and Land Rights* was a material topic for only two of the NACI—CN and CP (Table 15, page 132). The manner of disclosure is incongruent when also considering both railways follow the GRI guidelines, which requires disclosure of a management approach (GRI 103 Management Approach), and has a requirement under Sec. GRI-411-1 for topic-specific disclosures on incidents of violations involving rights of Indigenous peoples. Of note are the reporting recommendations of 2.1.1 relating to, "workers performing the organization's activities; and 2.1.2 communities likely to be impacted by existing or planned activities of the organization." (GRI Standards, 2018).

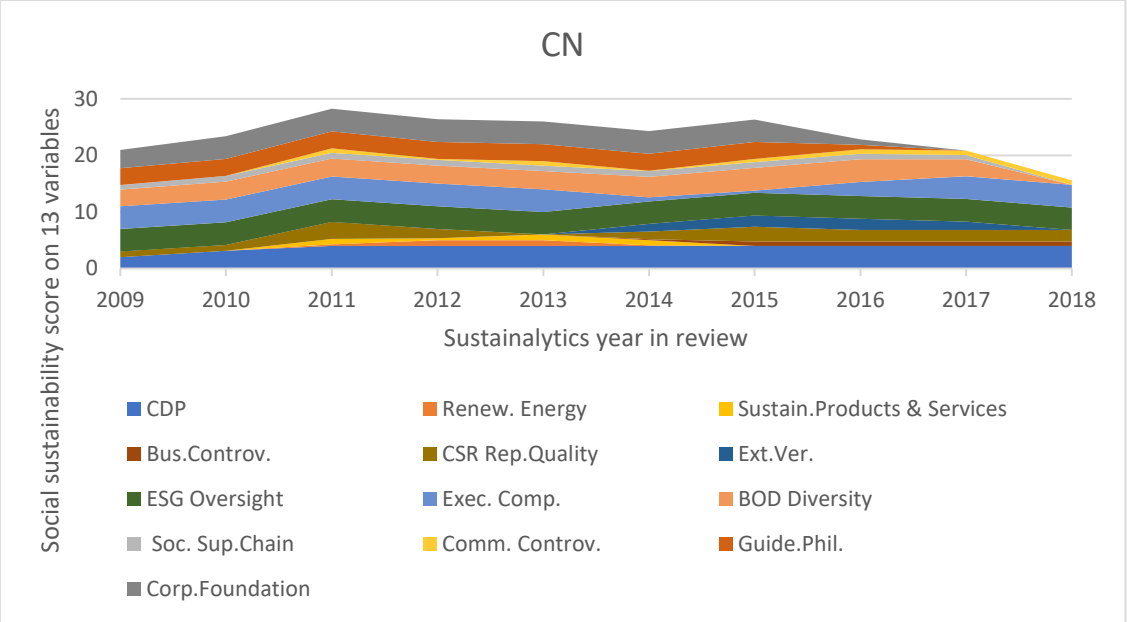
A comparison between NACI and North American companies from different industries and best practice companies highly rated on the Corporate Knights Index (Global 100 most sustainable

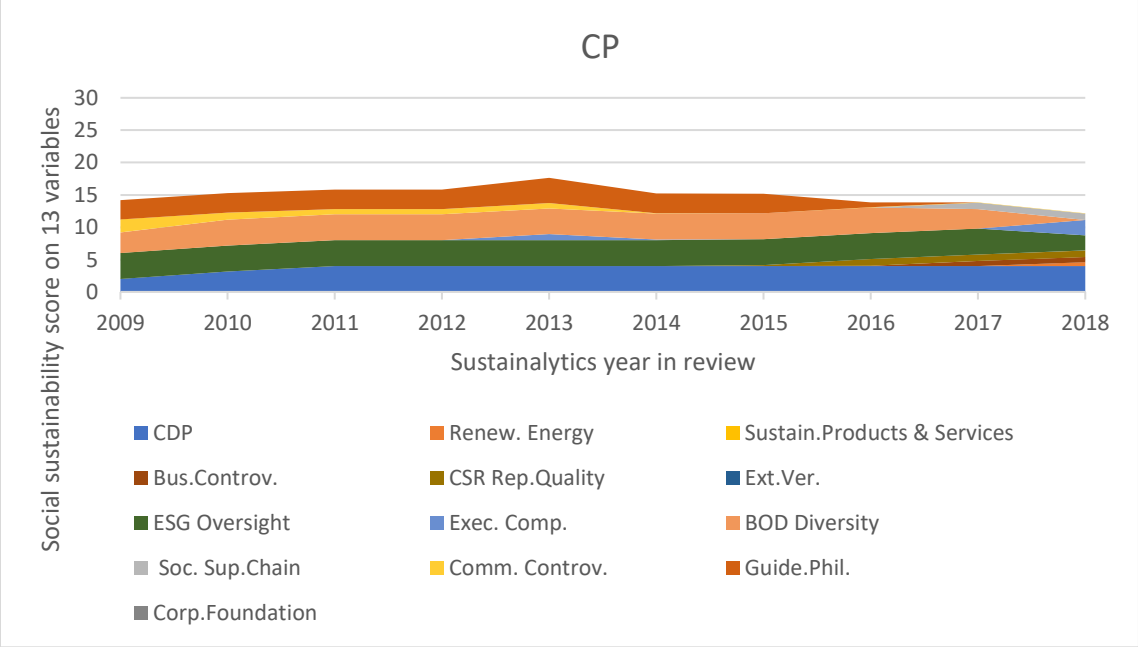
corporations) was conducted. The Corporate Knights Global 100 index, with results from corporate sustainability analysis, is considered globally to be the gold standard using indicators of environmental, social, financial, innovation capacity and the sustainability value of a company's products. The four comparators were all US or Canadian corporations from different industries. The following corporations, their overall ranking, and the rating of their sustainability performance on which their ranking of the world's top 100 sustainability performers: Algonquin Power and Utilities Corp., electrical utilities (#10, 80.89%); Cisco, communications equipment (#4, 83.59%); Bombardier, aerospace, and defense manufacturing (#44, 69.20%); and Prologis, real estate investment trusts (#26, 75.07%). Comparisons with the three Eurasian railway companies, Deutsche Bahn, Network Rail and MTR, could not be conducted, as data are not collected on state-owned enterprises (i.e., not publicly traded). The following represent graphical representations (Spreadsheet containing relevant data for 2009-2018 of six NACI is found in Appendix C, page 283 of the NACI sustainability disclosures along 21 Sustainalytics variables).

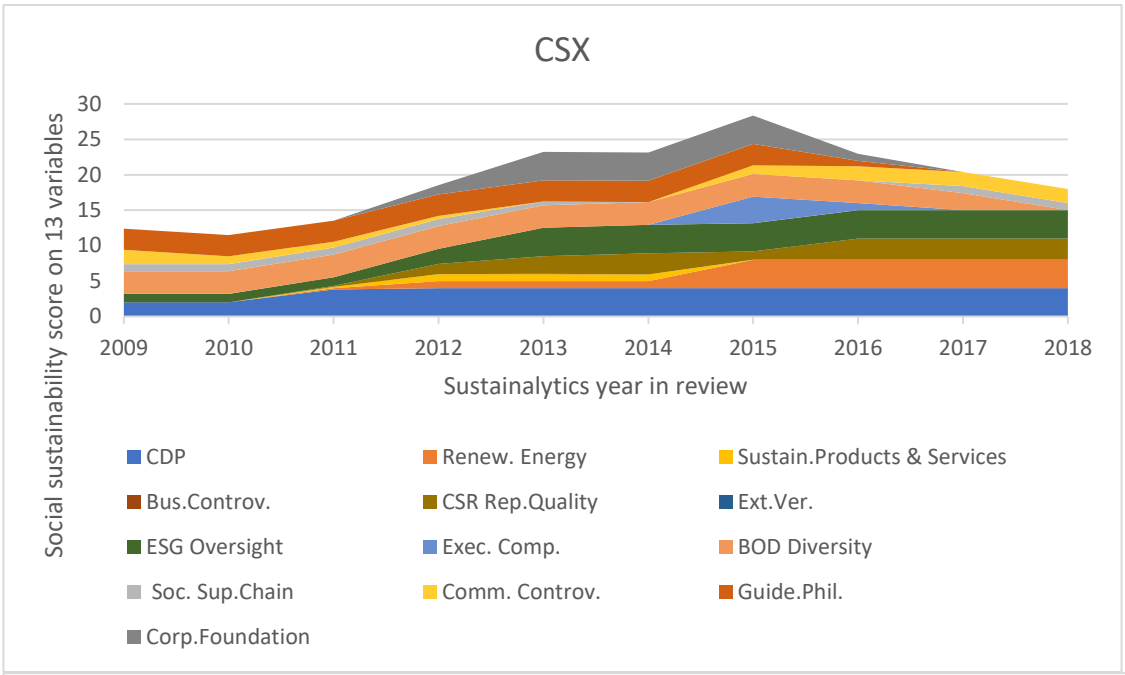
The following Figures 14-23 represent the cumulative scores on Sustainalytics variables linked to the social dimension for NACI 2009-2018 with a total maximum score of 52 across 13 variables.

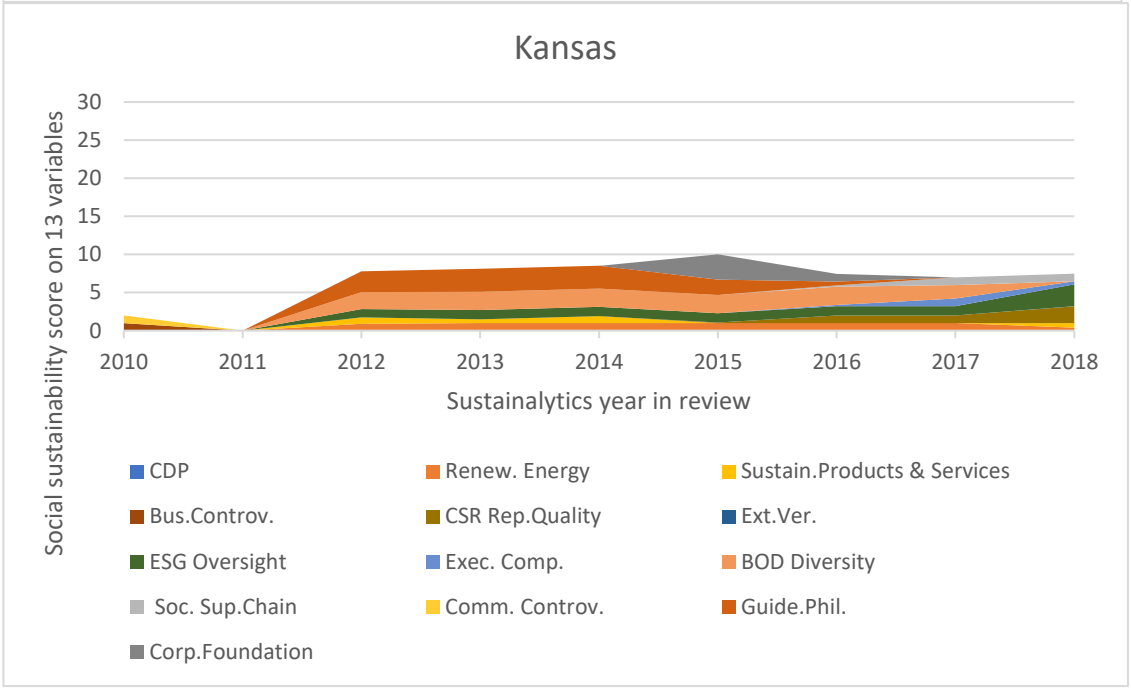
Figures 14-23

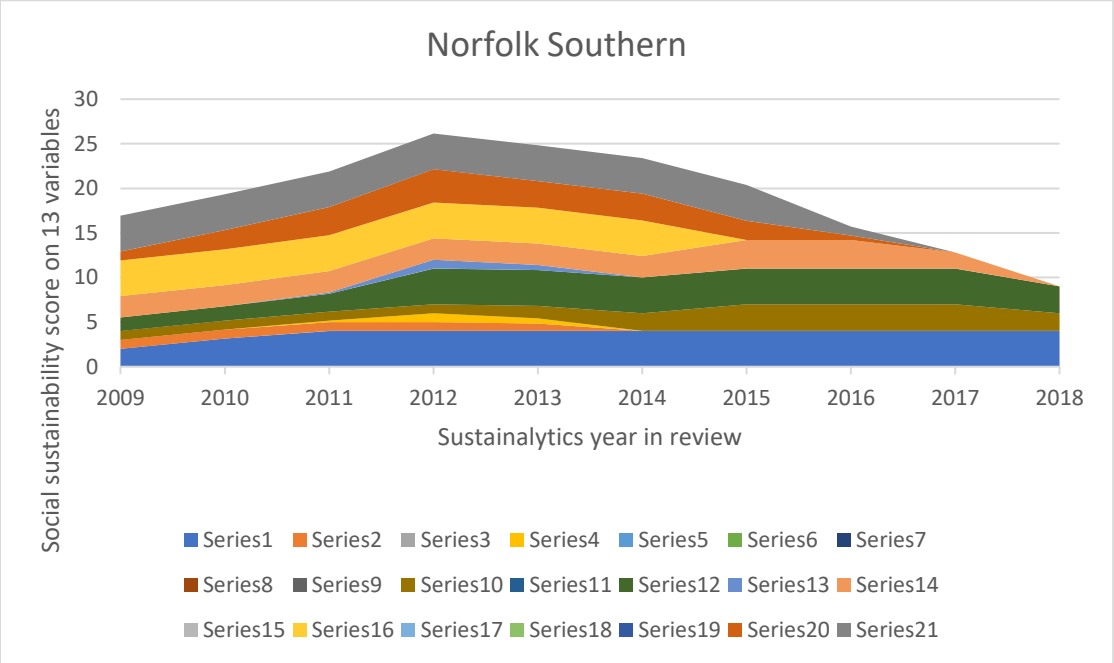
Cumulative Sustainalytics Scores on 13 Key Sustainability Variables (2009-2018)






CSX
Social sustainability score on 13 variables
30
25
20
15
10
5
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Sustainalytics year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Kansas
Social sustainability score on 13 variables
30
25
20
15
10
5
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
Sustainalytics year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Norfolk Southern
Social sustainability score on 13 variables
30
25
20
15
10
5
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Sustainalytics year in review
Series1
Series2
Series3
Series4
Series5
Series6
Series7
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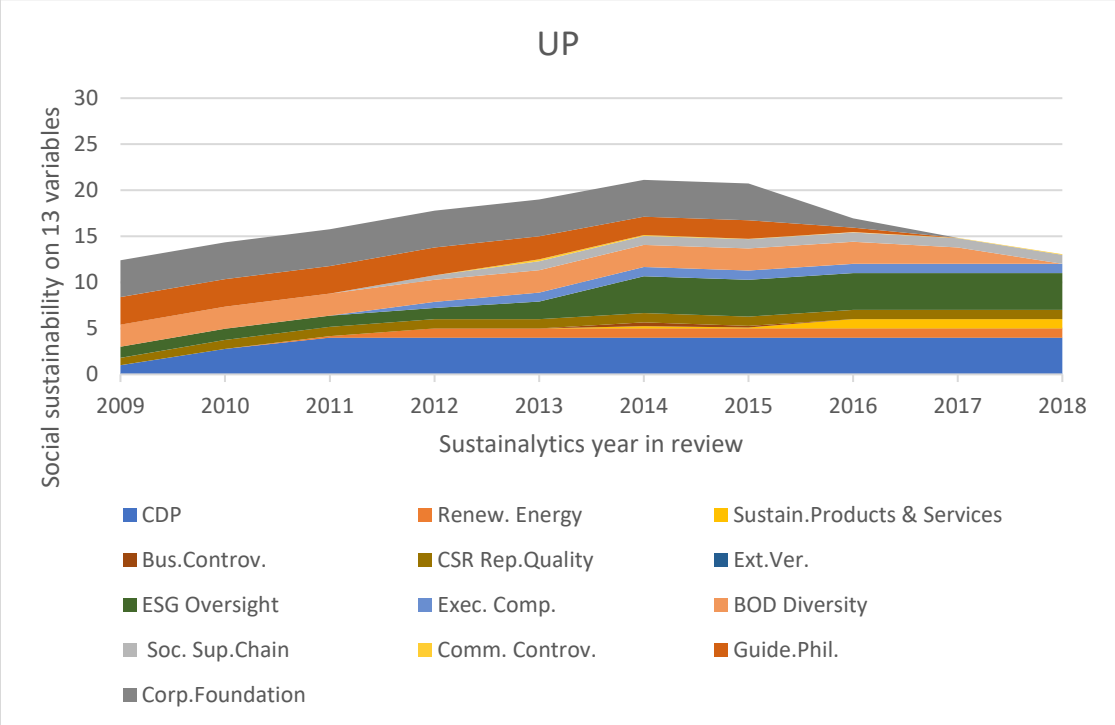
Series12
Series13
Series14
Series15
Series16
Series17
Series18
Series19
Series20
Series21


UP
Social sustainability on 13 variables
30
25
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2009
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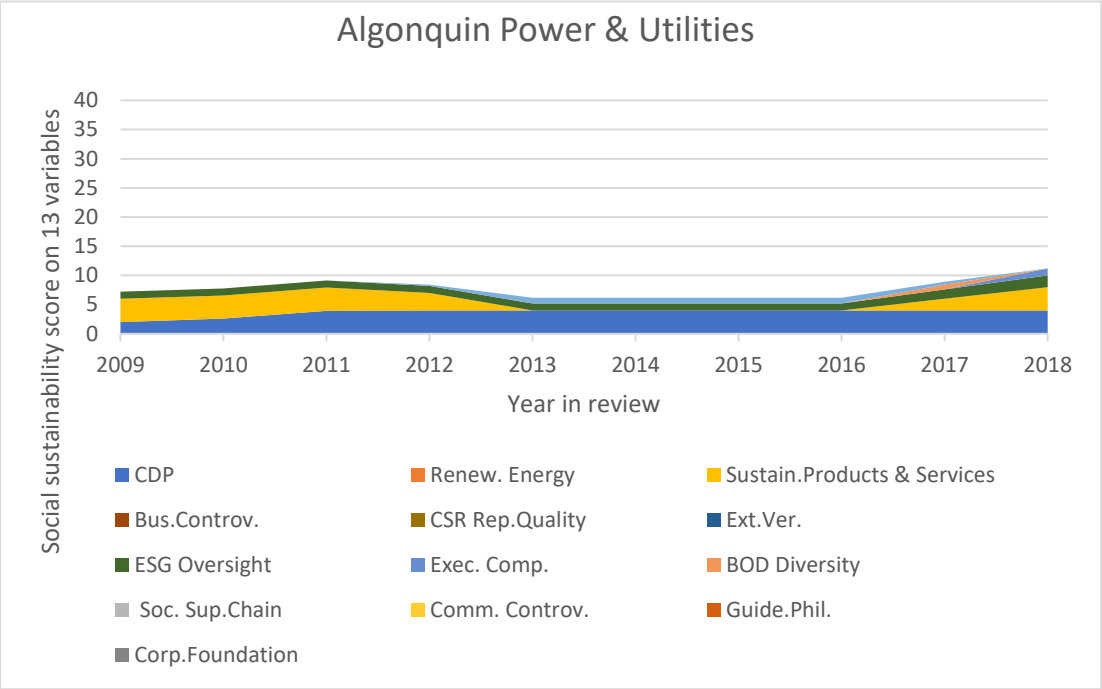
2017
2018
Sustainalytics year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Algonquin Power & Utilities
Social sustainability score on 13 variables
40
35
30
25
20
15
10
5
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2009
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2011
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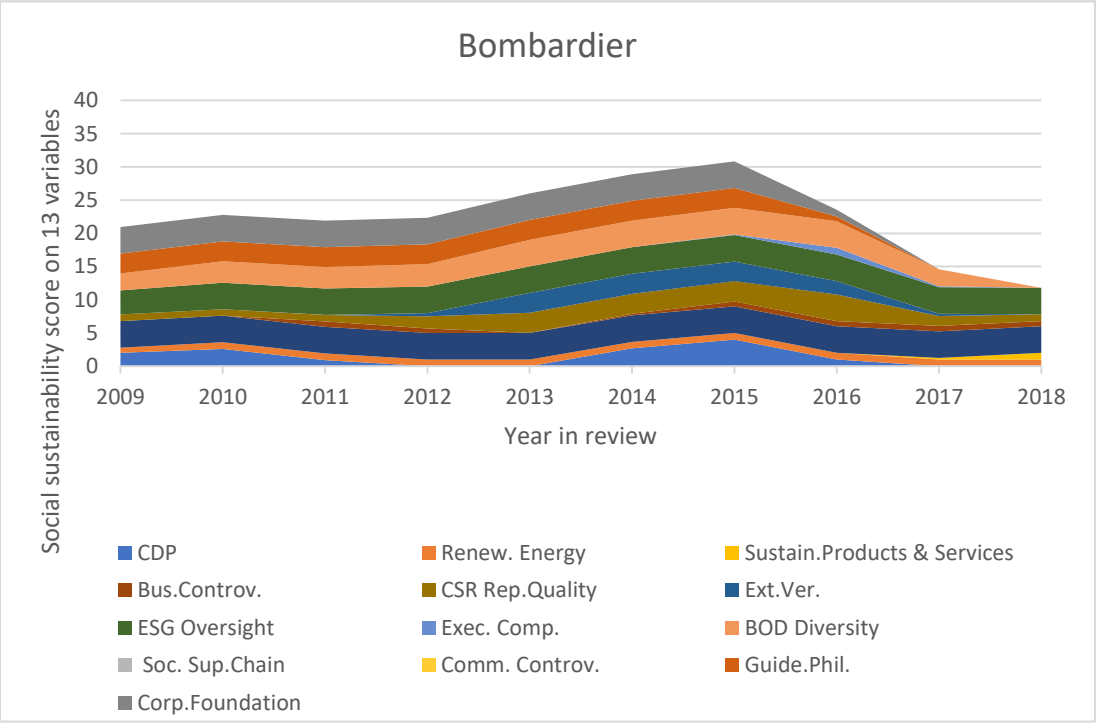
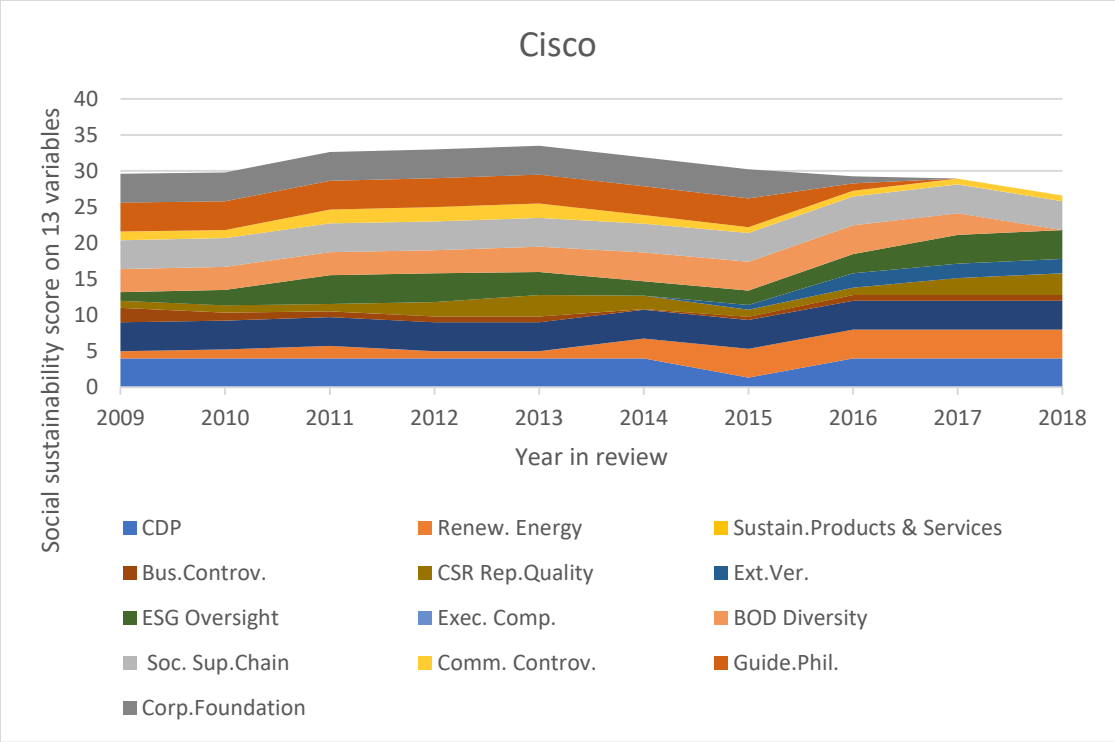
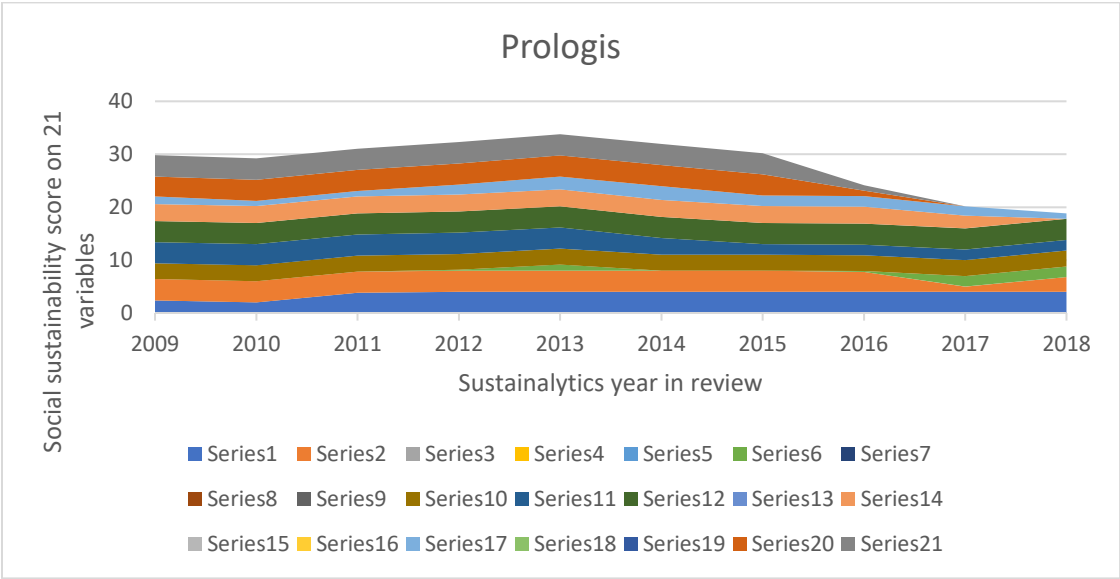
2013
2014
2015
2016
2017
2018
Year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Bombardier
Social sustainability score on 13 variables
40
35
30
25
20
15
10
5
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Cisco
Social sustainability score on 13 variables
40
35
30
25
20
15
10
5
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year in review
CDP
Renew. Energy
Sustain.Products & Services
Bus.Controv.
CSR Rep.Quality
Ext.Ver.
ESG Oversight
Exec. Comp.
BOD Diversity
Soc. Sup.Chain
Comm. Controv.
Guide.Phil.
Corp.Foundation


Prologis
Social sustainability score on 21 variables
40
30
20
10
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Sustainalytics year in review
Series1
Series2
Series3
Series4
Series5
Series6
Series7
Series8
Series9
Series10
Series11
Series12
Series13
Series14
Series15
Series16
Series17
Series18
Series19
Series20
Series21

When we examine the Sustainalytics data for 2014 and 2016 (the only year for which all NACI published sustainability reports, 2016, is also the last year with complete data from all sources respectively[70]), the following patterns emerge:

Overall, the NACI reported having significant oversight of environmental, social and governance (ESG) issues. The link between executive compensation to ESG performance and board diversity received high ratings by Sustainalytics. As previously indicated, these factors are known to be positively correlated with good sustainability performance and are mediated by greater attention to internal auditing and governance measures, education, and specific experience in sustainability roles (Dienes, Sassen & Fischer, 2016; Lu & Herremans, 2019; Pucheta-Martinez & Bel-Oms, 2018). The shifts by NACI away from philanthropic aid (ratings were significantly reduced from about 3 down to almost 0 on a scale of 0-4) between 2014 and 2016 (variable 12) CN, CP, CSX, KCS, Norfolk and UP—as determined by the Sustainalytics ratings (two years are compared)—are consistent with Refinitiv's ratings (10 years are compared). See Table 20 (page 159), which shows declining contributions as a portion of revenue. Similarly, there has been a reduction in corporate foundation commitment to giving (variable 13).

These Figures 14-19 (six NACI, pages 194-196) also corroborate the changes in orientation on variables studied thematically through CSR reports. Despite the expressed commitment to sustainability by the NACI, it appears that the variables linked to social sustainability are *very much in flux* (i.e., the variables being reported, and their scores, change according to criteria used by Sustainalytics for the associated ratings). Noted is consistency of reporting scores (Figures 20-23, pages 197-198) for any specified variable for Cisco, Bombardier, and Prologis regardless of the attributed value. Algonquin, however, appears to be an exception to this.

[70] CSX stopped publishing CSR reports and now only produces data supplement highlights.

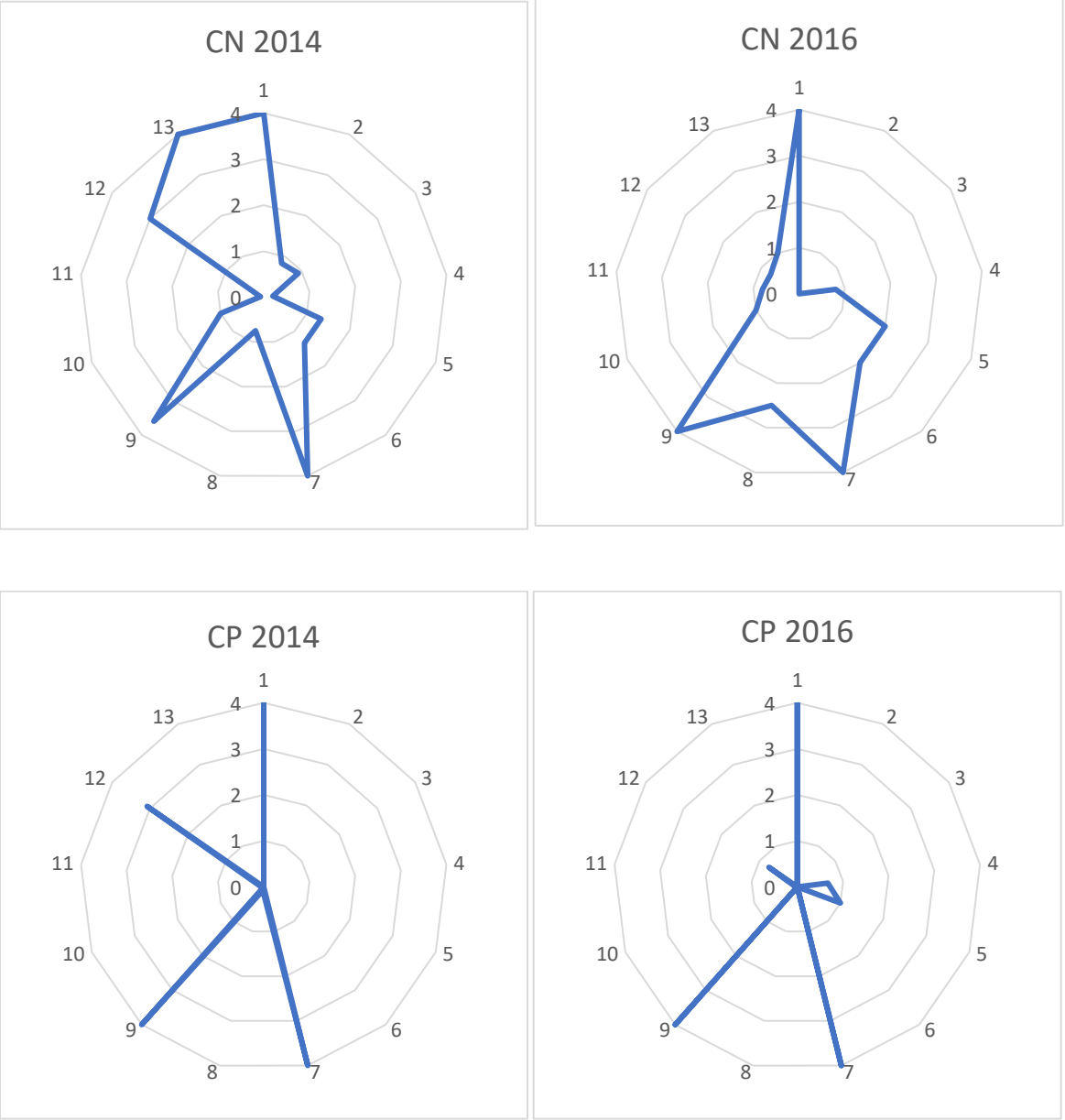
Comparison of NACI (2014 & 2016)

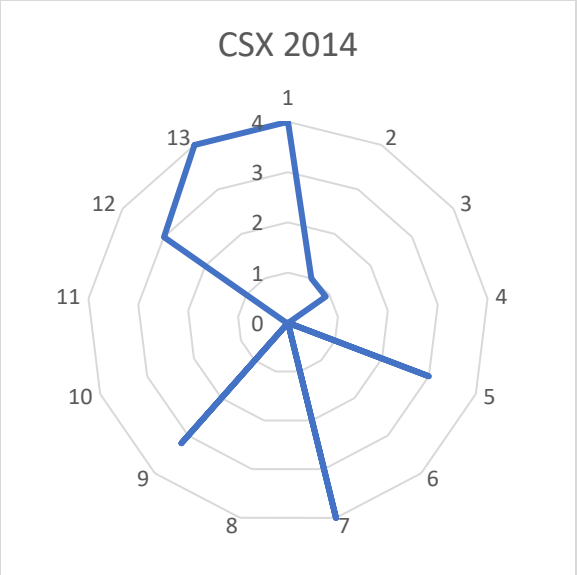
As previously indicated, only 13 of 21 variables from the Sustainalytics database chosen for analysis were reported by NACI. As compared to the best practice companies, NACI focus on governance (e.g., executive compensation and board diversity), whereas, for example, Cisco's areas of change were in Sustainalytics' areas such as "quality of sustainability reporting," "ESG oversight," and "programs and targets to increase renewable energy use." The last of these variables, renewable energy use, is completely absent in NACI sustainability disclosure. This is consistent with findings from question one, which relied on content analysis of the NACI reports. ESG oversight is common to both NACI and Cisco, for example.

I will now highlight variables where there was profound change (either increase or decrease) in their scores between 2014 and 2016. In the following starburst/radar graphs (found in Figures 24 to 37, p. 201 onward), the following findings are evident: CN has maintained its efforts in oversight of ESG and board diversity (variables 7 and 9, respectively), and this is complemented by executive compensation being tied to ESG performance (variable 8). There was considerable increase in the quality of CSR reporting (variable 5). However, resources geared to guidelines for philanthropic activities and the corporate foundation (variables 12 and 13, respectively) were reduced to negligible levels. CP's oversight and board diversity remained unchanged, but guidelines for philanthropic activities paralleled that of CN. CSX's efforts were highlighted as unique to the NACI in its attention to programmes and targets to increase renewable energy use (variable 2), a positive focus that was connected to a target to increase renewable energy blend by 10% (CSX 2016 sustainability report). There was no similar commitment by any other NACI discerned by either content analysis or other means. What was clear is the role that NACI saw itself—as only part of the supply chain for their customers that were shipping clean, green sources of energy (i.e., no involvement in its generation), contrary to some Eurasian companies. The patterns for UP and NS did not change appreciably.

Figures 24-37

Comparison of 2014 and 2016 Scores on Select Sustainalytics Social Sustainability Variables




CSX 2014
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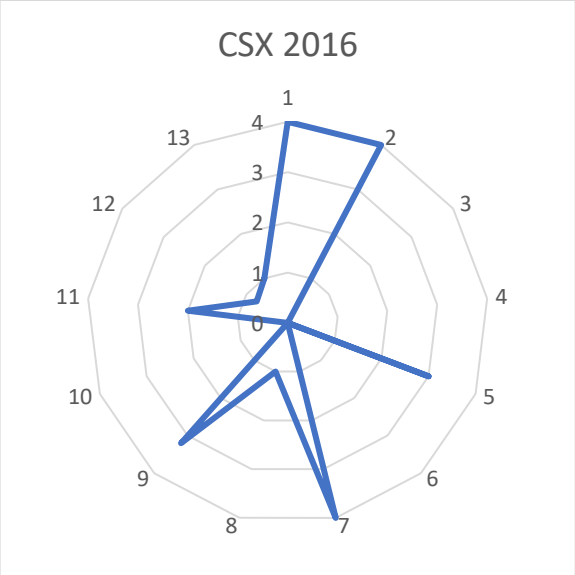
CSX 2016
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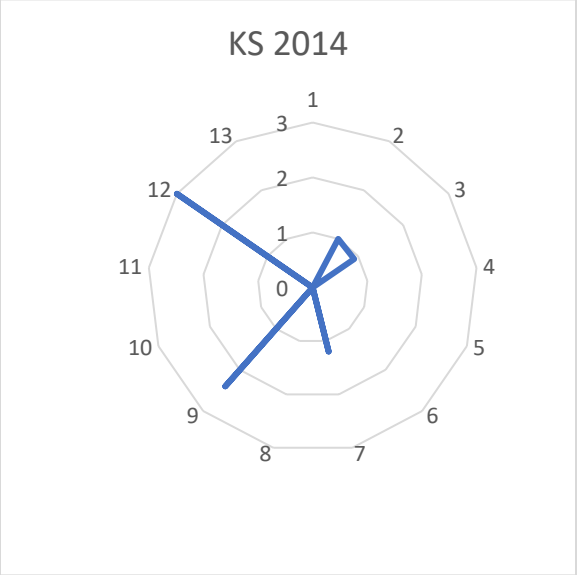
KS 2014
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13
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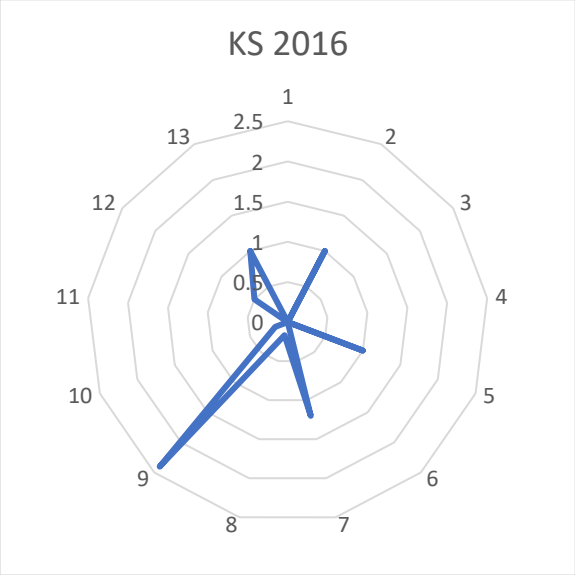
1
2
3


KS 2016
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6
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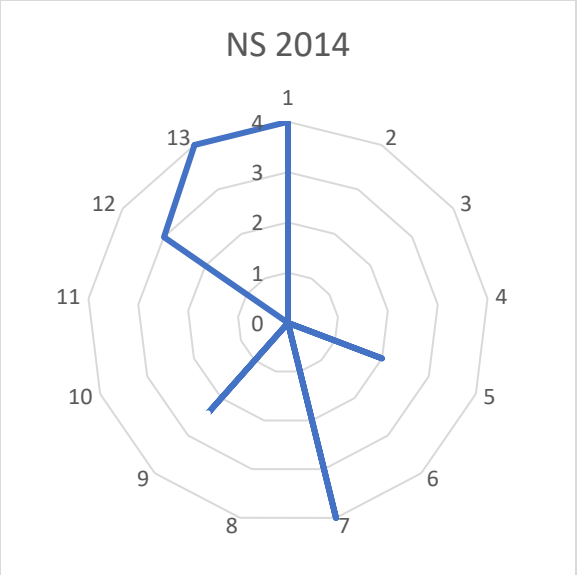
10
11
12
13
0
0.5
1
1.5
2
2.5


NS 2014
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10
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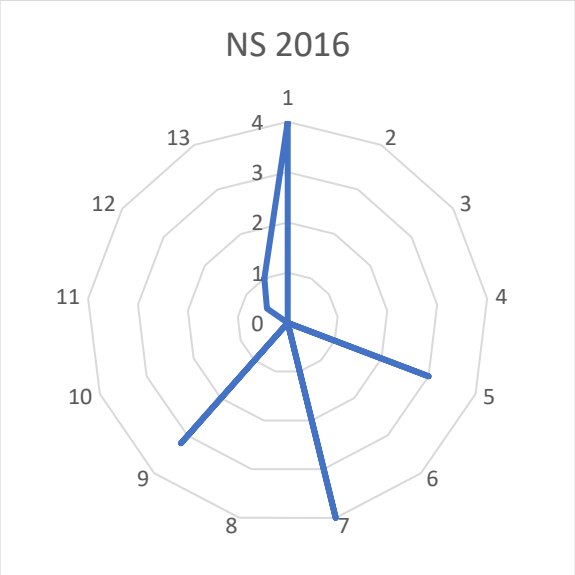
12
13
0
1
2
3
4


NS 2016
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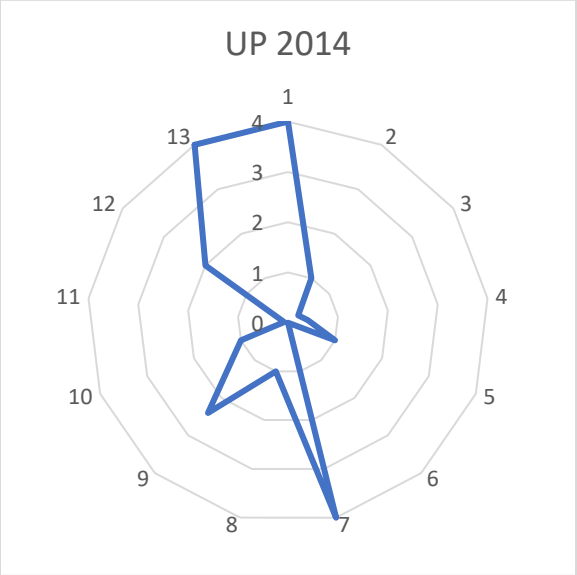
UP 2014
1
2
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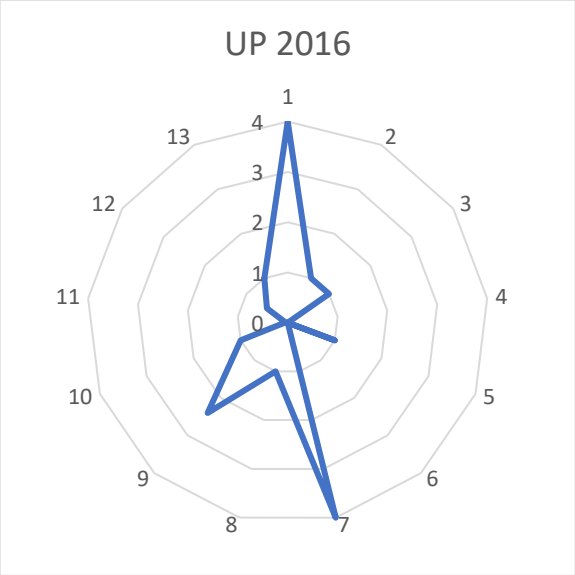
4


UP 2016
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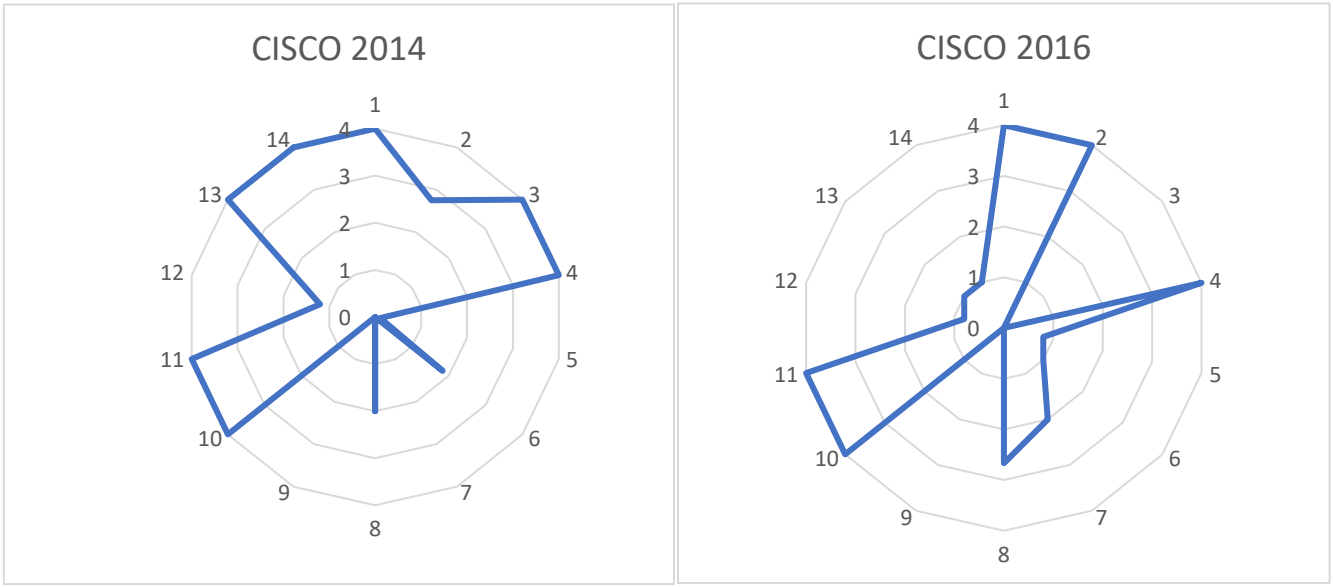
Figures 38 & 39

Cisco Ratings 2014 & 2016 (Comparator)



The NACI were similar in approach on SE, their scope and techniques used. Surveys and townhall meetings, and government and public relations outreach teams were used by two-thirds. All NACI used employee-led fundraising, acts of voluntarism, and training of first responders to connect with LCs. For example, they used ceremonial events centred around tree-planting, celebratory trains to commemorate special anniversaries, and holiday festivities. Community development included economic development that highlighted efforts with the workforce, community spaces (playgrounds, national parks systems), and safety initiatives in partnership with non-profit organizations, as well as subsidizing employees' time for volunteer programs, and donations to sports, recreation, arts, and cultural activities, with engagement approaches relying on the involvement of public affairs personnel being part of civic organizations. In its 2018 CSR report, CP acknowledges that, to provide, among other things, benefit to the communities, their agenda for sustainability rests on safety, operational excellence, and social impact.

As discerned from the published sustainability reports regarding local community engagement, Eurasian railways such as DB, a leading performer with exemplary reporting practices and used as a

comparator in this study, openly shared who they considered important stakeholders to be (employees, travelers, business customer, investors, politicians and regulators, suppliers, and media associations, and the professional public) and promoted open dialogue to effect social acceptance.

> Furthermore, they stated, "The acceptance of stakeholders is an essential prerequisite of our sustainable business success. For this reason, we are committed to holding dialogs with stakeholders as partners and working with all stakeholder groups in an atmosphere of mutual trust." (DB, Integrated Report, 2017).

Table 24

Quality and Extent of Stakeholder Engagement with Local Communities (2018)

Stakeholder Engagement 2018	CN	CP	KS	NS	UP	BNSF	DB (Germany 2014)
Dedicated SE section (0-no, 1-yes)	1	1	1	0	1	1	1
Objectives of SE (0, 1-strategic objectives, 2-define report content)	2	2	2	0	1	2	2
Definition of stakeholders	0	0	0	0	0	0	1
Oversight of ESG Issues (Q) (Director of sustainability-governance) GRI 102-20 G4-36	1	1	1	1	0	1	1
Internal report assurance and/or stakeholder panel (0, 1, 2) (advisory committees) GRI 102-32 02 21, G4-48	1	1	2	0	0	1	2
List of stakeholder groups GRI 102-40, G4-24	1	1	1	0	1	1	1
Approach to stakeholder engagement (is SE related to sustainability) GRI 102-43 G4-26	1	1	1	0	1	1	1
Defining report content and topic boundaries (do they report any clear exclusions)102-46 G4-18	1	1	1	0	1	1	1
Opportunity for feedback: Has a contact point for questions or other types of feedback regarding the report and its contents been provided? GRI 102-53 G4-31	1	1	1	1	1	1	1
External Verification of CSR Reporting (P) (External Assurance Report) GRI 102-56; G4-33	1	0	0	0	0	0	1
- Surveys	1	1	1	0	0	1	1
- President and CEO town hall meetings	0	1	1	0	1	1	1
- 24/7 Community connect online platform	0	1	0	0	1	1	1
- Employee-led fundraising or volunteerism	1	1	1	1	1	1	1
-Community Advisory Council	0	0	1	0	0	0	1
-Training first responders	1	1	1	1	1	1	0
- Active Outreach/Government relations and public relations team outreach	1	1	0	0	1	1	1
SE Frequency	0	0	1	0	1	0	1
SE Measurable Goals & Objectives	0	0	0	0	0	1	1
SE guidelines (a strategy or plan) used to guide engagement (Ex AA1000) 3.5	0	0	0	0	0	0	1
Involvement in decision-making beyond reporting process (regular assessments) 4.1	0	1	0	0	0	0	1
Total score (2018); max of 23	14	16	16	4	12	16	22
Total score (2014)	12	12	2	9	9	9	
Blue highlights are variables in common with Sustainalytics							
CSX score in 2018 was "10"; CSX did not report in 2018 and in 2016 started publishing only data supplements							

The foundation and guidelines for the dialogue, in turn, were based on a Stakeholder Charter (2019, DB Integrated Report), an exemplary practice seen in the UK system. Concepts included:

a) Commitment to alignment of understanding and continuous dialogue and transparency;
b) The importance of stakeholders in providing an assessment of important material topics;
c) Open constructive discussions that address possible conflicts between DB and stakeholders; and, conflict between different stakeholders, but that decision-making responsibility remains with DB;
d) That, where possible, consensual solutions on social responsibility will be preferred;
e) Tools and channels of exchange with stakeholders are the press/media and public relations, persona, or bilateral contact; long-term organized fair dialogue;
f) Information shared will be from the perspective of the stakeholders' relevant topics;
g) Open, trustful, and functional dialogue with all stakeholders;
h) Agreement governs the reuse of content and desired results.

Additionally, specific nature and resources conservation are delineated for biodiversity, natural habitats, and climate change goals, including measures such as the phasing out of glyphosate. DB's partnership with its federal government has a noise reduction strategy to reduce the noise impacting local communities by 50% by the end of 2020. Among its rationale is the creation of greater acceptance of climate-friendly railways so that local people reasonably accept it as an option.

To accomplish the level of desired engagement, the stakeholder groups have key dialogue formats assigned. The formats for dialogue with passengers, business customers, policymakers/regulators, and associations were combined in order to provide the depth of engagement, as LCs were not specifically highlighted: a) passenger advisory board; b) online dialogue platform/social networks; c) customer dialogue/enquiries; d) dialogue forum with top customer events; e) own dialogue and customer events; f) trade fairs and product conferences (including Green Tech 2019); g) labs; h) customer workshops; i) surveys; j) monthly satisfaction check (business customers); k) high-level talks and exchanges (on special topics with passenger, environmental and industry associations and the public transport authorities) and expert exchanges on compliance topics with university representatives (DB Integrated Report, 2017). The DB Passenger Advisory Board, a 30-member committee which, by nature, is the stakeholder group probably closest to LCs, provides products and service improvements through biennial discussions,

surveys, and workshops. They are also used in the earliest possible stages of projects that serve to support strategic determination.

Analysis of the stakeholder engagement by NACI (2018) provided the following insights (six reporting companies):

1) Their reports do not provide a definition of stakeholders; however, 50% detail the objectives of SE as supporting both strategic objectives as well as helping to define report content;
2) All NACI have employee-led fundraising or volunteerism as a SE tool;
3) All NACI are involved in training first responders;
4) The NACI do not have any SE measurable goals and objectives disclosed;
5) The are no documented/publicly available SE guidelines (strategy or plan) that are used to guide engagement (e.g., AA1000);
6) Two-thirds have internal panels or advisory committees involved in assuring the validity of the reporting process;
7) Two-thirds have their highest-ranking executive, such as president and CEO, attend public meetings (e.g., town halls);
8) Only one NACI, CN, utilizes external verification of CSR reporting;
9) Only one NACI, CP, uses the aid of SE in decision-making beyond the reporting process for regular assessment of their performance;

There exists an appropriate direction to “strengthen relationships with Indigenous communities along [their] network,” and this sentiment is mirrored across the NACI. Interestingly, although the railways usually described various Indigenous or Aboriginal programs related to, for example, efforts to respect their culture and establishment of diversity initiatives that promote equitable employment as material to their business strategy, etc., the NACI materiality matrices—if one existed—did not reflect the same level of importance to this issue by the NACI’s stakeholders.

With respect to projects (infrastructure or otherwise), stakeholder engagement by NACI involving LCs seems to have been limited to the *project approval process*, which included environmental and social impact assessments to address mitigation measures (CN, 2016 Sustainability Report). Based on the typology identified by Bowen et al (2010), these communications would align with transactional and transitional, but fall short of transformational. Transactional exchange is heavily informational, infrequent, involves many partners, and is geared to the exchange of time, skills, and money. This type of interface is common in volunteering, training, and philanthropy—approaches that typify the NACI model of community development and engagement where the control is centred in the company (Bowen et al., 2010; Herremans et al., 2016). In contrast, transformational engagement uses dialogue that is more proactive, long-term, and strategic, where value is achieved through joint learning, joint project management, and joint responsibility. Transitional engagement, on the other hand, involves two-way communications that act as bridges, thereby allowing more in-depth dialogue to take place. Whenever transitional with transformational engagement occurs, frequently it is late in the engagement process and typically after a controversy has forced deeper levels of dialogue.

Chapter V: Discussion

This research sought to answer the main exploratory question surrounding the relationship between NACI and local communities by examining behavioural patterns of disclosure and stakeholder engagement. Specific examples of cases and guidelines were drawn upon to provide some frame of reference, as tools for assessment, measurement and benchmarking do not currently exist for social performance in the context of LCs and NACI. Findings demonstrate that NACI are heavily institutionalized in their approach to relating to LCs. The marginal relationship change over a 10-year period gives some indication that local communities are typically not a priority for the NACI until—and unless—an incident occurs, a new project is planned, or there is opposition to the development of infrastructure.

As noted in this study, I first examined NACI sustainability reports, driven by a need to synthesize themes of disclosure and engagement of LCs, and scored them according to a tailored set of criteria adapted from several other guidelines—such as AA 1000, IFC's Practice Handbook, OECD, and others (as listed in Appendix F, p. 299). I then extracted the scores from Sustainalytics, an independent rating agency that scores the sustainability performance of companies, that pertained to specific factors deemed relevant (based on literature review and consistent with the conceptual framework).

This chapter characterizes and discusses the disclosure and engagement of LCs by NACI in accordance with globally accepted standards and academic literature. I point out that although certain established standards are being used to guide the reporting, the essence or intent of them to truly address value creation as part of a partnership (and as an expression of creating shared value) is lacking. Likewise, while LCs are periodically engaged by NACI, a fulsome strategy that consistently maintains a reasonable level of engagement pre-, during, and post-project, and is comparable to global standards, is lacking.

By analyzing the results, this study's objectives are met; however, based on the degree of disclosure and engagement, a discussion of performances from three other countries are provided as specific better practices in these areas: social sustainability disclosure, as exemplified by Deutsche Bahn

Track; stakeholder engagement, as exemplified by UK's Network Rail; and reporting on projects, as exemplified by Hong Kong's MTR. Sustainability performance and success are often determined at the managerial level within NACI, who, in my discussions with them, fervently believe that comparisons should not be made between them (e.g., AAR and RAC member railways, etc.). But this type of intra-industry comparison is frequently performed on financial measures (and environmental as well). The lack of a documented sustainability strategy within which a social dimension that speaks to value creation with LCs is lacking. As mentioned, this is in sharp contrast, not only with the railways of Europe and Asia studied, but also with companies from several different North American industries. The Eurasian systems are far from perfect, and although these railways are publicly owned, they offer useful possibilities if embraced by NACI.

Based on the use of data from ratings agencies, one might have anticipated a comparison between their rankings and that of this study. This was not done because the codification and analysis were already based on secondary data; that is, information was collected using each corporation's unique approach and presentation, which was not necessarily designed for the purpose of responding in a systematic fashion to a set of sustainability criteria and definitions. As previously indicated, this is one of the major criticisms of sustainability performance and reporting—the lack of clear and consistent definitions that give rise to verifiable information.

Influencers of Disclosure and Stakeholder Engagement

Factors external to the disclosure and SE relationship (such as strategy, political and regulatory environment) may act upon them simultaneously. It is not unusual, therefore, that the approaches and techniques used by NACI in disclosing to and engaging with local communities has isomorphic tendencies of institutionalism (discussed in the literature review). The disclosures to LCs have not devolved in a manner suitable for relationship building, which relies on high quality, transformative communications, and engagement. NACI benefit when there is heightened awareness of factors extraneous to the NACI-LC

relationship: the influencers that act on the NACI-LC relationship, engagement, and disclosure. As noted by Saka and Noda (2013):

> "Intermediary stakeholders between firms and their external stakeholders can also exert an effect on CSR information disclosure. These intermediary stakeholders typically include environmental conservation groups and lobby groups. Groups that have an interest in CSR obtain this information from firms and then make their corporate evaluation of this information publicly available. They are also sometimes directly involved in the political process, and lobby for legislation on CSR. For this reason, firms in industries that are an easy target for CSR advocacy groups tend to disclose CSR information to avoid any undue pressure. For example, Patten (1991), Cho and Patten (2007), and Huang and Kung (2010) all conclude that firms in industries with a heavy environmental impact tend to voluntarily disclose their environmental information" (Saka & Noda, 2013: p.7).

NACI tend to present information that puts them in a positive light to communities, and not the challenges they face. However, research has demonstrated that it is beneficial for the actor to voluntarily disclose negative impacts along the social sustainability dimension, as this makes it less pungent (Reinbach & Hahn, 2015; Saka & Noda, 2013). The options for transport of commodities, products and consumer packaged goods is a highly competitive environment, but disclosing negative incidents or performance should not be a deterrent from transparent and balanced disclosure. Indeed, for many shippers, rail remains the sole means of freight movement, including the legislated movement of hazardous materials. LCs that are optimally engaged at the earliest juncture can be available to work collaboratively with NACI. The face of disclosure and SE with LCs is rapidly changing because of increased consumption of media and greater diverse sources of information. The impact of globalization, which pushed a company's explication of CSR, is now no longer seen simply as adapting to the demands of their social and environmental responsibility or compliance with externally defined standards within the institutional and cultural demands of North American society, but rather as a *communication of values* of corporate strategic importance that transcends borders, nations, and institutions in scope. Therefore, NACI must be highly cognizant of the values they manifest in each project as they interact with LC.

On Disclosure

Discussion on Safety

Although safety is paramount for every NACI, and their respective federal regulators responsible for their oversight (e.g., Federal Railway Administration in the US and Transport Canada), growing concern over "push back" and lobbying by railways constantly puts LCs at the epicentre of such conflict. For example, from congressional requirements for a train to be deliberately wrecked to assess the impact of a derailment, to mandated new systems for braking (i.e., Positive Train Control) these policies have been met with dissension among the NACI. AAR has pushed for leniency, while regulators continue to press for tighter measures.

The voluntary nature of much of the sustainability disclosure means that North American railways have opted to share as little as possible—but with the hope of still being viewed as cooperative, accountable, and transparent. Some NACI have been consistent with (while others have diverged from) anticipated results based on corporate trends. An absence of a fulsome sustainability strategy was consistent across all NACI. Findings demonstrate that sustainability disclosure has improved in volume, generally among the NACI, such that many criteria of guidelines can be checked-off. But when a deeper analysis is performed, the quality falls short.

Gender Diversity

The high-level governance steps towards sustainability—for example, at the board and executive management levels—appear to be underway, as deduced from the so-called beginnings of the top-down approach to effecting sustainable change with LCs. An example of this is the change seen with increased gender diversity on the board of directors of several NACI. To date, based on the literature review, research supports the achievement of sustainability goals by increasing the representation of women on the board of directors of NACI (Dienes, Sassen & Fischer, 2016; Lu & Herremans, 2019; Pucheta-Martinez and Bel-Oms, 2018). Because transportation has been traditionally a male-dominated industry, significant

attention, recruitment resource allocation, and cultural transformations within NACI will need to occur. While this has begun at the governance and executive levels, the tactical (middle management) and operational levels require significant change in this direction. As such, NACI might consider investments that support the career path choices of pre-professional students by specifically making women a priority; sponsoring women rail networks; and developing STEM programs for inner-city and marginalized women and other evidence-based effective channels, such as those shared in the Osler report (MacDougall, 2019).

There is a stated desire to augment gender diversity by those who have either not established targets, such as Kansas City Southern, or those who have simply not met their targets yet. Another example of movement in the top-down approach involves the linking of executive compensation to sustainability performance. However, syncretism calls for a blending of this top-down perspective with a bottom-up approach (Martinez et al, 2019). As shared by Porter and Kramer (2011), one important way (of the three mentioned) to create shared value is through the development of clusters. I equate this with the development of LCs as neighbourhoods. One can assume, based on several reasons (such as inadequate information, organization, and resources), that there is a high likelihood that LCs might not be equipped to address this role head-on. The development of a network of LCs designed for multi-sectoral collaboration might support this (Beach, 2009). A major obstacle in the drive for social sustainability is the attitude of NACI toward LCs, which are largely viewed as pawns in the process and threats to the social license to operate—in other words, not true partners. And, certainly not as value co-creators whose saliency and, therefore, impact has the potential to rapidly escalate on a project depending on power (regardless of its genesis), urgency, and legitimacy of their interest as well as the involvement of other key stakeholders (Mitchell, Agle & Wood, 1997). With the requirements outlined in new legislation (e.g., Impact Assessment Act of 2019) in Canada, there is an expectation that local communities will be called upon for input regarding socio-economic, environmental, cultural, and other impacts. The financial responsibility for the processes of engagement, fact-finding, independent studies, and other activities

pertaining to and incurred by LCs will belong to project sponsors/applicants. Strategies need firm commitment, consistent proactive engagement and communications with LCs, and well-resourced implementation plans.

Timeliness

One significant area related to quality of disclosure is the reporting timeframes. Three of the seven NACI (CN, CP, and BNSF) report biennially. This long timeframe creates greater challenges for accountability. The IIRC indicates that "the length of each reporting time frame and the reason for such length might affect the nature of information disclosed in an integrated report" (IIRC, 2013: p.32). The suggestion is that uncertainty becomes more relevant a factor in issues that involve a longer-term timeframe. This timeframe contrasts with other industries, where sustainability reporting can occur as frequently as quarterly.

Disclosure and Engagement

The focus on operating disclosure and stakeholder engagement by NACI is not as in-depth as the Eurasian context. This could be due in part to the differences in regulatory requirements, but it also implies a difference in strategic orientation in content and quality in accordance with the various disclosure guidelines (I have pointed out several deficiencies in reporting as per the GRI standards). There is also a possible link between transparency, quality of disclosure and legitimacy concerns.

Because the NACI-LC relationships are frequently medium- to long-term, reporting with greater specificity would be beneficial by giving readers a sense of the intended long-term social impact of the NACI involvement. This is not occurring across all NACI. NACI could instead communicate their social return on investment and/or economic impacts in local communities because of their contributions. In this way, LCs and other stakeholders might be less likely to experience these activities as public relations stunts, reputational or marketing gimmicks, or as impression management (Maignan & Ralston, 2002). Similarly, if the railway is involved in a planned giving program with the LC, sharing the specific rationale

for long-term *goals and achievements* of the partnership/ sponsorship could add value by signalling the genuine nature of the giving.

Current Findings vs. Previous Studies

This study's findings were consistent with the findings of several other previous studies on sustainability disclosure. KPMG (2011) described their proprietary approach to understanding the quality of communication and process maturity of firms based on their GRI reporting using cluster analysis. They found that,

> "The Americas seem to have focused so far on communication rather than CR [corporate responsibility] processes. This is clearly an area of attention for companies in these geographies, as an imbalance between reporting and actual implementation might increase reputational risks." (p.4).

Sustainability reporting is related to size, visibility, and ownership structure; corporate governance influences auditing and sustainability committees (Dienes, Sassen & Fischer, 2016; Pucheta-Martinez and Bel-Oms, 2018). KPMG (2011) also found that certain industries that parallel railway infrastructure projects the most—such as transportation and construction—were at the margins of scratching the surface (lower end of process maturity and lower end of quality of communication). As noted by the following quotation, NACI need more diverse channels of communication and more sophisticated information systems to address the goals of sustainability and reporting to LCs. As opined by KPMG, I see them fitting in the category of firms that have:

> "gained limited traction so far for either implementing or communicating about their CR efforts and achievements. These companies tend to report using a single media channel and are not demonstrating significant results regarding the growing maturity of their information systems and processes" (KPMG, 2011: p.5).

Other research studies have found a correlation between the length of sustainability reporting history and the quality of reports (EY & Boston College, 2018). Norfolk and UP appear to have challenges based on the criteria used in this study. In the case of Kansas City Southern (KS), although they have demonstrated better quality reporting and thereby achieved the highest score to date, their reporting has

not been consistent enough over several years with sufficient diversity and strength. KS has disclosed on variables of interest to this study, and these disclosures have been done in a manner considered more consistent with disclosure requirements of GRI standards than other NACI in the past year. Demonstrating long-term performance will be critical to appropriately valuate their commitment to sustainability outcomes.

Significant challenges exist for developing an understanding of the relationship between NACI and LCs if one relies on existing types of disclosure. Firstly, not every negative impact on an LC is going to be published in the news because of naturally expected incongruence with what the media might consider as newsworthy. Secondly, controversies at times are not packaged and labelled as an "incident," "accident," or "spill," for example. Thirdly, litigation for many cultures that are dominant at railside communities might not be a viable option because of lack of resources or capacity, etc. Associated costs of litigation may be a hindrance to the public acknowledgement of negative impacts experienced.

As previously discussed, Harvey (2018) views the current NACI approach as consistent with neoliberalism views that also align with Keynesian economics. These schools of thought (Harvey and Keynes) would likely interpret currently reported NACI action as an (ab)use of their capital to respond to the inequality brought about from cuts in social programs by various governments for the various populations. These resultant gaps then provide opportunities for corporations, including railways, to exert some influence vis-à-vis donations and grants, which are interpreted, for the most part, as philanthropic aid, and at other times as business strategy (reference the materiality matrices of NACI). Instead, the 'creating shared value' school of thought would encourage a more inclusive and diverse approach with local communities to create the collective impact that leverages the strengths across multiple sectors (Kramer & Pfitzer, 2016; Porter & Kramer, 2006; Porter & Kramer, 2011).

Absence of Projects

From the perspective of infrastructure projects, disclosure by NACI in general is effectively non-existent. CP seemingly was the only NACI that provided a list of infrastructure projects—and some considerably basic details about their various stages of planning and execution—on its website. A Government of Alberta Major Projects' website listed CN's four maintenance, and seven expansion projects completed in 2018-2019 (Alberta Government, n.d.). CN's own website, as well as its *In Your Community and Delivering Responsibly* reports, do not contain this relevant information for local communities. Exceptions are major projects such as the Milton Intermodal Hub (Halton Region) that are longstanding (not less than five years since the initial community consultation) and might be involved in litigation. Otherwise, the information was of a technical nature to support their customers' involvement in public projects (e.g., BNSF's Public Project's Manual and Union Pacific's Technical Resources for Public Projects). And while CSX does have a *Projects and Partnerships* page on its website, it is extremely out-of-date (e.g., Pittsburgh Intermodal Rail Terminal was last updated in Fall, 2016). However, information published as recently as May 2020 in the Pittsburgh Gazette indicated that the site had been abandoned only three years after it had opened and reported the subsequent lease of 70 acres to Shell.

> "CSX opened the McKees Rocks intermodal rail facility, which cost more than $60 million to build, in September 2017. At the time, it was a key part of a national strategy to move more freight more efficiently and better compete with trucking.
>
> The company was hoping to rely on such operations to transfer goods from one form of transportation to another to stem losses related to coal and other energy products." (Belko, 2020).

While it is undoubtable that CSX's board and executives would have considered how this type of decision measures up on the sustainability scale, it provides a prime example of the lack of available information in the public sphere regarding important changes to infrastructure projects and reclassification of existing structures that could impact local communities—negatively or positively.

It was noted that, in many instances, railways reported on activities that were neither part of a well-laid-out strategy of social sustainability inclusive of value creation for local communities nor connected to the materiality assessment, strategic imperative or functional unit—thereby posing a challenge in appreciating the purpose behind the reporting while giving the impression of a fragmented approach. By examining some of the categories for which Sustainalytics is collecting information, but for which no data is yet available for NACI, one gets a sense of the discrepancy between what is occurring in other industries compared to the NACI, a sub-class of the railway industry. The following Sustainalytics categories had no data for the NACIs: “Guidelines and Reporting on Closure and Rehabilitation of Sites,” “Environmental and Social Impact Assessments,” “Oil Spill Reporting and Performance,” “Products to Improve Sustainability of Transport Vehicles,” “Use of Life-Cycle Analysis (LCA) for New Real Estate Projects,” “Signatory to UN Principles for Responsible Investment,” “Programmes to Minimise Health Impact of Electronic and Magnetic Fields,” “Community Engagement Programmes,” “Policy on Indigenous People and Land Rights,” and “Local Community Development Programmes.” It should be noted that data for NACI were available in several other categories, but the scores were “0” consistently across the board for “Signatory to UN Global Compact.”

NACI’s Terms of Reference

The lack of industry-wide definitions, tools of assessment, and benchmarking for social sustainability have barred its progress—both as an antecedent to and consequence of relationship-strengthening between NACI and LCs. By contrast, the quality and depth of sustainability reporting by public or state-owned enterprises such as Deutsche Bahn might well be influenced by its ownership (in other words, direct accountability to customers who are frequently the passengers/taxpayers). These insights can still inform NACI performance.

On Stakeholder Engagement

This study's findings demonstrate several aspects that pertain to the nature of the NACI-LC relationship—both by what the NACIs do and what they have neglected to do. In the absence of NACI engagement documents or a sustainability strategy that would address the social dimension, a search for corporate strategies had no results. Instead, strategic agendas tended to chronicle, and they were not forward-reaching containing goals, etc. This was consistent with the data from Sustainalytics. Railways that performed higher on stakeholder engagement (Table 18, page 136) were more diverse and had a higher score in their reported social sustainability factors. They also had elements of a strategic focus with sustainability at its core—although there might not have been a published guiding sustainability or stakeholder engagement document, or one that connected both per se. High disclosure scores alone (e.g., Kansas) were not indicative of high performance related to stakeholder engagement with local communities, or overall social sustainability measures—two factors that signal the nature of the NACI-LC relationship. A high disclosure score could have been achieved through the presence of several reported variables related to sustainability, such as governance. This could signal early stages of implementation, such as prior to impact to LCs being known; performance that is either not well monitored, measured, or not well-documented, thereby contributing to ambiguity in the reporting mechanism to agencies. Additionally, several disclosure variables important to sustainability disclosure that impact LCs, such as programs to reduce greenhouse gas emissions and other environmental issues, might not be listed. These could not be viewed as SE-involved, as these are multidimensional and LC participation is not linked.

SE of LC by NACI has even greater challenges than disclosure, and these will now be described. Firstly, although my thematic review of sustainability reports (refer to Table 16, page 135) points to an increase in sustainability disclosure, there has not been improvement in social sustainability (based on the 13 Sustainalytics variables, Table 22, page 190), but rather a shift towards governance (and away from social sustainability) based on variables thought to be most relevant—as evidenced by Sustainalytics

ratings. Because Sustainalytics uses quartile scores, there is greater discretionary capacity to interpret scores that are more granular than other rating agencies that simply use binary scores. The possibility that the current capacity of resources used to engage LCs has been reached, and that greater on-the-ground support is needed to shift the quality of engagement, is raised as a possible question for further research. A reduction in scores could signal a significant change in evaluation criteria by Sustainalytics; however, none was documented in their methodology. None of the NACI had scores that were balanced across the variables assessed. That is, radar graphs did not produce a starburst pattern. Also, there was little fluctuation in total scores for those with higher scores, and much greater variability among those with low total scores. This was true not only for the NACI, but also for the other companies reviewed, such as Cisco and Prologis.

The social and environmental values, explicated collectively, were that the NACI industry self-identifies as the "backbone of the economy," where a major goal is to enhance transportation by rail for the good of society and the environment. However, except for joint safety initiatives (for example, TRANSCAER and Operation Lifesaver), and aside from lobbyist efforts, there has been little evidence of a genuine *community engagement* approach adopted by the NACI. This contrasts with efforts made by the organization Community of European Railways and Infrastructure Companies (CER), which promotes and coordinates joint business ventures[71]. That is not to say there are no joint ventures with businesses, such as the cooperative between UP and Forest Management, but benefits for LCs have not been well communicated in public documents. If positive impacts, such as initiatives that drive local economies, are part of a NACI's value proposition to customers and investors in a competitive market, they might

[71] Connecting Europe Facility is a "European means to support the development of a high-performance, sustainable and efficient interconnected trans-European network in fields as diverse as energy, telecommunications and transport... CEF has an annual budget of €29.3 billion" (http://www.cer.be/publications/latest-publications/cer-position-paper-commission-proposal-connecting-europe-facility). One of the key endeavours is the Trans-European Network Transport or T-ENT deemed "vital for Europe's transport infrastructure network to cope with the expected increase in demand for transport services over the coming decades... The Connecting Europe Facility (CEF) is a key EU funding instrument to promote growth, jobs, and competitiveness through targeted infrastructure investment at European level". (https://ec.europa.eu/inea/en/connecting-europe-facility).

contribute to a rationale for not making some information publicly available—though I doubt that is the case. This is likely, in part, a reflection of the strong competition resulting from the capitalist worldview of NACI.

Knowledge Exchange and Cultural Development

The exposition of sustainability demonstrates an awareness by NACI of future challenges and helps the railways to maintain legitimacy. This legitimacy, I submit, must occur for the NACI-LC relationship in the context of "paideia" (or authentic action and active learning), which as a prerequisite implicates a much richer degree of knowledge exchange than present. As indicated by Merriam-Webster dictionary, in its adoption of Gilbert Highet's definition of paideia (Merriam-Webster, n.d.), this socio-political and economic shift needs to be about harmoniously contributing to "maximum cultural development" in such a way that one can no longer write simply to record facts. (Part of this knowledge exchange is disclosure in the form of sustainability reports used for the purpose of stakeholder engagement with LCs). Sustainability disclosure has been a means to an end used by NACI to distinguish themselves based on awards, ranking levels (e.g., Corporate Knights), inclusion on indices (e.g., Dow Jones Sustainability Index, Jantzi Index), and reporting standards such as GRI and CDP. As noted, these ratings are translated into risk by financial and investment analysts, thereby impacting investor decisions and the cost of capital.

Developing Legitimacy

As a company matures, and in its attempts to address pressures from the operating environment, looking for new ways to maintain legitimacy and promote itself as ''different and better'' is normal. However, sustainability remains an explicit part of the companies' strategies. NACI, in using these reports, continuously work to re-legitimize their positions as essential and positive actors within the communities in which they operate. In doing so, it is extremely important that they develop effective performance-related systems and quality disclosures with the goal of promoting genuine relationships with LCs rather

than impression management as construed from nebulous and asymmetrical reporting and short-sighted relationship-building (Bansal & Clelland, 2004; Chen & Roberts, 2010; Demuijnck & Fasterling 2016; Freeman et al, 2010; Hahn & Lulfs, 2014; Hummel & Schlick, 2016; Scherer, Palazzo & Seidl, 2013).

Beyond the content and approach to reporting as largely public relations, the engagement with LCs, which is predominantly philanthropic in nature, also has questionable motives. In alignment with Harvey (2018), the NACI approach is consistent with neoliberalism views which also align with Keynesian economics.

A key difference between the engagement approaches of NACI and the Eurasian railways is that while NACI declare heightened levels of engagement with LCs, their disclosed activities are most often to inform—or are low grade consultation, mainly transactional (one-way communication), and sometimes transitional (marked by sporadic opportunities for two-way communication) (Bowen, Newenham-Kahindi & Herremans, 2010). Lessons from the Eurasian landscape provide us with the following examples as a possible better practice of developing legitimacy.

In the UK, the national railway, Network Rail, has a Community Strategy. It provides deliberate support to communities interested in building capacity to develop sustainably. The document specifically spells out different aspects of working with and supporting local communities based on a wide-scale survey: diversity, equity, and inclusion; working with local and regional economies; and an examination of innovative improvements to the railway (Network Rail, 2020), Community Rail. Through these efforts, NR aspires to support the voice of the community, promoting sustainable travel and supporting social and economic development. Additionally, NR has developed a partnership with LCs, termed Community Rail, a grassroots movement “to shine a light on neglected and at-risk parts of the network, as communities came together to safeguard the future of their local lines” (Network Rail, n.d.). Additionally, the government and community rail organizations have formed an association, Association of Community Rail Partnerships (ACoRP). Among other priorities, ACoRP is charged with sharing knowledge between

community rail organizations as they provide a voice for their local communities through advocacy, promoting independence, relationship-strengthening with local authorities, and tools for developing a base of sound evidence.

NR's activities that meet the highest level of engagement are future-oriented strategic investments that are *not* related to their operations and business model but are positioned at Level 4-5 of the *Local Community Involvement Continuum* (Table 8, page 85). At these levels, activities typically involve long-term commitments such as education and other highly resilient forms of engagement that go beyond the short-term and direct needs of NACI. For example, as recently as February 2020, NR opened an institution that promotes Sciences, Technology, Engineering, and Math (STEM) education in preparation for the next generation. For a more detailed list of the ways in which community rail organizations implement their strategic pillars, please refer to their executive summary (link found in References).

Managerial Implications

Managerial implications are intended to summarize the results of this study in terms of action to be taken. As a project management professional and researcher, I consider this of utmost importance. It pinpoints the 'so what,' uniquely carves out the purpose for which the study was completed in the first place, and contextualizes it within the body of both academia and practical tools.

Addressing Stakeholder Theory

At the beginning of this paper, I presented stakeholder theory (ST) as currently the most widely used for strategic management and sustainability. I will now revisit the three fundamental tenets to confirm my choice.

The three main objectives of ST, also known as the *basic mechanics of stakeholder theory,* are: a) value creation and trade; b) the problem of the ethics of capitalism; and c) the problem of the managerial mindset (Freeman, Harrison, Wicks, Parmar & DeColle, 2010). This research has sought to advance an

understanding of the NACI-LC relationship so that an understanding of gaps could identify opportunities for research into nurturing better, productive relationships—first by examining quality disclosure, and secondly by SE and the interdependency of both disclosure and SE. To move towards this new currency (i.e., relationships) of high value, greater flexibility or slack will be needed. The balancing against efficiency will pose challenges but will be necessary in creating a more effective ecosystem (Kramer & Pfitzer, 2016).

Ethics and capitalism have been addressed from two perspectives: Firstly, enhanced involvement of LCs as part of a syncretic movement—their voices are heard and incorporated when feasible; and secondly, ethical considerations are approached in multiple ways, from transparency, reduction in information asymmetry, and closer alignment of decision-making to where they are carried out. The notion that the purpose of business is to create profit for shareholders is not at odds with its purpose to fulfill societal needs as well (Henderson, 2020). And lastly, ST supports a shift in the managerial mindset so that managers could make decisions resulting from globalization, turbulence (i.e., from environmentalism) and business ethics for stakeholders, rather than of stakeholders. By working closely with LCs (by using evidence-based SE strategies and planning), and enhancing their learning, they are better positioned to innovate and cooperate with NACI. In this way, the objective is managing for stakeholders, not managing of stakeholders.

Relationships as the New Currency

This research found that there are many inconsistencies between what is shared with LCs and what is known to have transpired. By working to increase transparency, better SE, and quality disclosure, the NACI-LC relationships would be on a better path of creating shared value. Should NACI determine that strong positive relationships with LCs are crucial components to their business strategy, more resources will need to be allocated 'on-the-ground,' where communication can occur in well-developed clusters or neighbourhoods. This section discusses implications for practitioners (implications for researchers will be addressed in the next chapter, VI on Conclusions).

Creating Sustainable Communities (SDG #11)

In the spirit that a well-engaged LC is a well-educated, learning community, tools that support these processes are crucial. Facilitating this knowledge acquisition can be achieved directly through each NACI, but other forms of knowledge exchange that can be jointly involved are possible. A knowledge centre for infrastructure projects is a concept that has already begun for multiple industries—but has not yet been adopted by NACI. World Economic Forum, in its Global Overview of International Knowledge Support Across the Infrastructure Project Cycle (2016), shared, for the purpose of disseminating best/good practice, the following cross section of recommended products in Table 25.

Table 25

Typology of Knowledge Products for Infrastructure

Typology of Knowledge Products for Infrastructure	
Data and content-based	Gather, analyze, synthesise, and disseminate information on infrastructure policies and projects for users e.g., MDB's Public Private Partnerships (PPPs) Knowledge Lab and G20s Global Infrastructure Hub
Learning and training-based activities	User is an active participant within a structured learning capacity. Focus on public sector preparing to deliver an infrastructure project or for students. Many knowledge products available online.
Process-oriented products	Legal framework elaboration/adaptation, pipeline building, prioritizing, and preparing projects; supporting through tendering and implementation
Networking-based products	Small-scale seminars, workshops, conferences, online peer-to-peer services based on social networking. Repository base to augment users' experience after conferences, website searches for data or documentation

The reader is encouraged to review the Global Infrastructure Hub's mapping of the knowledge products, which pinpoints the beneficiaries and the type of support needed at different points of a project—from concept to planning, development, approvals, and execution.

As previously intimated, a knowledge hub with the task of sharing alignment with GRI Standards and other guidelines and supports internal activities needed to promote corporate integration of

sustainability is recommended. This would support the integration of business functions and drive noticeable change within the railways that provides shared value for the NACI and LCs.

The responsibility of NACI—or preferably some independent body—to provide the resources (financial, environmental data, professional expertise) that substantially contribute to capacity-building for LCs should occur on a regular basis. This recommendation is consistent with a type of knowledge hub that provides unbiased info to anyone on infrastructure projects, as well as serving as an interface with LCs. Currently, many community or grassroots groups tend to organize around safety or a specific accident.

Projectized Reporting

One key objective of this study was to characterize the NACI-LC relationship in the context of infrastructure projects; however, it was determined that although NACI construct, fund and maintain their infrastructure and engage with LCs on a project basis, they have not developed any meaningful reporting for consumption by stakeholders in that way. In contrast, the projectized disclosure by Hong Kong's MTR warrants specific mention. On both their website and in their sustainability report, MTR's focus on structuring the progress of infrastructure construction is clearly laid out according to geographic boundaries, which makes comprehension of challenges and opportunities for LCs possible. MTR delivers a useful example of the type of projectized disclosure and engagement through both their web-based platform and sustainability report. On the MTR website, each major project is listed, together with:

1. Project Details
    a. Background
    b. Key information
    c. Alignment
    d. Journey Time
2. Important Linkages
3. Construction
    a. Safety first
    b. Team members
    c. Major contracts awarded
    d. Construction Methods

    e. Monitoring of Construction Works
    f. Progress Update
    g. Related Works
    h. Associated Works and Other Arrangement
    i. Temporary Works Areas & Construction Facilities
    j. Notices
4. Environment & Heritage Preservation
    a. Heritage Preservation
    b. Environmental Protection
    c. Tree Protection
5. Public Consultation and Engagement
    a. Community Liaison Groups (channel to communicate with LC[72] on progress and construction impacts)
    b. Consultation Meetings[73]
    c. Community Activities
    d. Community-involvement competition (E-Game Design)
    e. Gazettal Arrangement
    f. Contact Us
6. Multimedia Gallery
    a. Press Release
    b. Report
    c. Publications and Publicity
    d. Game
    e. Video
    f. Photo Gallery
    g. Knowledge Centre

MTR made its commitment to local stakeholders quite clear. After listing the specific innovative recommendations coming out of the public consultation that were incorporated, they stated,

> "For stakeholders, whose suggestions could not be incorporated into the scheme, the Corporation and the Government explained to them why their plan is not feasible.
>
> To ensure the project meets the community's needs, we welcome views from different organisations and members of the public on all aspects of the SCL project" (MTR, n.d.)

And finally, in philanthropic aid, although the population of North American communities continues to increase, as does their risks because of proximity to railways, the philanthropic aid to LCs (as

[72] MTR defines LC as local district council members, representatives of residents, schools, local organizations etc., and representatives from government departments. Meeting observation accessed with reservation.
[73] Community activities included, roving exhibitions in stations and shopping malls in 18 districts, competitions, public forums, school talks, youth engagement programmes, visits to railway facilities to introduce the project to the LCs and gauge their response. A range of publications—leaflets, brochures, newsletters provided easily accessible updates for public and to collect their project-related suggestions.

a percentage of annual revenue) continues to decrease. The outcomes/social impacts of these donations are unknown, and it would be helpful to the relationships with LCs for these to be well-defined so that they are not simply viewed as pacification payments (Frazier, 2020)—and that the solutions for impacting communities be data-driven (Bennett, 2020) and transparently articulated.

Rating Agencies

The challenges experienced in analyzing the data were largely based in lack of consistent reporting, the genesis of which crosses multiple boundaries—industry, societal/cultural and legislative hurdles. I would submit that, at the time of writing, NACI were not yet consistently reliable reporters on specified variables of social sustainability. Of the 21 variables chosen, only 13 of them had consistent data and one railway, BNSF, was completely absent in its reporting. In turn, the absence of this data should signal to the NACI the need to investigate further, if alignment with these practices is in their best interests. As a potential assist, the ACCF's recommendation could be considered: that ESG disclosures in regulatory filings should be standardized to help rating agencies make more consistent judgments; and that the rating agencies should be more transparent on their process, and better adjust for size, industry, and legal jurisdiction (Doyle, 2018; Romero, Jeffers, Lin Aguilino & DeGaetano, 2018).

The privatization of the Canadian railways came about because of the neoliberalism of the mid-90s, but some researchers and authors believe that deregulation has contributed to the erosion of safety and minimized how obligated the NACI felt they needed to listen to LCs (Campbell, 2020; Canada Transportation Act Review, 2015) in favour of their shareholders. Despite some areas of modest improvements, such as research and disruptive technology for safer transportation of crude oil, the relationships with LCs do not appear to be keeping pace with potential benefits from greater transparency of project-based information. For example, the number of derailments is troubling (see Chapter IV for its sections on safety and accidents). Though there are fewer accidents among the NACI, they are more catastrophic, seemingly because of the nature of commodities shipped and the composition of freight

(which can have devastating consequences depending on what is juxtaposed, etc.). Yet, NACI report that there is improvement. In fact, because NACI continuously change the criteria used and the categories of incidents, true change/improvement is challenging to discern with any accuracy—e.g., number of accidents involving hazardous materials, accident v. non-accident releases, number of accidents at at-grade crossings, etc. (some could be combined with non-accidents, such as suicides, etc.).

Finally, it is important to revisit the key method for attaining sustainability, which is the purpose behind disclosure, stakeholder engagement and relationships between NACI and LCs—the creation of shared valued. When all these factors coalesce, working towards a harmonious, economically feasible, environmentally sustainable, and socially accepted approach for NACI and LCs working together, I rely, as a final note, on Porter and Kramer's (2011) statement regarding the dimension of cluster development. It is these social clusters—or LCs—that, when developed to the point of having effective relationships with NACI, we (civil society and firms) can say that we have been able to move the needle in our progress towards achieving the SDGs. In the absence of reliable quality disclosure that speaks to reducing the current asymmetry in information for LCs, the purpose is assumed to be a public relations intervention, as previously submitted (Porter & Kramer, 2002; Maignan & Ralston, 2002; Talbot & Boiral, 2018).

NACI might also benefit greatly from moving towards appreciating the LCs as smart or learning communities that could function as their allies and partners in disruptive collective action that promotes the safe, efficient, and environmentally effective use of railroad transportation. To do this, however, LCs will need a credible reference state to appreciate what the environmental, social, and economic impacts of the infrastructure projects are within their geographic proximity to railroads (Lankoski, Smith & Wassenhove, 2016) to assess value and gauge their reaction. To support the resolution of our ongoing social and ecological issues as they involve railways, Mintzberg (1990) had suggested that decision-making be closer to where its impacts are felt. This supports more analysis, planning, and implementation at the local level of communities. To do this, disclosure needs to be of high quality, and of the public language

type, so that it is trustworthy and reliably linked to acceptable sustainability performance. In that manner, the strategy for engagement is less likely to be aligned with the four typical settings in which public language is commonly used as a tool, as outlined by Gao, Yu and Cannella (2016): entrepreneurial, image threatening, financial and competitive.

A recommendation for a Knowledge Hub that is accessible to Local Communities could provide not only project-specific and general information but can be segmented (or aggregated) so that the learning necessary for Sustainable Cities and Communities, SDG #11, is developed. As espoused by Pellizoni (2011), an increase in knowledge among LCs will impact the power differential. This should be embraced, not avoided. The development of genuine relationships with key communities should not be a retroactive pursuit, but rather be seen as critically important for the construction of infrastructure projects on railway as well as their operations following commissioning.

Chapter VI: Conclusions and Recommendations

This research studied disclosure of an entire group or sub-population of the North American industry, Class I Railways, from 2009-2018. The small sample size of this study did not make it possible to make statements regarding significance (i.e., no quantitative testing possible); however, because the findings neither required extrapolation nor use in a predictive capacity, they are made with confidence. Social sustainability disclosure to, and stakeholder engagement with local communities by NACI, as published by them, is very much in its infancy. This is distinguished by the high degree of variability in disclosure scores on variables of social sustainability within the company. Additionally, quality of disclosure and characteristics of stakeholder engagement are below industry leaders—and comparators from Eurasia. This has been deduced from the NACI own reports as compared with expectations based on globally accepted standards such as AA 1000, ISO 26 000 and those established and disseminated by organizations such as Global Reporting Initiative and Organization for Economic Cooperation and Development, as well as reporting from other jurisdictions.

This study's findings appear to be in the same vein as Gill et al (2008) in that, although there is awareness by NACI of some sustainability-oriented issues, and indeed the reporting is consistent with both mandatory and voluntary (those that are non-standardized but of interest) reporting issues, the reporting falls short of demonstrating a specific focus on sustainability and social sustainability.

We have seen in the news recently that LCs are interested in the preservation of community spirit, and this has been heightened around the globe in response to the COVID-19 pandemic; in North America, as part of the Black Lives Matter movement; and in Canada, as part of the Wet'sowet'en solidarity movement. How a firm's strategy changes because of shifting stakeholder power or economic performance will ultimately impact the NACI-LC relationship, which is to be (re)defined by many different forces (Ullmann, 1985). But, although we see LCs increasingly asserting their power through civic action

and unrest, the relationship with NACI has not markedly changed from its historical roots. I suspect that it will, and that NACI will be forced to configure a strategy—perhaps in response to a crisis.

Some of the more substantive social sustainability information considered relevant for LCs was not found in the sustainability reports, thus necessitating a diversified look into additional resources to develop a meaningful understanding of the NACI-LC relationship. Material information worthy of disclosure to LCs was often found in the Annual Reports for shareholders—containing, as a requirement of corporate financial disclosure, a description of risk management factors—but not in the sustainability, CSR, or community reports. These material issues were frequently framed within risk management related to safety, accidents, spills and derailments, biodiversity, and land management. Others, such as noise reduction, were not accompanied by any hard information (i.e., readily verifiable and objective). As the literature review unearthed, there are inherent difficulties in assessing the credibility and reasonableness of a sustainability disclosure report from any specific variable or set of variables (Talbot & Boiral, 2018).

The findings of this study—along the lines of disclosure of NACI—were consistent for several variables with the data obtained from known entities that report on sustainability disclosure and SE (through their analysis of ESG data), such as Sustainalytics. Using published secondary data and observational data, the dual approaches of strategic management and economic sociology, provided evidence from the perspective of stakeholder theory regarding the nature of the NACI-LC relationship. The conclusions are summarized as follows:

Related to question one, "*What social sustainability factors are being disclosed by North American Class I railways (NACI) to local communities (LCs)? What is the quality of this disclosure?"*

Throughout investigations into the social sustainability disclosure of a 150-year-old industry, I found that it was important to maintain the backdrop of its institutional nature deeply rooted within a North American capitalist structure. The historical and political environment would have undoubtedly impacted what was disclosed to stakeholders over the 10-year period in question. The disclosed social

sustainability information, based on a combination of NACI material concerns as reported, is lacking. The evidence of quality, strategic interface based on value creation (EY & Boston College, 2018; BSR, 2019; KPMG, 2016; Porter & Kramer, 2011), where LCs are collaborators driving change with NACI, has not been found. This does not mean that this degree of desirable performance is lacking; it simply means that it has not been communicated using channels likely to be accessed by LCs. It is entirely possible that it might be present but not disclosed; however, it seems logical that, if present, it could be beneficial to NACI and improve corporate reputation. A higher level of public participation, more frequently seen in the European railways, could be related to the state-owned nature of ownership and a greater emphasis on retail/passengers. Instead, in North America, LCs have been largely marginalized, responded to, and have had their concerns addressed just sufficiently for acquisition and/or maintenance of the railways' social license to operate.

This section relates to question two, "*How do NACI engage with LCs and what is the nature of the relationship?"* The NACI-LC relationships are heavily mediated by government agencies and regulatory bodies—that some review panels feel, as expressed in the literature, are not pulling their weight (Transportation Canada, 2018). This is a complex matter that is likely moderated by neo-capitalism, the economic power derived from the NACI contribution to North American society, and the reciprocal need to manage their philanthropic aid, foundations, community boards, etc. It appears that although there has been marginal improvement in stakeholder engagement with LCs, as disclosed in sustainability reports, NACI are attempting to be strategic philanthropists and their philanthropic giving is on the decline (see Findings section). I found that the lack of disclosure on highly contentious issues such as the number of derailments, the asymmetrical reporting, and the ambiguities, as submitted by Porter and Kramer (2002), suggests that it is being used "as a form of public relations or advertising, promoting a company's image or brand through cause-related marketing or other high-profile sponsorships" (p.1). The content of the photos within the sustainability/CSR reports, in conjunction with the challenges of transparency and

information asymmetry to local communities, would support this argument. Instead, LCs and other stakeholders would likely benefit from NACI investing these support resources in collaborative initiatives—and even deeper involvement in issues that contribute to releasing tensions and the creation of value. Being a good citizen in the community—and a fair one—might be more relevant than being perceived as a generous one. This would be especially so among LCs that have the power to pass laws, or, more realistically, interpret the laws in ways that affect an NACI's social license to operate (Freeman, 2017).

In terms of future research, Hahn and Kuhnen (2013) suggested,

> "a shift from the dominance of content analysis of published documents towards more exploratory and confirmatory methodological approaches such as interviews, surveys, and experimental studies. Overall, the above-mentioned gaps suggest that there are significant opportunities for future researchers to contribute to the field of sustainability reporting" (p.13).

Soliciting the opinions and attitudes of members of local communities and their representatives regarding disclosure (its impact and quality) and their engagement with NACIs on infrastructure projects would provide some of the additional evidence needed to understand the nature of this business-societal relationship.

Recommendations to Industry

Improvement in Social Sustainability Disclosure

NACI reports have demonstrated that they are becoming better disclosers of sustainability—but not as good at *social* sustainability disclosure as the environmental and governance dimensions. There are improvements, but SE by NACI does not measure up to the recommendations of guidelines. If a different reality exists, the NACI industry would display wisdom by reporting it.

Reduction of Information Asymmetry, Enhancement of Transparency, and Clarity

Based on CSR/sustainability reports, a significant gap exists between what we can only assume is truly representative of verifiable internal information and what is provided as external information.

The very concerns that impact LCs the most, because of outputs from operations, environmental misdeeds (e.g., remediation sites), and future impacts from ongoing activities (the infrastructure projects), are not fully reported to communities, and they are not engaged early in the proactive manner as recommended by many of the guidelines—such as IFC, AA 1000 and ISO 26 000. NACI need to close the gap between the practices of the guidelines and standards, their own performance and how they report.

When disclosing to the LCs, NACI currently alter terminology, making comparisons difficult to achieve. Data that is relevant to LCs could be communicated in a manner that is distinct from occupational health and safety, along with the planned remediation on infrastructure projects, to bring performance into line with targets that should be clearly articulated from one year to the next. The guidelines of GRI (i.e., Sections 403 and 413) should be followed to ensure the sharing of the respective management approach for each NACI.

NACI should clearly communicate their support of communities without conflating donations with the good deeds of others. Additionally, philanthropic giving or social sustainability initiatives should be clearly fragmented from the cost of doing business. For example, giving to the Coalition for Clean Coal should not be viewed as philanthropy (Meyer, 2019). Differentiation within categories related to corporate giving helps to increase clarity. Thus, the segmentation of community relations' activities into philanthropic, business, and economic development activities can provide some means of differentiating a railway's approach and commitment to giving. For example, Norfolk, in its 2018 *Building America Report*, indicated that $500,000 had been given to the Coalition for Clean Coal Energy, Operation Lifesaver, and Chambers of Commerce. In so doing, a greater level of transparency was achieved, as there was recognition of targeted affiliations that directly benefited the railway (coal is the commodity which generates the highest revenue for NACI). This masking or the portrayal of a role steeped in a more moralistic view of corporate social responsibility spoke to an act that openly supported the creation of

value for all stakeholders (Bansal & Song, 2017; Carroll, 1991; Freeman et al, 2010; Greenwood, 2007; Patzer, Voegtlin & Scherer, 2018).

Each NACI, through regulatory requirements, contributes to the Superfund[74]. However, a review of the Sustainalytics database indicates no disclosure for any of the NACI under the category, "Guidelines and Reporting on Closure and Rehabilitation of Sites." Therefore, this might represent an opportunity for improvement for the NACI to reduce the gap between internal and external reporting (Hawn & Iannou, 2016). Along these lines, the question remains whether the NACI sufficiently consider full lifecycle assessments in their current projects to prevent history from repeating itself. Given the significant negative environmental impact attributed to transportation in general (admittedly, railways currently provide a better ground option for our ecology), and the resources allocated to cleaning up contaminated sites (i.e., remediation efforts), it would be recommended that NACI address publicly what new environmental stewardship initiatives they are pursuing.

Intergenerational Strategy

One of the most significant and defining features of sustainability is the intergenerational aspect and future-based planning. For example, there is little to no indication of any commitment from the NACI for renewable energy programs. The objectives linked to reduction of emissions were clearly stated, and they relate to reducing fuel consumption, providing cost savings (e.g., CN is 15% more fuel-efficient than

[74] "In the late 1970s, toxic waste dumps such as *Love Canal* and *Valley of the Drums* received national attention when the public learned about the risks to human health and the environment posed by contaminated sites. In response, Congress established the *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) in 1980. CERCLA is informally called Superfund. It allows EPA to clean up contaminated sites. It also forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work. When there is no viable responsible party, Superfund gives EPA the funds and authority to clean up contaminated sites. Superfund's goals are to:

- Protect human health and the environment by cleaning up contaminated sites;
- Make responsible parties pay for cleanup work;
- Involve communities in the Superfund process; and
- Return Superfund sites to productive use."

(https://www.epa.gov/superfund/what-superfund)

the average of NACI), and significantly impacting the operating ratio (OR) of the railway (CN website). NACI need to examine what possibilities exist for using—and even becoming generators of—renewable sources of energy.[75]

Collaboration

In keeping with the Transportation Safety Board's report, the need for data collection of geographic and demographic information was already noted. As this would be derived regionally, such an opportunity could also be a catalyst for LC engagement and serve to strengthen the NACI-LC relationship in creating shared value. Governments, as agents of the people, need to be bolder in their facilitation of value creation on infrastructure projects (Freeman, 2017)—and have greater clarity on regulatory enforcement. When there is ambiguity, LCs are caught in the middle and ultimately live with the consequences daily. Although infrastructure is constructed based on projects—from their very conceptualization through to permitting, planning, execution, and commissioning—the local communities of NACI are consulted as a requirement of completing a checklist, and retroactively when opposition or conflicts arise. NACI need to become proactive in collaborating on medium- and long-term initiatives that promote sustainability—but where the impacts might not become obvious within the same cycles as financial reporting.

Community Development

Genuine efforts to support communities require a well-developed inclusive strategy with the communities, and it should be clearly articulated regarding goals, roles, and timeframes (IFC, 2007; ISO, 2010; AA 1000, 2015). There was little evidence in the NACI sustainability reports of ongoing relationship-building with LCs, such as through structured and regularly scheduled dialogue. This could be because the

[75] As of December 18, 2020 during the period following writing of this dissertation, CP announced several laudable sustainability initiatives: 1) its hydrogen-powered locomotive pilot project, the very first of its type in North America in supporting the "decarbonization of the freight transportation sector"; 2) receiving an A- on their 2020 Climate Change Disclosure Reporting to CDP; 3) being added to the Dow Jones Sustainability Index for North America; and, 4) the commencement of work (as per August 12, 2020 media release) to install a net negative solar energy farm at its corporate headquarters in Alberta.

reports are not currently designed with a focus on project reporting. Additionally, the information disseminated through the various newswires paints a steady picture of disgruntled communities. These LCs consistently have a narrative that is contrary to the information conveyed in the sustainability reports. While each jurisdiction and the needs of LCs are different, NACI could support use of lessons learned to both inform and build a truly syncretic movement from the bottom up for innovation and value creation.

Local communities are especially at risk because of geotechnical events such as mudslides, landslides, floods, and natural occurrences that destroy infrastructure, impede access, and threaten the safety of residents. Given the long-term strategic measures to address these issues, railways, residents, and local municipalities could better support collaborative efforts if information is shared early so that proactive activities can be developed.

CEO Involvement

This study found that two-thirds of NACI CEOs are involved in town hall meetings. However, given that this has been exemplified by leaders such as DB in Germany (and other companies in the US), according to the Globescan/Business for Social Responsibility survey, this is a highly effective approach for supporting the relationship building that is the new currency (or unit of analysis) in business. Therefore, NACI could consider developing a sound plan for stakeholder engagement that involves several levels of management and across a representative and diverse number of functional units or divisions.

Governance and Diversity

Some railways—notably, CN and CP—that have publicly committed to diversity at the board level and met their targets are also demonstrating better stakeholder engagement and better consistency across many characteristics aligned with quality disclosure. However, the material topic for five of the reporting six NACI to achieve a skilled and diverse workforce could provide additional opportunities for stakeholder engagement with LCs. Adoption of the UNGC and its operationalization throughout would enhance social sustainability performance. Therefore, NACI need to continue to support diversity, and

perhaps expand their definition to one with even greater inclusion to ensure adequate representation of the communities in which they do business.

Philanthropy

In support of philanthropy to improve a company's competitive context, Porter & Kramer (2011) suggest activities that genuinely converge social and economic benefits aligned with the company's business, such as contributing to a university as a means of strengthening the local skills base. This is already happening to some degree, for example with the relationship between CN and Wilfrid Laurier University's Lazaridis School of Business and Economics, which develops the next generation of supply chain professionals. An approach of this nature might augment credibility and have greater stakeholder impact if carried out in areas outside of regions where infrastructure projects are being challenged in court.

Future Research

There is insufficient evidence based on NACI sustainability reports and other publicly available corporate documents, websites, and newswires to convincingly characterize the true nature of the relationships between NACI and LCs and not merely the impressions that have been constructed to manage them (as presented earlier with a basis in Lankoski et al (2016)). As an opportunity to extend this work, which used the perspective of the NACI, future research could incorporate the voices of LCs as part of an in-depth case study investigation. Such research could delve into the unique socio-economic, health and environmental justice concerns of LCs and how they are (or are not) addressed by NACI, as well as collaborations on various programs and services. Investigations involving field studies into the establishment of key contributing factors and relationship maintenance are crucial insights to support sustainability using principles of shared value (Porter & Kramer, 2011).

Additionally, research questions that utilize surveys and/or interviews could examine how the NACI-LC relationship factors are mapped to approaches of engagement by NACI.

There is a paucity of reliable information regarding the outcomes of engagement with LCs—not just the inputs, which are readily quantified by NACI in financial terms. Assessing and tracking impacts of social and economic factors within sustainability would solidify socially responsible investments. Engagement efforts would require new tools of communication and assessment, structure, and collaborations by NACI. This would be of benefit to both NACI and LCs. These tools would serve as a starting point for relationship enhancements and resilient and sustainable communities.

As indicated in the findings, the sustainability reports frequently presented information in unclear ways and were rife with ambiguities. Future research could examine concepts such as the degree of obfuscation (such as when disclosing unfavourable news). Tools that have been used in communications research, such as the Gunning FOG Index (Fabrizio & Kim, 2019; Lehavy & Merkley, 2011) which measures obfuscation, might prove helpful. The Index could also help to determine, among other things, the "syntactic complexity of a firm's written public communication," as it has a long history of use by researchers in the social sciences when understanding the relation between a document's readability and outcomes of various decisions (Lehavy & Merkley, 2011). Among other benefits, this could aid the NACI in developing more effective communications from the perspective of reducing information asymmetry and promoting transparency in accordance with the referenced guidelines.

Lastly, research that provides the elements for project-based sustainability reporting to be developed into a framework should be informed by sustainable project management principles, processes, and products (deliverables). Once developed, this framework should be tested for its quality, scope, and effectiveness of engagement with LCs. Such reporting, while meeting the unique gaps for LCs, would support transparent information sharing in general, which serves the collaborative types of alliances that benefit multiple stakeholder groups. Models from which key components could be considered for adaptation include DB (Germany) and MTR (Hong Kong). Reporting of a similar nature by NACI could support the transparency, understanding and trust needed to bring LCs along as

collaborators—and potentially innovators—jointly working towards sustainable communities and sustainable infrastructure.

Sustainability disclosure, although technically voluntary, could be considered in a new light that has the potential to illuminate better quality and meaningful information that is diverse, accurate, and balanced, and promotes greater accountability by NACI to the communities where they operate. If approached with a similar rigour as mandatory regulatory requirements, sustainability reports could potentially serve to better engage LCs while also reflecting the outcomes of those engagement processes. These disclosures relate not only to the expectations held by investors, but to the rest of society as well (AOM, Information Disclosure in Strategic Management, Session 326, August 11, 2020).

The reporting of sustainability disclosure and stakeholder engagement with LCs on social sustainability can also be investigated from the perspective of the LC narrative. As indicated, however, each LC, with its unique demography and needs, will likely bear witness to quite different approaches, techniques, and relationship type with NACI. A study of this nature, however, would be encouraged by a collaboration of interested parties who are positioned to collect data from LCs using culturally, linguistically, and technologically appropriate tools. The NACI industry has placed an emphasis on certain strategic aspects of sustainability, such as governance. However, as Manning (2019) warned, many firms that have put their focus in this area, tend to end up simply complying with more standards and not necessarily improving performance itself. Ultimately, disclosure of high quality relies on good stakeholder engagement. This supports the development of reliable reports based on verifiable information, which promotes transparency and long-term trusted relationships. Moreover, when a firm engages slowly and consistently in a sound sustainability engagement strategy and focuses on sustainability dimensions that begin with internal capacities, its corporate financial performance is enhanced (Tang, Hull & Rothenberg, 2012). These are the hallmarks of a foundation for creating shared value and sustainability.

Historically, each industry with a reasonable record of good sustainability reporting, whether in North America or elsewhere, has had to learn its lessons on integrating sustainability over a period into their business model. Those lessons were learned in the oil and gas sectors and chemical industries because they received the feedback from multiple stakeholders and deliberately (and wholeheartedly) sought to improve upon their performance in measurable ways. All indications to date are that the NACI-LC relationships and engagement will have to devolve for them to mature.

Limitations

As previously mentioned in Chapter III: Methodology, the major limitation of this study is rooted in its use of secondary data. This, however, was purposeful to try and understand NACI-LC relationships as recorded without encumbrances of subjectivity from personal interviews and reliance on memory, nuances of sense-making, and other factors because personal perceptions were not at issue (Morsing & Schultz, 2006; Onkila, Makela & Jarvenpaa, 2018; Weick, 1995). While secondary data did allow for the examination of official corporate disclosure to answer the research questions, this information is skewed and does not allow the voice of the LCs to be appreciated. Published corporate reports provide only the perspective of each NACI as it wishes to be perceived by stakeholders (largely investors and customers). The assumption was that the ethical nature of managers and their principles would be evident through the reporting (Marcelino-Sádaba, S., González-Jaen, L. F., & Pérez-Ezcurdia, 2015: p.3).

A second limitation, which was also related to secondary data, involved their collection from rating agencies for an extensive period of 10 years. The changes in scores, therefore, could have resulted from altered definitions of the variables under study—or changes in methodology.

And lastly, as a qualitative study, the methodology relied heavily on interpretation of the meaning of words, concepts and passages of text that would have been framed by my epistemology and values system to provide insight.

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Appendix A: Codes and Their Frequencies

Theme	Number of Reports	Number of References	Theme	Number of Reports	Number of References
Safety	45	163	GRI Index	12	12
Accident	32	132	Community development key purpose	8	12
Training community safety	44	126	Infrastructure philosophy, general	5	12
Philanthropic Aid	41	113	Merger/Acquisition	4	11
Environmental management	38	90	Historical perspective	4	9
Fuel efficiency and technologies	37	90	Ship intermodals	3	9
Local communities	29	88	Sustainability rating	5	8
Stakeholder engagement	31	79	Climate neutral CO2-free efforts	3	8
Environmental stewardship	25	73	External assurance report	5	8
Community development_eduation_culture_language	17	56	Competition	3	8
Gender ratio	25	55	Failed or aborted infrastructure projects	3	8
Infrastructure build strategy	27	51	Proximity	6	8
General philosophy	18	47	Sustainability networks and alliances membership	5	7
Recognition and rewards re: SDGs or infrastructure	26	46	SDGs adoption	2	7
Diversity	24	45	Disclosure on infrastructure	4	7
Performance metrics	28	45	Standards of reporting requirements satisfied	4	6
Clean/green economy	24	45	Environmental performance operations into energy	5	6
LC-community investment	24	44	Corporate governance	5	6
Future orientation	11	39	Economic performance	4	6
Emissions	22	39	Purpose of community	4	5
Material topics and concerns (GRI 102-44)	20	37	SP-En_GRI 304-a-i_drivers for infrastructure change	3	5

Recycling or modern resource management system/infrastructure recycling	18	36	Management board composition	3	5
Organizational structure	17	35	Network location	4	5
Remediation sites	22	34	Air pollutant emissions/particulates localized effects	3	5
Disclosure	20	33	Project risks/more extensive public participation	3	4
Railroader in community piggyback	19	32	Self-identified with sustainable development	3	4
Customer feedback mechanisms	18	32	Sound/Audio protection project specific	2	3
Positive train control	17	31	GRI-405-employee geographic spread	2	3
Sustainability organizational responsibility	18	30	Financial approach	2	3
Public-private partnerships	17	28	Environmental performance/renewable power usage	2	2
Noise reduction-significant negative impact	8	27	Advisory board role	2	2
Stakeholder groups	16	25	Network size	1	2
Sustainability management	16	25	Prospects, growth etc.	1	2
Risk management and approach to disclosure	16	25	Permitting	1	2
Economic performance linked to infrastructure	14	24	Climate change achievements	2	2
Success hallmarks	15	23	Innovation	2	2
Water	16	23	Energy consumption	2	2
Aboriginal rights	12	21	Cooperative federalism	1	2
Financial costs aborted/paused projects	2	19	sustainability policy	1	2
Intermodal logistics solutions milestones	10	18	Incident-related mechanism for quality care and info	1	1
Risk management and infrastructure	7	17	Projects map	1	1
Policy and regulatory influence	4	17	Report authentication	1	1
SP-Ec_203_1 (indirect economic impacts)	9	15	Policy changes impacting infrastructure utilization	1	1

Environmental assessment	11	14	CEF Connecting Europe Facility Investment	1	1
CDP rating	13	13	Project tools	1	1
Organizing galvanizing issues	2	13	Scope of business	1	1
Sustainability performance	6	13	Mudslide/landslide	1	1
Factors affecting economic performance	7	13	Land trust	1	1
			Compensation	1	1

Appendix B : Stakeholder Engagement Scores 2014-2018

Detailed Disclosure Scores **2014-2018** **Stakeholders and Engagement**	**BNSF** **2015**	**CSX** **2015**	**KS** **2015**	**NS** **2015**	**UP** **2015**	**BNSF** **2014**	**CN** **2014**	**CP** **2014**	**CSX** **2014**	**KS** **2014**	**NS** **2014**	**UP** **2014**
Dedicated SE section (0-no, 1-yes)	1	1	0	0	1	1	1	1	1	0	1	1
Objectives of SE (0, 1-strategic objectives, 2-define report content)	1	2	0	0	0	1	1	1	1	0	0	0
Definition of stakeholders	0	0	0	0	0	0	0	0	0	0	0	0
Oversight of ESG Issues (Director of sustainability-governance) GRI-102-20; G4-36	1	1	0	1	0	1	1	0	0	0	1	0
Internal report assurance and/or stakeholder panel (0, 1, 2) (advisory committees) GRI-102-32 02 21, G4-48	0	1	0	1	0	0	1	0	0	0	1	0
List of stakeholder groups GRI-102-40, G4-24	1	1	0	1	1	1	0	1	1	0	0	1
Approach to stakeholder engagement (i.e., is SE related to sustainability) GRI-102-43; g4-26	0	0	0	0	1	0	1	0	1	0	1	1
Defining report content and topic boundaries (do they report any clear exclusions) GRI-102-46; G4-18	1	1	0	1	1	1	1	1	0		1	1
Opportunity for feedback: Has a contact point for questions or other types of feedback regarding the report and its contents been provided? GRI-102-53 G4-31	1	1	1	1	1	1	1	1	1	1	1	1
External Verification of CSR Reporting (P) (External Assurance Report) GRI-102-56; G4-33	1	1	0	0	0	0	0	1	0	0	0	0
SE Methods - specifically with community and employees												
- Surveys	0	1	0	1	0	0	1	1	1	0	1	0
- President and CEO town hall meetings	0	1	0	0	0	1	0	0	0	0	0	0
- 24/7 Community connect online platform	0	0	0	1	1	0	0	1	1	0	0	1
- Employee-led fundraising or volunteerism	0	1	1	1	1	0	1	1	1	1	1	1
Community advisory council	0	0	0	0	0	0	1	1	0	0	0	0
-Training first responders	0	1	1	1	1	1	1	1	1	0	1	1
- Active Outreach/Government relations and public relations team outreach	0	1	0	0	1	1	1	0	1	0	0	1

SE Frequency	0	0	0	0	0	0	0	1	0	0	0	0
SE Measurable Goals & Objectives	0	0	0	0	0	0	0	0	0	0	0	0
SE guidelines (a strategy or plan) used to guide engagement (Ex AA1000) 3.5	0	0	0	0	0	0	0	0	0	0	0	0
Involvement in decision-making beyond reporting process (regular assessments) 4.1	0	0	0	0	0	0	0	0	0	0	0	0
Material Topics												
- Public Safety & wellbeing (grade crossing safety, trespasser prevention, safe hazmat transport)	1	1	0	1	1	1	1	1	1	0	1	1
- Emergency Preparedness	1	0	0	0	0	0	0	0	0	0	0	0
- Indigenous Relations	0	0	0	0	0	0	1	0	0	0	0	0
- Community Engagement (company participation in communities of operation)	1	1	0	0	0	0	0	1	1	0	0	1
- Diversity and Inclusion/Equal opportunity/Non-discrimination	0	0	0	1	0	0	1	1	1	0	0	0
- Customer Service	0	1	0	1	1	0	0	0	1	0	0	0
- Environmental footprint	0	0	0	1	0	0	1	1	1	0	1	0
- Energy efficiency and emissions	1	1	0	1	0	1	1	1	1	0	0	0
- Asset and Rail Network Management	0	0	0	0	0	0	0	0	0	0	0	0
- Asset and Rail Network Resiliency	0	0	0	0	0	0	0	0	0	0	0	0
- Workforce Management	1	1	0	1	1	1	0	0	1	0	0	1
- Supply Chain Management	0	0	0	0	0	0	0	0	1	0	0	0
Compensation tied to ESG performance	0	0	0	0	0	0	1	0	0	0	0	0
Reporting to CDP (0, 1, 2=B rating or above	0	2	0	2	2	0	2	2	2	0	2	2
Economic and infrastructure												
Infrastructure investment GRI-203-1 G4-ec7	1	1	1	1	1	1	1	0	1	1	1	1
Indirect +/- impacts of E and I on stakeholder priorities 203-2; G4-ec8	0	1	0	1	0	0	0	0	1	0	1	0
Social sustainability												
Women in management or board of directors % GRI-405-1 G4-LA12	0	1	0	1	1	1	0	1	1	0	0	1
Salary ratio GRI-405-2 G4-LA13	0	0	0	0	0	0	0	0	0	0	0	0
Programs to increase management diversity	0	0	0	1	0	0	1	0	1	0	1	0

Local communities' engagement and impact assessment GRI-413-1 G4-SO1	0	1	0	1	1	0	1	1	1	0	1	0
Significant actual and potential negative impacts GRI-413-2 or G4 SO2	1	1	0	0	0	0	0	0	1	0	0	0
Society and Community Related Controversy or Incidents	0	1	0	0	0	0	0	0	0	0	0	0
Environmental Sustainability												
Programs to reduce key environmental impacts (water, waste)	1	1	1	1	1	0	1	1	1	1	1	1
Programs to reduce GHG emissions	1	1	1	1	1	1	1	1	1	1	1	1
Programs and targets to increase renewable energy	1	0	0	0	1	1	0	1	1	0	1	0
Aggregated variables (assessed total of scores below)	5	6	2	7	5	4	5	8	6	2	3	5
Disclosure Quality												
1) directness of communication	1	0	0	1	1	1	1	1	1	0	1	1
2) clarity of stakeholder identification	1	1	0	1	1	1	0	1	0	0	0	1
3) deliberateness of collecting feedback		0	0	0	0	0	1	1	1	0	0	0
4) broadness of stakeholder inclusiveness	0	1	0	1	1	0	0	1	1	0	0	1
5) utilization of SE for learning	0	1	0	0	0	0	0	1	0	0	0	0
Relationship Type:												
1) Transactional (1-way communication) 2) Transitional (predominantly 1-way with some 2 way) 3) Transformational (predominantly 2-way)	1	2	1	2	1	1	2	2	2	1	1	1
Project Management Maturity												
(1-compliant; 2-reactive; 3-proactive; 4-purpose) see pg. 95	2	1	1	2	1	1	1	1	1	1	1	1
	BNSF	**CSX**	**KS**	**NS**	**UP**	**BNSF**	**CN**	**CP**	**CSX**	**KS**	**NS**	**UP**
	2015	**2015**	**2015**	**2015**	**2015**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**	**2014**
SUM	**22**	**35**	**8**	**31**	**25**	**20**	**30**	**32**	**35**	**7**	**23**	**23**

Stakeholders and Engagement 2018-2016	**CN**	**CP**	**KS**	**NS**	**UP**	**BNSF**	**KS**	**UP**	**CN**	**CP**	**CSX**	**KS**	**NS**	**UP**
	2018	**2018**	**2018**	**2018**	**2018**	**2017**	**2017**	**2017**	**2016**	**2016**	**2016**	**2016**	**2016**	**2016**

Dedicated SE section (0-no, 1-yes)	1	1	1	0	1	1	1	1	1	1	1	1	1	1
Objectives of SE (0, 1-strategic objectives, 2-define report content)	2	2	2	0	1	2	2	0	2	2	1	2	1	1
Definition of stakeholders	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oversight of ESG Issues (Director of sustainability-governance) GRI-102-20; G4-36	1	1	1	1	0	1	1	0	1	1	1	1	0	0
Internal report assurance and/or stakeholder panel (0, 1, 2) (advisory committees) GRI-102-32 02 21, G4-48	1	1	2	0	0	1	2	0	0	1	1	2	0	0
List of stakeholder groups GRI-102-40, G4-24	1	1	1	0	1	1	1	1	1	0	1	1	1	1
Approach to stakeholder engagement (i.e., is SE related to sustainability) GRI-102-43; G4-26	1	1	1	0	1	1	1	0	1	0	1	1	1	1
Defining report content and topic boundaries (do they report any clear exclusions) GRI-102-46 G4-18	1	1	1	0	1	1	1	0	1	1	1	1	1	0
Opportunity for feedback: Has a contact point for questions or other types of feedback regarding the report and its contents been provided? GRI-102-53; G4-31	1	1	1	1	1	1	1	1	1	1	1	1	1	1
External Verification of CSR Reporting (P) (External Assurance Report) GRI-102-56; G4-33	1	0	0	0	0	0	0	0	0	0	1	0	0	0
SE Methods - specifically with community and employees														
- Surveys	1	1	1	0	0	1	1	0	1	1	1	1	1	1
- President and CEO town hall meetings	0	1	1	0	1	1	1	0	0	0	1	1	1	1
- 24/7 Community connect online platform	0	1	0	0	1	1	1	1	0	1	1	1	1	1
- Employee-led fundraising or volunteerism	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Community advisory council	0	0	1	0	0	0	1	1	0	0	0	1	1	0

-Training first responders	1	1	1	1	1	1	1	1	1	1	1	1	1	1
- Active Outreach/Government relations and public relations team outreach	1	1	0	0	1	1	1	1	0	0	0	1	1	1
SE Frequency	0	0	1	0	1	0	1	0	0	0	0	1	0	0
SE Measurable Goals & Objectives	0	0	0	0	0	1	0	0	0	0	0	0	0	0
SE guidelines (a strategy or plan) used to guide engagement (e.g., AA1000) 3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Involvement in decision-making beyond reporting process (regular assessments) 4.1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Material Topics														
- Public Safety & wellbeing (grade crossing safety, trespasser prevention, safe hazmat transport)	1	1	1	1	0	1	1	1	1	1	1	0	1	1
- Emergency Preparedness	0	1	0	0	0	0	0	0	1	1	1	0	0	0
- Indigenous Relations	1	1	1	0	0	0	0	0	1	1	0	0	0	0
Community Engagement (company participation in communities of operation)	1	1	1	0	0	1	0	1	1	1	0	0	1	1
- Diversity and Inclusion/Equal opportunity/Non-discrimination	1	1	1	0	0	1	1	0	1	1	0	1	1	0
- Customer Service	1	1	0	0	0	1	0	0	1	0	1	0	1	0
- Environmental footprint	1	1	1	0	0	1	1	1	1	1	0	1	0	1
- Energy efficiency and emissions	1	1	1	0	0	1	1	0	1	1	0	1	1	0
- Asset and Rail Network Management	1	1	0	0	0	1	0	0	0	1	1	0	0	0
- Asset and Rail Network Resiliency	1	1	0	0	0	1	0	0	0	1	0	0	0	0
- Workforce Management	1	1	1	0	0	1	1	0	1	1	0	1	0	0
- Supply Chain Management	1	1	0	0	0	1	0	0	0	1	0	0	0	0
Compensation tied to ESG performance	1	1	0	0	0	0	0	1	0	1	0	0	0	1
Reporting to CDP (0, 1, 2=B rating or above)	2	1	1	1	2	0	1	2	2	2	2	0	2	2
Economic and infrastructure														
Infrastructure investment GRI-203-1; G4-ec7	0	0	1	1	0	1	1	1	0	1	1	1	1	1

Indirect +/- impacts of E and I on stakeholder priorities GRI-203-2; G4-ec8	0	0	0	0	0	0	0	0	0	1	1	0	1	0
Social sustainability														
Women in management or board of directors % GRI-405-1 G4-LA12	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Salary ratio GRI-405-2 G4-LA13	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Programs to increase management diversity	1	1	1	0	0	1	1	1	1	1	0	0	1	0
Local communities' engagement and impact assessment GRI-413-1 G4-SO1	0	1	1	0	0	1	1	0	0	1	1	1	1	0
Significant actual and potential negative impacts GRI-413-2 or G4 SO2	0	0	0	0	0	0	0	1	0	1	0	0	1	0
Society and Community Related Controversy or Incidents	1	0	0	0	0	ND	0	0	1	0	2	0	0	0
Environmental Sustainability														
Programs to reduce key environmental impacts (water, waste)	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Programs to reduce GHG emissions	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Programs and targets to increase renewable energy	0	0	1	0	1	0	1	1	0	1	1	0	0	1
Aggregated variables (total of rows below)	8	9	10	2	3	9	9	3	6	6	10	4	5	4
Disclosure Quality														
1) directness of communication	1	1	1	0	1	1	1	1	1	1	1	1	1	0
2) clarity of stakeholder identification	1	1	1	0	0	1	1	0	0	0	1	1	1	1
3) deliberateness of collecting feedback	1	1	1	0	0	1	1	0	0	1	1	0	0	0
4) broadness of stakeholder inclusiveness	1	1	1	0	0	1	1	0	1	0	1	0	1	1
5) utilization of SE for learning	1	1	1	0	0	1	1	0	1	1	1	0	0	0
Relationship Type:														
1) Transactional (1-way communication) 2) Transitional (predominantly 1-way with some 2 way) 3) Transformational (predominantly 2-way)	1	2	2	1	1	2	2	1	2	2	2	1	1	1

Project Management Maturity														
(1-compliant; 2-reactive; 3-proactive; 4-purpose)	2	2	3	1	1	2	2	1	1	1	3	1	1	1
	CN1	**CP2**	**KS3**	**NS4**	**UP5**	**BNSF6**	**KS7**	**UP8**	**CN9**	**CP10**	**CSX11**	**KS12**	**NS13**	**UP14**
	2018	**2018**	**2018**	**2018**	**2018**	**2017**	**2017**	**2017**	**2016**	**2016**	**2016**	**2016**	**2016**	**2016**
SUM	**42**	**44**	**41**	**12**	**21**	**40**	**40**	**24**	**33**	**40**	**39**	**31**	**33**	**26**

Appendix C: Sustainalytics Scores Transformed on 21 Variables

The following six tables represent the transformed scores of NACI (except BNSF which did not have input on 21 key sustainability variables belonging to *Sustainalytics'* dataset. Each year was comprised of 12 scores (one for each month) from 0% to 100%. These were converted to a score of 0-4 for each month and an average taken.

CN	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2009	2	0	0	0	0	0	0	0	0	1	0	4	4	2.96	0.8	0	0	0	0	3	3.2
2010	3.167	0	0	0	0	0	0	0	0	1	0	4	4	3.2	1	0	0	0	0	3	4
2011	4	0.25	0	1	0	0	0	0	0	3	0	4	4	3.2	1	0.8	0	0	0	3	4
2012	4	1	0	0.333	0	0	0	0	0	1.667	0	4	4	3.2	1	0.2	0	0	0	3	4
2013	4	1	0	1	0	0	0	0	0	0	0	4	4	3.2	1	0.8	0	0	0	3	4
2014	4	0.083	0	0.917	0	0	0	0.2	0	1.333	1.333	4	0.75	3.6	1	0.073	0	0	0	3	4
2015	4	0	0	0	0	0	0	0.8	0	2.583	2	4	0.417	4	1	0.55	0	0	0	3	4
2016	4	0	0	0	0	0	0	0.8	0	2	2	4	2.5	4	1	0.8	0	0	0	0.75	1
2017	4	0	0	0	0	0	0	0.8	0	2	1.5	4	4	3	0.75	0.8	0	0	0	0	0
2018	4	0	0	0	0	0	0	0.8	0	2	0	4	4	0	0	0.8	0	0	0	0	0

CP	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2009	2	0	0	0	0	0	0	0	0	0	0	4	0	3.2	0	2	0	0	0	3	0
2010	3.167	0	0	0	0	0	0	0	0	0	0	4	0	4	0	1.1	0	0	0	3	0
2011	4	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0.8	0	0	0	3	0
2012	4	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0.8	0	0	0	3	0
2013	4	0	0	0	0	0	0	0	0	0	0	4	0.917	4	0	0.8	0	0	0	3.917	0
2014	4	0	0	0	0	0	0	0	0	0	0	4	0.083	4	0	0.07	0	0	0	3.083	0
2015	4	0	0	0	0	0	0	0	0	0.167	0	4	0	4	0	0.003	0	0	0	3	0
2016	4	0	0	0	0	0	0	0.067	0	1	0	4	0	4	0	0.04	0	0	0	0.75	0
2017	4	0	0	0	0	0	0	0.8	0	1	0	4	0	3	1	0.04	0	0	0	0	0
2018	4	0.6	0	0	0	0	0	0.8	0	1	0	2.32	2.4	0	1	0.04	0	0	0	0	0

CSX	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2009	2	0	0	0	0	0	0	0	0	0	0	1.2	0	3.2	1	2	0	0	0	3	0
2010	2	0	0	0	0	0	0	0	0	0	0	1.2	0	3.2	1	1.1	0	0	0	3	0
2011	3.833	0.167	0	0.167	0	0	0	0	0	0.167	0	1.2	0	3.2	1	0.8	0	0	0	3	0
2012	4	1	0	1	0	0	0	0	0	1.417	0	2.133	0	3.2	1	0.46	0	0	0	3	1.333
2013	4	1	0	1	0	0	0	0.013	0	2.5	0	4	0	3.2	0.5	0.013	0	0	0	3	4
2014	4	1	0	0.917	0	0	0	0.004	0	3	0	4	0	3.2	0	0.04	0	0	0	3	4
2015	4	4	0	0	0	0	0	0	0	1.167	0	4	3.75	3.2	0	1.24	0	0	0	3	4
2016	4	4	0	0	0	0	0	0	0	3	0	4	1	3.2	0	2	0	0	0	0.75	1
2017	4	4	0	0	0	0	0	0	0	3	0	4	0	2.4	1	2	0	0	0	0	0
2018	4	4	0	0	0	0	0	0	0	3	0	4	0	0	1	2	0	0	0	0	0

Kansas	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2010	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0.917	0	0.833	0	0	0	0	0	0	0	1.1	0	2.2	0	0	0	0	0	2.75	0
2013	0	1	0	0.5	0	0	0	0	0	0	0	1.2	0	2.4	0	0.013	0	0	0	3	0
2014	0	1	0	0.917	0	0	0	0	0	0	0	1.2	0	2.4	0	0.003	0	0	0	3	0
2015	0	1	0	0	0	0	0	0	0	0.083	0	1.2	0	2.4	0	0	0	0	0	2	3.333
2016	0	1	0	0	0	0	0	0	0	1	0	1.2	0.167	2.4	0.167	0	0	0	0	0.5	1
2017	0	1	0	0	0	0	0	0	0	1	0	1.2	1	1.8	1	0	0	0	0	0	0
2018	0	0.4	0	0.6	0	0	0	0	0	2.2	0	2.88	0.4	0	1	0	0	0	0	0	0

NS	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2009	2	1	no data	0	no data	no data	0	0	no data	1	0	1.52	0	2.4	0	0	no data	no data	no data	1	4
2010	3.167	1	no data	0	no data	no data	0	0	no data	1	0	1.6	0	2.4	0	0	no data	no data	no data	2.167	4
2011	4	1	no data	0.167	no data	no data	0	0	no data	1	0	2	0.167	2.4	0	0	no data	no data	no data	3.167	4
2012	4	1	no data	1	no data	no data	0	0	no data	1	0	4	1	2.4	0	0	no data	no data	no data	3.75	4
2013	4	0.833	no data	0.583	no data	no data	0	0	no data	1.417	0	4	0.583	2.4	0	0	no data	no data	no data	3	4
2014	4	0	no data	0	no data	no data	0	0	no data	2	0	4	0	2.4	0	0	no data	no data	no data	3	4
2015	4	0	no data	0	no data	no data	0	0	no data	3	0	4	0	3.2	0	0.003	no data	no data	no data	2.167	4
2016	4	0	no data	0	no data	no data	0	0	no data	3	0	4	0	3.2	0	0	no data	no data	no data	0.5	1
2017	4	0	no data	0	no data	no data	0	0	no data	3	0	4	0	1.8	0	0	no data	no data	no data	no data	no data
2018	4	0	no data	0	no data	no data	0	0	no data	2	0	3	0	0	0	0	no data	no data	no data	no data	no data

UP	Participation in Carbon Disclosure Project (Investor CDP)	Programmes and Targets to Increase Renewable Energy Use	Guidelines and Reporting on Closure and Rehabilitation of Sites	Sustainability Related Products & Services	Products to Improve Sustainability of Transport Vehicles	Use of Life-Cycle Analysis (LCA) for New Real Estate Projects	Signatory to UN Global Compact	Business Ethics Related Controversies or Incidents	Signatory to UN Principles for Responsible Investment	CSR Reporting Quality	External Verification of CSR Reporting	Oversight of ESG Issues	Executive Compensation Tied to ESG Performance	Board Diversity	Quality of Social Supply Chain Standards	Society & Community Related Controversies or Incidents	Community Engagement Programmes	Policy on Indigenous People and Land Rights	Local Community Development Programmes	Guidelines for Philanthropic Activities and Primary Areas of Support	Corporate Foundation
2009	1	0	0	0	0	0	0	0	0	0.8	0	1.2	0	2.4	0	0	0	0	0	3	4
2010	2.75	0	0	0	0	0	0	0	0	1	0	1.2	0	2.4	0	0	0	0	0	3	4
2011	4	0.167	0	0	0	0	0	0	0	1	0	1.2	0	2.4	0	0	0	0	0	3	4
2012	4	1	0	0	0	0	0	0	0	1	0	1.2	0.667	2.4	0.5	0	0	0	0	3	4
2013	4	1	0	0	0	0	0	0	0	1	0	1.9	1	2.4	1	0.2	0	0	0	2.5	4
2014	4	1	0	0.25	0	0	0	0.4	0	1	0	4	1	2.4	1	0.077	0	0	0	2	4
2015	4	1	0	0.083	0	0	0	0.2	0	1	0	4	1	2.4	1	0.04	0	0	0	2	4
2016	4	1	0	1	0	0	0	0	0	1	0	4	1	2.4	1	0.04	0	0	0	0.5	1
2017	4	1	0	1	0	0	0	0	0	1	0	4	1	1.8	1	0.04	0	0	0	0	0
2018	4	1	0	1	0	0	0	0	0	1	0	4	1	0	1	0.04	0	0	0	0	0

Appendix D: Framework for Meaningful Engagement of Local Communities

This framework, adapted from OECD (2017), addresses risks about executing stakeholder engagement activities with local communities (LCs) to ensure they are meaningful and contribute to the avoidance and mitigation of adverse impacts. The perspective adopted is one of due diligence rationales because it is proactive, and this is believed to be an approach with sound potential for NACI. This approach presents a viable option for NACI that react to or manage LCs (following grievances) when proactive and the earliest engagement possible on infrastructure projects could produce better outcomes.

Due diligence recommendations are grouped by processes with the understanding that activities are not linear, but iterative.

I. Recommendations for corporate planning or to management

1. Position stakeholder engagement with LCs strategically

a) Establish and clearly communicate an ***enterprise policy, strategy,*** or commitment on stakeholder engagement with clear objectives, timetable, budget, and responsibilities.
b) Integrate LC engagement into core management systems i.e., manage it as a business function not just governmental and public relations events (OECD, 2017; International Finance Corporation, 2007).
c) Consider LC issues when forming business relationships e.g., supply chain sustainability and economic development for communities.
d) Establish a feedback loop ***to integrate LC views into project decision making.***
e) Be proactive in cultivating relationships with LCs in advance of any conflict (IFC, 2007).

II. Recommendations to on-the-ground personnel

1. Take adequate steps so that personnel undertaking stakeholder engagement activities have a strong understanding of the local and operating context

a) Consult with technical personnel, local sources, and relevant documents.
i) Consult technical personnel and where relevant ***participate in conducting and designing impact assessments.***
ii) Where possible involve local communities in designing and conducting impact assessments.
iii) Conduct preliminary field research.
b) Vet information for accuracy.
c) Continuously update understanding with different sources within each LC.

Ensure that stakeholders and their interlocutors are appropriately identified and prioritized

a) Identify and prioritize most severely impacted LCs.
i) Identify all impacted LCs and rights-holders.
ii) Prioritize vulnerable and most severely impacted stakeholders.
iii) Verify and update findings.
b) ***Verify stakeholder representatives or interlocutors and be clear regarding who is and is not presented***.
i) Verify that views of constituents are being represented.
ii) Re-evaluate representatives as relevant.

3. Establish the necessary support system for meaningful stakeholder engagement

a) ***Set aims and objectives with the local communities*** that provide the correct framework for stakeholder engagement activities throughout the project lifecycle and beyond.

b) Develop systems to ensure stakeholder facing personnel treat stakeholders with respect.
c) ***Provide the support and information necessary for stakeholders*** to represent their perspectives and interests (requirement of Canada's Impact Assessment Act, 2019).
i) Share material information with stakeholders from the earliest stages.
ii) Balance transparency and privacy concerns.
iii) Consult stakeholders to inform information sharing and be mindful of cultural needs/preferences.
iv) Provide the necessary training or resources to stakeholders.
v) Support the formal/informal development of LC relationships through employees (IFC, 2007)
d) Optimize resources (human and financial) for engagement activities (e.g., for LCs, a ***knowledge-based platform or portal about railway infrastructure projects*** would promote transparency and a foundation for trust based on equitable disclosures). (World Economic Forum, 2016)
i) Identify and request resources in advance.
ii) ***Advocate for additional resources*** and streamline resources in the face of resource constraints. (***This could emanate from intersectoral strategic partnerships***)

4. Design appropriate and effective stakeholder engagement activities and processes

a) Plan appropriate timelines for stakeholder engagement activities (Knowledgeable SE owners will know that working with LCs and Indigenous communities requires significant planning and longer time horizons)
b) Identify which mode of engagement is needed or required (See Modes of Engagement section that follow).
c) Identify and apply best practices (Refer to *Stakeholder Engagement Before and Beyond* section that follows.
d) Identify and respond to external challenges to engagement.
e) Establish clear and functional processes to enable remediation of adverse impacts.
f) Engage with stakeholders to ensure remediation is appropriate.
g) Use stakeholder engagement as a sound prerequisite to risk management and scale strategies relative to risks and impacts (IFC, 2007)
Adapted from: OECD (2017)

Appendix E: Stakeholder Engagement: Before and Beyond Conflict for Communities and Railways

This guide is for project-based or ongoing activities; managers or decision-makers; and communities; organized or individual. It is intended to support relationship and knowledge management as key processes within social responsibility and sustainability; transparency and reporting; governance and accountability and to ultimately support risk, quality improvements and value creation for all stakeholders.

It represents a synthesis of the following standard, guidelines, reports, processes, and observations of better practices to effect optimal Stakeholder Engagement by NACI with local communities:

- ✓ AA 1000 Accountability Principles Standard 2015, Stakeholder Engagement Standard;
- ✓ Federation of Canadian Municipalities' and Railway Association of Canada's Guidelines for New Development in Proximity to Railway Operations
- ✓ IFC Stakeholder Engagement Good Practice Handbook for Companies Doing Business in Emerging Markets;
- ✓ Impact Assessment Act of Canada;
- ✓ ISO 26000 Guidance on Social Responsibility;
- ✓ Meta-Evaluation of the Local Government Modernisation Agenda: Progress Report on Stakeholder Engagement with Local Government;
- ✓ Organization for Economic Cooperation and Development's Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractives Sector;
- ✓ Annual Report on the OECD Guidelines for Multinational Enterprises 2018
- ✓ Project Management Institute, Stakeholder Management

Elements of Quality Stakeholder Engagement (Assessment, Design, Implementation and Communication)

The commitment to stakeholder engagement (SE) is principles-based, with integration into the organization's governance, strategy, and operational management;

Meaningful, risk-based throughout the due diligence process to identify, prevent and mitigate actual and potential negative impacts and promotes Responsible Business Conduct (OECD, 2017; OECD, 2019)

The principles of materiality, inclusivity and responsiveness should be formalized in accordance with the railway's governance such as inclusion in policy, vision, mission, and values statements.

A commitment is both necessary and expressed to respond comprehensively and in a balanced fashion to material issues, impacts and opportunities.

The process for decision-making has been agreed-upon, is appropriate to stakeholders, and as a result the scope is clear;

SE is integrated into the railway's governance processes which defines decision-making processes including roles and responsibilities.

It highlights issues that are material to both the railway and its stakeholders;

It provides opportunities for dialogue and transparency;

It is timely yet responsive; and

Adds value to the stakeholders and organization.

Results in outcomes valued by involved parties and is well communicated.

Purpose and scope of engagement and identification of stakeholders must be well laid out in a credible manner to include ownership and mandate.

Scope relates to the subject matter or material issues, part(s) of organization involvement, geographic reach, and the timeframe for the engagement (e.g., long-term and/or project-based). Adjustable based on SE feedback.

Mandate and ownership—owners of engagement (changeable) must have appropriate competencies e.g., cultural awareness and sensitivities, language, historical knowledge, and project plan. Internal or external including partners and decision-making collaborators linked to planning, preparation, implementation review and communication of SE.

*Stakeholder Identification and Analysis** —should be systematically performed, revised as necessary and consider certain attributes: dependency, responsibility, tension, influence, and diversity of perspectives e.g., use of impact zone mapping, aerial photographs.

Stakeholder Engagement Process (two-way)

- Strategic development processes and policies—aspirations, goals, audiences and approach, resources necessary
- Planning: governance processes—forming an opinion, making, and implementing decisions
    - Profile and map stakeholders—individual reps and groups, and their purpose for engaging (provides clear strategic direction and unimpeded by distractions)
        - SE owners seek to understand stakeholder's:
            - Knowledge of issues associated with purpose and scope
            - Expectations of the engagement
            - Existing relationship with organization
            - Dependence on organization
            - Willingness to engage
            - Level of influence
            - Type (NGO, special interest, municipality, chamber of commerce)
            - Cultural context
            - Geographical scale of operation
            - Capacity to engage (language, physically or otherwise ability-challenged)
            - Legitimacy and representation
            - Relationships with other stakeholders
    - Determine engagement level(s) and method(s)—to meet needs, capacity, and expectations of stakeholders—levels for stakeholder map segments may vary; two-way process
        - Analysing of stakeholder views: protests, letters, media, grievance mechanisms, websites, other advocacy efforts
        - Tracking information: media, internet, social network, second-hand reports

        - Creating awareness: bulletins, newsletters and brochures, websites, speeches and conference presentations, road sows, press releases, advertising and other public displays, lobbying, social media
    - Establish and communicate boundaries of disclosure—specification of information dissemination to stakeholder
    - *Information Disclosure*: early communication of information*
    - Draft engagement plan (Refer to Appendix G)—include management of the SE process—tasks and timelines, contact person, technologies used, ground rules, comfort requirements, engagement risks, resource requirements, budget, channels of communication, monitoring and evaluation and *reporting and engagement outputs and outcomes e.g., sustainability report.*

      Factors that could impede the SE process should be included e.g., travel, accessibility and neutrality of location, timing, anonymity, *local conflicts, lack of shared understanding,* literacy and language, culture-specific communication styles
    - Establish indicators to measure and evaluate SE progress—areas for improvement or value derived
- Preparing
    - Mobilize resources—identified and approved for SE
    - *Management Functions*:* Build capacity—owners of process and stakeholders identify areas necessary for building of capacity—gaps identified to prevent exclusion or disengagement.
        - Knowledge—understanding and awareness of issues, organization, culture, and politics
        - Skills
            - language and communication skills
            - examine and interpret SE outputs and capture key insights, messages etc.
            - individual personality traits, talents, intelligences, ability to innovate
        - Opportunity—availability of resources: finances, physical, time, access to information.
            - Criteria for financial support to stakeholders should be transparent and eligibility criteria clear
            - Balance levels of knowledge, understanding and key issues
    - Identify, assess, and prepare for engagement risks by owners of SE—framework for risk management
- Implementing the engagement plan
    - Invite stakeholders to engage and perform *stakeholder consultation**inclusively
        - Incl. purpose and scope, process, and timelines
        - Expected contributions of stakeholders
        - Benefits to invited stakeholder
        - Practical information
        - Instructions on responding
        - Information to be provided and next steps
    - Brief stakeholders—materials support robust responsiveness
    - Engage—procedural and behavioural ground rules established with stakeholders

    - Document the engagement and its outputs e.g., purpose and aim of SE, methods used, key discussions and interventions, material issues, expectations and perceptions, proposals, and recommendations
    - *Conduct Negotiation and Partnerships** value added to impact mitigation or benefits through strategic partnerships (IFC, 2007)
    - *Develop an action plan*—owners of SE analyze engagement and each output and plan a response to each output; plan delivered in consultation with implementation team
    - Communicate engagement outputs and action plan—to stakeholders in timely way
    - *Conduct Grievance Management** for accessible and responsive means for concerns to be raised by stakeholders (IFC, 2007)
- Continuous Reviewing and Improving—monitor SE process
    - Monitor and evaluate the engagement—completed systematically for quality of overall and individual SE
    - *Stakeholder Involvement in Project Monitoring**by stakeholder and external monitors
    - Learn and improve—owners of SE and stakeholders work to improve SE by identifying and acting on specific improvements
    - Develop and follow-up on action plan—including ensuring organizational collaboration and informing stakeholder of the outcome
    - *Report on engagement—public communication on value of aggregated SE activities and overall outcomes and impact.*
- *Reporting on SE—stakeholder groups engaged; approach to SE and methods used, frequency of engagement, primary issues and concerns raised, and organizational response to engagement outcomes*
- *Report to Stakeholders*both those consulted and others with general interest in project.*

Italicized categories with * are specific to IFC's key components of Stakeholder Engagement p. 12 of the Stakeholder Engagement Good Practice Handbook

Stakeholder Engagement Ultimately Enhances an Organization's:

- Performance
- Knowledge
- Social and relationship capital
- **License to operate**
- Resources through stakeholders effecting both strategic value and operational improvement
- Capacity in considering the voices of those with rights to be included in decision making for equitable and sustainable social development
- **Materiality assessment for sustainability management and reporting**
- Risk identification and management; and reputation-building
- Ability to pool resources and collaborate for mutual benefits
- To understand complex environments including the dynamics of culture and market development
- **To learn from stakeholders which leads to and innovation** and improvements in processes and products i.e., insights become organizational assets and inform further plans and processes

- Knowledge exchange with stakeholders that influences their decisions that effect the organization and society
- Development of trusting and transparent relationships with stakeholders
    - Performance on dimensions of inclusiveness, materiality, and responsiveness

Appendix F: Modes of Engagement

Many different terms are used to mean the same things in the context of stakeholder engagement. The terms below should be understood as described:

●**Monitor** *One-way communication: stakeholder to organization*
• Media and internet tracking.
• Second-hand reports from other stakeholders
possibly via targeted interviews.

● **Informing/reporting** *One-way communication*: *organization to stakeholder*, there is no invitation to reply generally from the enterprise to stakeholders focused on providing information.
• Bulletins and letters
• Brochures
• Reports and websites
• Speeches, conferences, and public presentations

●**Advocate** *One-way communication: organization to stakeholder*
• Pressure on regulatory bodies
• Other advocacy efforts through social media
• Lobbying efforts

● **Consult***: Limited two-way engagement*: organization asks questions, stakeholders answer. Communication focused on sharing information and collecting information to adequately understand the project or activity's context and the preferences, concerns, and expectations of each party and to ensure all parties learn from one another's perspectives.

• Surveys
• Focus groups
• Meetings with selected stakeholder/s
• Public meetings
• Workshops

● **Negotiate:** *Limited two-way communication*: discuss a specific issue or range of issues (with the objective of coming to a shared agreement or consensus)

• Collective bargaining with workers through
their trade unions

●**Transact** *Limited two-way engagement: setting and monitoring performance according to terms of contract*
• 'Public- Private partnerships'
• Private Finance Initiatives
• Grant-making
• Cause-related marketing.

● **Responding:** acting in response to an issue, concern, or certain information.

●**Involve** *Two-way or multi-way engagement: learning on all sides but stakeholders and organization act independently*
• Multi-stakeholder forums
• Advisory panels
• Consensus building processes
• Participatory decision-making processes
• Focus groups
• Online engagement tools

●**Collaborate** *Two-way or multi-way engagement: joint learning, decision making and actions*
• Joint projects
• Joint ventures
• Partnerships
• Multi-stakeholder initiatives
• Online collaborative platforms

●**Empower:** *New forms of accountability; decisions delegated to stakeholders; stakeholders play a role in shaping organizational agendas*
• Integration of stakeholders into governance, strategy, and operations of the organization

Adapted by author from: OCED 2017, 2019; AA1000 SES.

Appendix G: Understanding Local Context to Shape Stakeholder Engagement Activities

Area of Impact The geographic area within which project activities are likely to have human rights, social, cultural, and environmental impacts. These should include potential negative impacts as well as positive impacts, such as opportunities for employment or business development. The area can extend far beyond the physical area of the project site and include downstream and trans-boundary regions, as well as nearby towns and settlements. Special attention should be paid to potential cumulative impacts (e.g., how the operation may add to the impacts of external operations or past and future impacts) A specific example would be the potential dual and compounding impacts of two different types of infrastructure projects—the environmental impact to key water resources such as the Skeena River from herbicides used to control rail-side brush and negative impacts from a pipeline project's chemical run-off.

Railway lines may have trans-boundary impacts in both countries. This could lead to jingoism if a railway is foreign owned (e.g., during the stakeholders' engagement with 33 communities for CN's acquisition of EJ&E lines that encircles the Chicago region).

Identification of impacted stakeholders and rights-holders. Identification of potential cumulative impacts to stakeholders.

Historical events Key historical events in the area or region that may be relevant to the project, and which may affect engagement with stakeholders. This may include legacy issues from prior development projects; cumulative impacts of past, on-going, or foreseeable activities; history of conflict in the area, including between community groups; previous protests over land, resources, and infrastructure ownership, use and/or access.

Identification of potential cumulative impacts on stakeholders. Identification of opposition groups and vulnerable groups. Identification of challenges to engagement (e.g., inherited issues, violence, and opposition).

Regulatory regime and relevant standards The regulatory regime governing an operation and obligations or commitments around stakeholder engagement activities may include: applicable international standards such as the OECD Guidelines, other instruments related to international human rights (in order to avoid human rights infringements or complicity therein); national laws of the country where the enterprise is domiciled or publicly-traded (if applicable), national, regional or local law of where the enterprise is operating; contracts, financing agreements, contractor agreements, and supplier agreements, as relevant and how such regulatory regimes are enforced.

Identification of legal obligations about stakeholder engagement. Identification of appropriate modes of engagement. Identification of challenges to engagement (e.g., legal requirements and repressive regimes).

Political and governance National, regional and local political issues that might influence engagement with local communities and other stakeholders such as the presence or the absence of strong civil

society, trade unions and democratic institutions; local perceptions about corruption, tolerance towards criticisms of the government; administrative structures and formal decision-making processes; investment regimes and approaches to resource nationalism; dynamics of competing political parties; integrity of the judicial system and rule of law.

Identification of challenges to engagement (e.g., capacity constraints, bad-faith on the part of stakeholders and other groups). *To avoid or mitigate the risk of being acting in bad faith railways that may want to listen to LCs and compromise may be prevented from doing so by legal counsel. Identification of appropriate modes of engagement.*

Government structure and roles Different roles, powers, and underlying interests at the local, regional, and national levels of government, and between different departments and agencies responsible for the various aspects of regulating the railway transportation sector. Capacity and institutional presence of the government at different levels*. Regulators wished to not be part of the CN acquisition of EJ&E lines. The system, therefore, deflected the concerns from the national level to the community level and what were legitimate issues for the LCs were not equally addressed across the communities. (Base on my pre-study observations which led to the formal post-proposal investigations)*

Identification of challenges to engagement (e.g., capacity constraints, competing interests and expectations amongst stakeholders). Identifying appropriate modes of engagement.

Demographics and social relations Characteristics of the population in the local area/region, including population size, age, and trends; migration patterns; gender relations, relations between different ethnic groups; presence of vulnerable or marginalized groups and indigenous peoples; crime rates and security.

Identification of potentially impacted stakeholders including vulnerable groups. Identification of engagement challenges (social/cultural norms, local power dynamics, socio-economic constraints. Identification of aims of stakeholder engagement activities (e.g., creating shared value). Identification of appropriate modes of engagement. OECD (2017) recommends: “Enterprises should also consider how certain impacts may vary amongst different stakeholder groups and prioritise the most vulnerable and severely impacted groups for engagement” p. 47. For example, areas that were already “hard hit” such as Gary, Indiana (the site of the Kirk Yard which was part of one of CN’s strategic acquisitions to divert rail traffic and increase capacity in the acquired by CN continue to be plagued

Economy and employment National and subnational data (both regional, local, and trans-boundary if relevant) on income, poverty levels, sources of employment, availability of qualified workers, business environment, working conditions and standard of living, quality of life, literacy rates. Availability of locally produced goods and services. The relevant types of available goods and services will differ amongst operations as well as during the phases of projects.

Identification of potentially impacted stakeholders and vulnerable groups. Identification of challenges to engagement (social or cultural norms, socio-economic constraints, differences in genders). Identification of aims of stakeholder engagement activities (e.g., creating shared value). Identification of appropriate modes of engagement (e.g., benefit sharing through local procurement, optimising benefits locally).

Human rights Strength of human rights protections under domestic law; track record of the governments in complying with international human rights obligations; track record of industry and

enterprises in addressing human rights issues in the past, including through access to remedy; practices of local, regional, and national security forces (e.g., violent repression of protests, involvement in disappearances of human rights defenders); access to remedy for victims of human rights abuse.

Identification of potentially impacted rights-holders. Identification of appropriate modes of engagement, including remedy processes. Identification of challenges to engagement, e.g., legislative requirements and repressive regimes, violence, and opposition).

Socio-economic factors and infrastructure Factors affecting the ability of people to secure a livelihood, including: access to productive resources, security of land tenure, employment opportunities; factors that may contribute to vulnerability (e.g. health conditions, gender, discrimination, ethnicity or religious status); patterns of social exchange and reciprocity outside the formal economic system; condition and accessibility of health services, education, utilities, transportation and other infrastructure (e.g. roads, rail, air, sea). The vulnerability of subsistence/traditional economic activities to infrastructure/ demographics/ecosystem changes.

Identification of potentially impacted stakeholders and vulnerable groups. Identification of appropriate modes of engagement (e.g., benefit sharing through shared-use infrastructure, etc.). Identification of challenges to engagement (social or cultural norms, socio-economic constraints, logistical constraints).

Gender factors Gender roles, responsibilities and relations within specific contexts and groups; recognition of gender issues by the government. Differences among genders in education levels, skills, and employment opportunities.

Identification of potentially impacted stakeholders and vulnerable groups. Identification of challenges to engagement (social or cultural norms, socio-economic constraints, logistical constraints).

Cultural factors Languages spoken, belief systems, cultural practices, cultural heritage (including places of cultural and spiritual significance), and traditional decision-making. Presence and recognition of indigenous peoples. Protocols as they relate to engagement (e.g., permission to enter a community, whether initial engagement with an authority group, such as a government body or community leaders, may be necessary as a matter of protocol).

Identification of potentially impacted stakeholders and vulnerable groups. Identification of appropriate modes of engagement (e.g., engaging to obtain consent through traditional decision-making processes). Identification of challenges to engagement (social or cultural norms, socio-economic constraints, logistical constraints).

Social organisation Formal and informal characteristics of the established social order; aspects of household and community organisation and capacity that affect participation in decision-making processes and access to services and information.

Identification of potentially impacted stakeholders and vulnerable groups. Identification of appropriate modes of engagement. Identification of challenges to engagement (social or cultural norms, socio-economic constraints, local power dynamics, capacity constraints).

Workers' rights General conditions of work including wages, working time, social protection, occupational health, and safety. The prevalence of work-related human rights abuse such as discrimination, child labour, forced labour and human trafficking. The role of the State in providing

labour protection and protecting workers' rights. The extent and nature of industrial relations (management – trade union relations) and collective bargaining. The extent to which the right of workers to form or join trade unions and to bargain collectively is respected. The extent to which trade unions are independent of employer and government.

Identification of groups with special legal status (e.g., workers). Identification of appropriate modes of engagement. Identification of challenges to engagement (e.g., local power dynamics, repressive regimes).

Adapted by author from OECD, 2017

Appendix H: Identifying Potential Human Rights Impacts

Issue	Examples of potential human rights impacts	Factors increasing likelihood of human rights impacts if present	Relevant stakeholders and stage of project lifecycle
Resettlement	Infrastructure project activities can result in displacement and loss of access to traditional lands and livelihoods. Inadequate stakeholder engagement can result in poorly planned livelihood restoration programs. Potential rights impact: e.g., right to an adequate standard of living, right to food (for current and future generations), right to health.	Resettlement is the responsibility of national authorities with weak capacity and/or a poor record of engaging with local communities impacted by development projects. Region where resettlement will take place is resource scarce. Local communities have a unique status (e.g., indigenous peoples) or cultural heritage they would like to protect. Land in question has cultural or spiritual value for local people. Local communities have insecure land ownership/tenure status	Local communities during construction and expansion of operations.
In-migration	Influx of people from outside the area seeking economic opportunities can drive up the cost of housing and food and increase the level of homelessness among vulnerable groups. Cultural rights of previous residents such as indigenous communities may be threatened by in-migration. In-migration can also lead to the creation of tension and conflict, particularly when groups' interests vary (e.g., external workers seeking to protect their jobs). Potential rights impact: e.g., right to an adequate standard of living including right to food and housing, right to participate in cultural life, right to life, liberty, and personal security. Example of this on a different type of infrastructure project can be found at: http://www.wetsuweten.com/files/Wetsuweten_Title_and_Rights_report_to_EAO_for_Coastal_GasLink_Application.pdf	Local communities have a unique status (e.g., indigenous) or cultural heritage they would like to protect. There are high levels of poverty in the area and few opportunities for employment. There is a scarcity of land and natural resources capable of supporting large number of migrants. There is insufficient infrastructure to support many migrants. There are large numbers of people belonging to vulnerable groups in the area (e.g., the aged, those in ill health, youth, and ethnic minorities subject to discrimination). Cultural factors exist requiring	Local communities, specifically vulnerable populations, and migrant workers primarily during feasibility studies and construction but also operations.

		that extended family members be housed	
Access to resources and food security	Degrade agricultural land. Potential rights impact: e.g., right to an adequate standard of living, right to food and right to health and access. Example of a train which for 56 minutes simultaneously blocked four crossings thereby impeding ambulance's route to hospital. https://www.nbcchicago.com/news/local/first-responders-delayed-by-blocked-rail-crossings/2037826/	Local communities are dependent on natural resources for subsistence and livelihood needs. There are high levels of poverty in the area and few opportunities for employment. There are large numbers of vulnerable people in the area, for example the aged, youth and ethnic minorities. Local communities have insecure land ownership/tenure status.	Stakeholders relying on resources within area of impact, during construction and operations.
Security	Private security personnel and/or public security forces may use excessive force to remove landowners protesting peacefully about an overland pipeline that will cross their land. Potential rights impact: right to security of person and right to freedom of expression.	Concerns have been raised by human rights groups or others about the lack of basic freedoms in the region and/or country (e.g., freedom of speech, freedom of assembly, etc.). There is a history of repression in the region and/or country against people or groups who participate in civil protest. There is a lack of training on human rights issues for security forces	Local communities, advocacy groups or organisations opposed to the project, prior to concession issuance and during construction and operation
Cultural heritage	Infrastructure project activity can damage areas of cultural and spiritual importance to local communities, in particular indigenous peoples. Potential rights impact: e.g., right to participate in cultural life.	Local communities have a unique status (e.g., indigenous) or cultural heritage they would like to protect. There are documented sites of spiritual significance or cultural heritage in the area	Stakeholders with cultural heritage or sites located within area of impact, during construction and operations.
Community health	Adverse impacts on local people's health can arise from groundwater contamination or other forms of pollution. In-migration can lead to increased rates of diseases. Potential rights impact: e.g., right to health.8	Local communities rely on natural water sources within the area of impact (e.g., rivers, bores) for their daily water needs. Local communities are	Communities within area of impact or relying on resources within the area of impact during operations and construction.

		reliant on land and natural resources in areas surrounding infrastructure project and operations for their livelihood. Significant in-migration.	
Gender relations	Men in a community may gain access to employment and economic opportunities and women are excluded, or subject to sexual harassment. An increase in the cash economy can lead to changing power structures within families. Potential rights impact: e.g., right to freedom from discrimination.9	Civil society organizations or other groups have expressed concerns over discrimination against women or gender-based violence. Limited or inequitable participation of women in formal labour markets. Educational levels and cultural factors	Women in local communities or migrant populations during construction, operations, and closure.
Social change	Increased number of people from outside the area and availability of cash in the local economy can contribute to an increase in alcohol consumption, prostitution and gambling and change the power structure within families. Potential rights impact: e.g., right to health and right to security of person.	Social vices (alcoholism, drug use, prostitution, gambling) have been identified as a significant problem in the area. Significant in-migration. Increased cash economy. Civil society organisations or other groups have expressed concerns over discrimination against women or gender-based violence	Local communities, particularly women, during operations and closure.
Conflict	Different compensation, settlement or mitigation agreements with railways can generate hard feeling and conflict that did not previously exist between regions. Examples of actions by railways to LCs include financial compensation, provision of sound attenuation walls, payment for engineering studies or fencing etc. Conflict may also be pre-existing and contributed to by infrastructure project and subsequent operations. Potential rights linkage: e.g., right to an adequate standard of living, right to life, liberty, and personal security.	Current or history of violent conflict between groups in the area.	All local stakeholders during all stages, including planning, preparation and implementation and post-project. Disparity in treatment often arises when those who can benefit are without adequate knowledge, representation and might be unaware of mechanisms. High levels of regulatory knowledge and diplomacy are often required for these negotiations; however, LCs oftentimes do not know the “rules of the game”.
Environmental degradation	Construction and operational activities can degrade soil quality and contribute to air and water pollution threatening resources upon which people depend for subsistence and threaten biodiversity. Potential	The area has been identified (e.g., by international or national organizations or academics) as being ecologically fragile or	Stakeholders relying on resources within area of impact, primarily during operations but also construction.

	rights linkage: e.g., right to health, right to food. Example of this is the result of derailments with subsequent environmental damage	having high ecological value. Several other operations are ongoing in the region leading to cumulative environmental impacts	

The chart above has been adapted from OECD (2017). The issues raised by OECD were largely adopted from the United Nations Declaration of Human Rights, December 10, 1948. Retrieved from: www.un.org/en/documents/udhr/. Articles 3, 7, 19, 25, and 27

APPENDIX I: A Stakeholder Engagement Plan

Source: OECD, 2017

Appendix J: The Case of EJ & E

Background of EJ& E

On October 30, 2007 Canadian National Railway and Grand Trunk Corporation, known collectively as CN made an application to purchase Elgin, Joliet & Eastern Railway Company (EJ & E). In these types of cases where a Class I railway wishes to acquire a Class II railway, only oversight by the Surface Transportation Board (STB) is required as compared to the purchase of a Class I by another Class I, which would be considered of public interest. The proposed purpose of this project was to connect all CN's five metro Chicago lines by using the EJ&E line (Executive Summary, Draft Environmental Impact Statement, 2008). The arc shaped EJ&E line which surrounds Chicago is situated in the Northeastern region of Illinois and the Northwestern region of Indiana. As is required, the Section of Environmental Analysis (SEA) of the Surface Transportation Board, completed the Environmental Impact Statement which informs much of the environmental factors and social information gleaned for the purposes of this research. According to the press release published on the newswire, a comprehensive set of recommendations that included the mitigation plan submitted by CN would be carried out in addition to the management of other issues for the various affected communities. The estimated costs totalled over 80 million, "an unprecedented expenditure on environmental issues", in addition to the $300 million for the purchase and $100 million in proposed improvements to the line—"no other rail control transaction has received such an extensive environmental review in the history of the STB"—in order to provide significant economic, transportation and environmental benefits for the region around Chicago. The application to acquire control of EJ&E 200 miles of track lines, was decided (Decision No.16) in CN's favour on December 24, 2008 (with issuance of the Final Environmental Impact Statement[76] on December 5,

[76] Decision No.16 specifically mentioned that although the usual requirement in acquisition cases is for a more limited Environmental Assessment—owing to the fact that changes in ownership are not typically accompanied by significant environmental changes—however, a full Environmental Impact Statement was deemed necessary because of the "large projected traffic increases on certain line segments and the potential impacts of the transaction on a number of communities that would likely result from the increased activity levels on rail line segment and at rail facilities" (p.3).

2008), subject to many environmental mitigation[77] and other conditions. The decision filed under STB's Finance Docket No. 35087 stated, "…will greatly improve rail transportation through Chicago, a vital rail transportation center, and will have environmental benefits to those living in and near that city. At the same time, however, the transaction will have *adverse environmental impacts on communities along the EJ&E rail line* [emphasis my own], an area already stressed by existing vehicular congestion and freight and passenger rail traffic". The decision went on to state that anti-competitive concerns were not warranted, would not create a monopoly, or restrain surface transportation freight trade in any region in the US. The benefit to the public, it was felt, outweighed any potential anti-competitive effects. At that time, in the social realm, CN was proactive in working with six communities and was expected to be reaching out to many others (ultimately approximately 33 had discussions with CN). Interestingly, the news release also indicated that, the final EIS acknowledges the benefits of the transaction to many Chicago neighborhoods and suburbs and reflects CN's view that the impacts on communities along the EJ & E can be mitigated in fair and reasonable ways."

(Author, Final paper, DDBA-800, November 2016).

[77] The environmental mitigation, as indicated, was extensive, including: safety (which was comprised of 12 conditions for grade crossings, construction, 13 conditions related to the transportation of hazardous materials); transportation systems (including 10 regarding grade crossing delays, commuter and passenger rail service, emergency vehicle delay, and construction); land use (15 conditions of general land use, community outreach, residential, business and industrial, state lands, utility corridors); air quality; noise and vibration; biological resources; water resources; monitoring and enforcement. Additionally, the Board made final mitigation conditions, including: rail operations; rail safety (applicants' approved final Safety Integration Plan, freight rail safety, vehicle safety, quiet zones, hazardous materials transportation safety, pedestrian and bicycle safety); transportation systems (regional and local highway systems, emergency response, airports); land use; environmental justice; air quality and climate; noise and vibration; biological resources (resource agency liaison, plant communities, federally listed and state-listed threatened and endangered species); water resources; constructions (rail operations, rail safety, hazardous waste sites, land use, noise and vibration; biological resources, water resources, cultural resources); agreements; monitoring and enforcement.