Discourse, Power Dynamics, and Risk Amplification in Disaster Risk Management in Canada

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Abstract
The domain of disaster risk management is rife with discursive contentions, whereby dominant discourses amplify the powers of risk actors to precipitate and reinforce political, economic, and environmental inequalities that predispose different sections of the population to unequal disaster risk vulnerabilities. This thesis identified important actors (government, risk experts, media, and NGOs) that shape the power dynamics in disaster risk management in Canada and explained their roles, influences, and the dimensions in which their powers negotiate each other through risk discourses. The patterns of these power dynamics in the three aspects of power—communication, assessment, and social trust—were also developed to provide a detailed description of how they form hegemonies that produce disaster inequality. The Power Amplified Risk Discourse (PARD) framework provides a theoretical framework for investigating the roles of discourses in creating and sustaining these power imbalances. PARD is an adaptation of the Social Amplification of Risk Framework (SARF) which can explain the complex cognitive, technical, and social dimensions to selective risk interpretations. Accordingly, PARD uses documentary and critical discourse analyses to investigate the roles of discourses in shaping the assessment and interpretation practices that reflect risk power imbalances. Analyses of the discursive and social practices also revealed that in many cases, these powers do not oppose each other, but rather work cooperatively to foist a risk hegemony as a means of self-perpetuation in risk management decision-making. The study also concludes that technical expertise, social trust, and privileged access to media constitute the biggest power factors for shaping risk discourse. Additionally, topic modeling and thematic analysis of social media data revealed the social impacts that could be directly attributed as the social consequences of these discursive power dynamics. The study suggests that the decentralized access to risk information and the growing distrust for institutional expertise significantly account for the social responses to power amplification in risk discourses. The study recommends a more inclusive approach to risk management and calls for restoration of trust between institutions and the public. Recommendations were also made for future research.

Keywords
Discourse, Power, Risk, Social Amplification, Natural Disaster, Canada, Hurricane, Emergency Management, Critical Discourse Analysis
Summary for Lay Audience
Discourse refers to how we express our understanding of the relationships between people, things, and the organization of society through our thoughts and communications in different contexts. The field of discourse is a naturally contentious one whereby different social actors project their worldviews through contest of discourses for favorable outcomes. Social actors create and sustain power imbalance via discourses hence, discourses are instruments for differential power relations. Discursive contest also plays significant roles in shaping the domain of disaster risk management. Herein, discursive contentions amplify the social powers of various risk actors to precipitate and reinforce political, economic, and environmental inequalities which in turn predispose different sections of the population to uneven risk vulnerabilities when disasters strike. Consequently, the primary aim in this thesis is to investigate how power dynamics in disaster risk management in Canada precipitate variances in risk vulnerability and disaster outcomes for everyone through the instrumentation of discourses. Moreover, the study also intends to show that examining distinctive forms of powers can give insights into how discourses contribute to uneven risk outcomes for different sections of the society.

This thesis employed the Power Amplified Risk Discourse (PARD) Framework to investigate the roles of discourses in creating the power differences (around risk communication, assessment, and social trust) that precipitate disaster inequalities and risk vulnerabilities. This thesis identifies the roles and influences of important actors that shape the power dynamics in disaster risk management in Canada and the different forms of powers they hold. The patterns of these power dynamics were demonstrated to provide a description of how they produce disaster inequality. In many cases, these powers do not counter each other, but rather work cooperatively to foist a risk hegemony as a means of self-perpetuation in risk management decision-making. It is also concluded that technical expertise, social trust (i.e., credibility), and privileged access to media constitute the biggest power factors for shaping risk discourses. The thesis ended with the identification of a few social impacts that could be directly attributed as the social consequences of these discursive power dynamics. Recommendations for practice and research were also prescribed.
Dedication

To my beautiful wife, Abimbola Immaneulla. Thanks for enduring those many compulsorily silent days and nights for my sake.

To my parents, Oluwole Badmos (late) and Elizabeth Badmos, thank you both for planting the seed of curiosity in me and showing me the beauty of education.

To my siblings, Adejoke Moyosade, Opeyemi Dolapo, Omolara Risikatu, Eniola Modupe, and Anthony Ayodeji and their beautiful families, thank you for the support and strength that I draw from our collective laughter and pains over the years.
Acknowledgment

I count it a privilege to have worked under the supervision of Dr. Anabel Quan-Haase and to have benefited from her keen sense of hard work, and attention to details. Her generous suggestions to this thesis contributed greatly to its completion while her constant demand for clarity of thought improved my capacity to reflect deeply and critically about my views as well as articulate my thoughts more convincingly. Moreover, her unrelenting productivity is both a challenge and an inspiration. My appreciation also goes to my thesis committee for their generous and constructive contributions towards the completion of this dissertation. Dr. Suarez took special interest in my work and his thought-probing comments ultimately improved the arguments in this thesis. I am also grateful for Dr. Ajiferuke’s kind guidance and patient mentoring during the trying times – and they were many – kept me grounded and hopeful during the program. I also thank him and his amiable wife, Auntie Bolaji for their warm hospitality especially during the early days of my program and landing in Canada. They ensured we settled well and quickly in Canada.

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AFN    Assembly of First Nations
AHRA   All Hazards Risk Assessment
API    Application Programming Interface
BC     British Columbia
BOW    Bag of Words
CAP    Congress of Aboriginal Peoples
CAQDAS Computer-Aided Qualitative Data Analysis Software
CCII   Canadian Council of Insurance Regulators
CDA    Critical Discourse Analysis
CDS    Critical discourse studies
CHC    Canadian Hurricane Centre
CRC    Canadian Red Cross
DFAA   Disaster Financial Assistance Arrangements
DGEM   Domestic Group on Emergency Management
DPD    Designated Primary Department
DRM    Disaster Risk management
DRR    Disaster Risk Reduction
ECCC   Environment & Climate Change Canada
EM     Emergency Management
EMO    Emergency Management Office/Organization
ETC    Extratropical Cyclone
FPT    Federal, Province & Territories
GC     Government of Canada
GOC    Government Operations Centre
IBC-BAC Insurance bureau of Canada
ICLR   Institute for Catastrophic Loss Reduction
ICP    Insurance Core Principles
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ITK</td>
<td>Inuit Tapiriit Kanatami</td>
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<tr>
<td>JEPP</td>
<td>Joint Emergency Preparedness Program</td>
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<tr>
<td>KWIC</td>
<td>Keyword-In-Context</td>
</tr>
<tr>
<td>LDA</td>
<td>Latent Dirichlet Allocation</td>
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<tr>
<td>MNC</td>
<td>Métis National Council</td>
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<tr>
<td>NB</td>
<td>New Brunswick</td>
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<tr>
<td>NDMP</td>
<td>National Disaster Mitigation Program</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organizations</td>
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<tr>
<td>NHC</td>
<td>National Hurricane Centre</td>
</tr>
<tr>
<td>NIMBY</td>
<td>Not In My BackYard</td>
</tr>
<tr>
<td>NLP</td>
<td>Natural Language Processing</td>
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<tr>
<td>NS</td>
<td>Nova Scotia</td>
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<td>NWAC</td>
<td>Native Women’s Association of Canada</td>
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<tr>
<td>P&amp;C</td>
<td>Property &amp; Casualty</td>
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<tr>
<td>P&amp;M</td>
<td>Prevention and Mitigation</td>
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<td>PEI</td>
<td>Prince Edward Island</td>
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<tr>
<td>PERC</td>
<td>Policy Evaluation Risk Framework</td>
</tr>
<tr>
<td>PESTEL</td>
<td>Political, Economic, Social, Technological, Environmental and Legal</td>
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<tr>
<td>PR</td>
<td>Public Relations</td>
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<td>PS Canada</td>
<td>Public Safety Canada</td>
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<td>RO</td>
<td>Regional Offices</td>
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<td>RQ</td>
<td>Research Question</td>
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<td>SARF</td>
<td>Social Amplification of Risk Framework</td>
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<td>SOREM</td>
<td>Senior Officials Responsible for Emergency Management</td>
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<td>TA</td>
<td>Thematic Analysis</td>
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<tr>
<td>TF-IDF</td>
<td>Term Frequency Inverse Document Frequency</td>
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<td>UNDRR</td>
<td>United Nation Disaster Risk Reduction</td>
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<td>USGS</td>
<td>United States Geological service</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WoS</td>
<td>Whole-of-Society</td>
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<tr>
<td>ZR</td>
<td>Zone of Responsibility</td>
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Chapter 1

Introduction

1.1 Background to the Study
Research into the significance of discourses for shaping and legitimizing social structures is a long-standing global effort and decades of research have given tremendous insights into the strong causal relationship between discourse and what we have normalized as acceptable social practice and norms. Discourse refers to how we construct the relationships between people, things, and the organization of society and how we express them through our thoughts and communications in different contexts (Cole, 2020). Discourses typically emanate from the meanings and associations given to language and thoughts (Richardson, 2007). Thus, discourse gives structure and order to our thoughts, ideas, beliefs, values, identities, interactions with others, behavior, and our understanding of social reality in general (Cole, 2020). Social discourse was defined by the French philosopher, Michael Foucault as:

“ways of constituting knowledge, together with the social practices, forms of subjectivity and power relations which inhere in such knowledges and relations between them. Discourses are more than ways of thinking and producing meaning. They constitute the 'nature' of the body, unconscious and conscious mind and emotional life of the subjects they seek to govern”. (Weedon, 1997; 108)

Since we all have differing worldviews and ideas about social realities, the discourses through which we express these worldviews and actualize our ideas would naturally differ and even compete. Hence, the field of discourse (Hollis, 2014) is naturally a contentious one. Those who control the media or dominate the political, economic, and technological domains of knowledge play central roles in shaping discourses for public consumption. Dominant discourses are thus typically shaped by knowledge producing institutions such media, schools, professional bodies, etc. For instance, while the Right-Wing media in the United States would label some immigrants with words such as “illegals”, the Left-Wing media would prefer to use labels such as “undocumented”, both clearly appealing to the different discourses that have been built around these terms.
The concept of discourse is therefore strongly connected to the issues of power and influence and this characteristic typically permits the dominance of some discourses (and the ideologies underlining them) while suppressing others. Likewise, through these relations of discourse to power and influence, we come to accept (dominant) discourses as truthful, mainstream, and “normal”, while alternative discourses are often considered unconventional, rabblerousing or even wrong (Hardy and Maguire, 2016). Accordingly, Hardy and Maguire (2016) describe the dominant discourse in any field as an “instrument and effect” of power (p.85) since discourses are instruments for differential power relations (i.e., contentions) among different social actors as well as the product of ideological differences. While the dominant narratives in a discourse field typically suppress the minority views, ironically, the challenge or “resistance” to the former could be found in the alternative, marginalized, and subjugated discourse (Foucault, 1982). Therefore, the cycle of reinforcement continues if the alternative discourse doesn’t find enough counteractive power. As Pinkus (1996) pointed out:

“This, there are both discourses that constrain the production of knowledge, dissent, and difference and some that enable 'new' knowledges and difference(s). The questions that arise within this framework, are to do with how some discourses maintain their authority, how some 'voices' get heard whilst others are silenced, who benefits and how - that is, questions addressing issues of power/ empowerment/ disempowerment”.

Social actors (e.g., individuals, governments, corporations) occupy various powerful roles in the society and they exert those powers and influences in diverse ways which ultimately create some power dynamics. Power dynamics trigger discursive contentions and the consequences of such can manifest in myriads of ways. The management of disaster risks is one of the prominent domains in which discursive power dynamics manifests. In this case, power dynamics precipitate and reinforce political, economic, and environmental inequalities in the society and these inequalities in turn predispose different sections of the populations to uneven risk vulnerabilities when disasters strike. Additionally, the inherent imbalances in the power dynamics that precipitate these inequalities can also be created and sustained by social discourses of disaster risk. Consequently,
the primary aim in this thesis is to investigate how power dynamics in the disaster risk management field precipitate differential risk vulnerabilities through the instrumentation of discourses.

Academic and policy research in the last few decades have continued to expose the alarming historical and ongoing sociopolitical, socioeconomical and socioecological prejudices in Canada that have mostly been subtle but sometimes staring us right in the face (Buzzelli and Jerrett, 2004; Veenstra and Patterson, 2016). Hence, when it comes to social inequalities, Ollevier and Tsang (2007) point out that “we can no longer pretend that Canada does not suffer from discrimination, racialization, and social exclusion” (p. 8). In this thesis, I will provide a unique contextual layer for further understanding the relationship between discourse and social power through examination of the various discursive fields in the domain of disaster risks in Canada. I will also show that the ontological examination of power hierarchies can reveal insights into how social discourses contribute to uneven risk outcomes for different sections of the society in Canada. To situate the significance of these thesis, I shall proceed in the next section to provide the reader with a brief discussion about the context of the study.

1.2 Risk Inequality and Disaster Vulnerability

There is a pattern to how risk inequalities are created and sustained. Social categorizations (income, social class, occupation, gender, race, etc.) produce social stratifications that crystallize into a hierarchy of rank, privilege, and power. Social stratification is a form of institutionalized system of social inequality (Robertson, 2020) that in turn, produces social exclusions. Stratification creates a system in which social, political, and economic hierarchies determine who gets what, when, and why (Little, 2014) and whose voices are heard around the decision-making table (Fletcher, 2003). On the other hand, social exclusion describes the inequitable distribution of important resources, rewards, and positions in a society (Little, 2014).

A major argument in the risk inequality debate is the differing exposure of different parties to risks (Ollevier and Tsang, 2007). Henstra and McBean (2005) used the term “vulnerability” to describe the unequal burdens that parties (such as minority communities, disabled, rural dwellers, etc.) bear, pointing out that vulnerability can describe both the differential extents to which people can resist
the impacts of disasters as well as the reinforcement of preexisting conditions that predisposes (or insulate) different populations to risks. For instance, peripheral communities (Blowers and Leroy, 1994) which typically experience varying levels of economic marginalization and political suppression also bear a disproportionate share of burden of environmental degradations. Characteristically, they are the most impacted victims of undesirable events but are usually the most powerless to effect any change about them (Mattiuzzi and Hodge, 2021). Risk inequality is thus reinforced when certain sections of the risk stakeholders lack equal access to decision-making and policymaking processes. They are consequently unable to project a favorable risk discourse (that would improve their disaster outcomes) into disaster risk management decisions, thereby forcing them to bear an unfair share of risks (Agyeman et al., 2003). This illustration exemplifies the crucial relationship between risk discourse and risk vulnerabilities, hence more depth of discussions shall be provided in coming sections.

It is important to state with clarity the difference in the conceptions of “risk” and “hazard” in the context of environmental disasters. Borrowing a leaf from Dotto et al.’s (2010) analogy, I consider hazard as any naturally occurring or human induced process or event that has the potential to cause fatalities, injuries, or damage (e.g., hurricanes). A risk on the other hand, is conceived as the combination of the chances of such events happening and the consequences thereof. While flood hazards are the same for two villages at the foothill of a glacier mountain, the risks are different in the spring season for the village which has flood relief channels than for the one without. As Kasperson (2017) points out, “hazard events include not only actual accidents or consequential events, but also reports that characterize the hazards” (p. 129). However, in this study, the focus on disaster risks (and not hazards) is more appropriate since we are more interested in evaluating the anthropocentric factors at play in the social consequences of hazards. Disaster risks describe the potential loss of life, injury, or property damage which could occur to community determined probabilistically as a function of hazard, exposure, vulnerability, and capacity (UNDRR, 2022). Next, I will provide a few examples of how disaster and environmental inequalities have manifested among different risk stakeholders and how it continues to demonstrate the widening gulf among them according to social exclusion factors.
1.3 Critical Cases of Disaster Risk Inequalities
The goal of this section is to use different cases of environmental crisis and disasters to highlight how differential vulnerabilities can be precipitated by preexisting social, economic, and political inequalities. These examples cut across multiple dimensions of socioecological and environmental domains to give a wider picture of the interconnected nature of risk vulnerabilities. They also shed light on the dimensions of vulnerabilities characterizing different stages of disaster events such as preparedness and mitigation, response, recovery, repopulation, etc. In addition, these cases attempt to show the inverse association between power and decision-making on one hand and various inequalities that predispose populations to rigged vulnerabilities on the other. Finally, it is my intention to provide illustrations that reflect how socially stratifying discourses causes different groups that faces similar hazards to face considerably varying levels of vulnerabilities and outcomes.

1.3.1 Hurricane Katrina in New Orleans
Hurricane Katrina (2005) is a well-documented extreme weather event that demonstrates the disaster experience of poor and black communities in New Orleans, USA. It illustrates the complex relationship between race, socioeconomic status and disaster vulnerability that have been reechoed in various literature of disaster studies, social justice, and critical political ecology (e.g., Bullard and Wright, 2009b; Eisenman et al., 2007; Sovacool et al., 2018; Tierney, 2006; Weber and Hilfinger Messias, 2012). Hurricane Katrina made landfall in New Orleans and surroundings on August 29th, 2005, but it took relief organizations some days later to provide evacuation and supplies. The Katrina flood which covered 80% of the city and caused over $161B in economic losses (NOAA Office for Coastal Management, 2022) exposed once again the various fault lines in the underbelly of American society. Some of the studies and reports mentioned above suggested that race and socioeconomic status were largely responsible for discriminatory treatment of New Orleans’ poor and minorities compared to their wealthy and white counterparts. Minority-owned and small businesses experienced the worst of the destructions mostly due to flooding and the insurance companies’ insistence to only provide relief for wind-related damages (Lee, 2005). Whereas these businesses were vastly located in the city center and in lowlands, bigger corporations and many white-owned ventures which reside in well protected areas consequently received easier insurance payouts (Robert D. Bullard and Wright, 2009b).
Similarly, poor institutional planning predisposed the poor, old and disabled residents (a large portion of which are racial minorities) to abandonment, especially the erroneous assumption that many residents of the city would evacuate by personal or family vehicles, thus the public transit option was never adequately considered (Robert D. Bullard et al., 2009). This fatal oversight left many low-income individuals and large families without mobility to evacuate. Even when buses and boats were made available, they could not reach heavily flooded areas. Eisenman et al. (2007) explained that not all those who could evacuate before storm landfall did so as many were concerned about where to go, cost of hotels, connection to jobs and families or the fear of their businesses and properties being looted. In the aftermath of Katrina, physical and economic recovery were unsurprisingly lopsided along zip codes as affluent districts received more administrative and financial supports than low-income areas. Likewise, the repopulation of these different areas was disproportionate due to concerns for soil and ground water contamination, lack of support or simply the exit of erstwhile occupants. This pattern ensured that environmental and ecological resilience of these communities were uneven further aggravating the possibility of days of hurt and loss becoming “years of grief, dislocation, and displacement” (Robert D. Bullard and Wright, 2009b).

The horrible Katrina experience of these communities was not by chance or tough luck, it was precipitated by decades if not centuries of social neglect, systemic discrimination, environmental degradation, and institutional flaws which gave rise to forewarned poor planning and risk management failures among other things (Robert D. Bullard and Wright, 2009b). The disproportionate exposure of African Americans of New Orleans to the worst of nature’s fury is steeped in history. Although free Blacks in New Orleans, many of whom were then economically well-off originally had lived and owned properties in the high lands and some affluent wards of the city, social hostilities coupled with administrative policies in many southern states after the civil war (and the onset of Jim Crow laws) made many Black communities find themselves systemically pushed out of these (middle to-) upper middle class and naturally protected neighborhoods. Among other factors, these segregated residential and business patterns have over the years precipitated well-defined and polarized districts, which New Orleans, like many other major American cities, are known for. Whereas the better-off White populations settled in the high
lands and city suburbs, a vast portion of the Black population of New Orleans, the majority of who lived in low-income districts and around the low-lying areas of the Mississippi river were the most affected by the flooding that followed the storm as well as the poor recovery decisions of both state and federal organizations (Robert D. Bullard and Wright, 2009a).

Another major risk factor was the continual disappearance of marshlands around the Mississippi delta which had evolutionarily served as natural bulwark for the city and surrounding areas against coastal surges. However, offshore drilling, city canals, oil pipelines, highway projects, agricultural, urban development (Robert D. Bullard and Wright, 2009b) and climate change have all contributed to the continual disappearance of large swaths of these ecologically important marshlands thus leaving many low-lying sections of the city defenseless against the wrath of mother nature. A US Geological Survey (USGS) report estimated that Louisiana wetlands has lost 25% of its land area between 1932 and 2016 (Couvillion et al., 2017). In addition, without adequate warning to the occupants, both federal and state governments built many low-income houses on former city dump sites such as the famous Cancer Alley, an 85-mile stretch from Baton Rouge to New Orleans (Mizutani, 2019). The Gordon Plaza and Press Park districts of the city were built on a portion of land that had been a municipal landfill for decades. These sites experienced considerable soil and groundwater contamination during and after Katrina flooding (Rabito et al., 2012; Shogren, 2006).

Bullard and Wright (2009b) suggested that the racial inequity in the city seemed to have been worsened by institutions that consistently underinvest in prevention and preparedness for areas inhabited by minorities and the poor (p. xxii). Critical infrastructural underinvestment permitted the failure of mitigatory structures, which was exemplified by the infamous inability of the city’s flood levees to hold up against the flooding from the gulf coast. Also, a pre-Katrina insurance redlining ensured that many small and minority-owned properties and businesses were not covered for flood disasters and this practice impacted their ability to recover in the aftermath. It appears that while the disaster risks faced by different sections of New Orleanians were never the same in the first place, nothing however could have foretold the incredible level of disparate vulnerabilities that followed Katrina. Unfortunately, those who were most impacted were the least capable to do anything to prevent it, prepare for it and mitigate a future repeat of the disaster.
1.3.2 The Green Lane Landfill

The Keele Valley landfill was the primary landfill site for the City of Toronto and the regional municipalities of York and Durham from 1983 until 2002 when it was shut down following several lawsuits as well as ecological concerns from city residents. The search for a new landfill in anticipation of the Keele Valley closure led to the decision by the city council to seal a deal with the Boston Township, south of Kirkland Lake in northern Ontario for the use of Adams Mine, an abandoned open pit (Crittenden, 2003). Local resistance from environmental groups led to the deal being quashed but Toronto city council thereafter approached and signed a 2008-ending deal with Carleton Farms Landfill, located in Sumpter Township, Michigan in the United States (Fletcher, 2003). Expectedly, there were protests among local residents and from the state legislature against what was considered an instance of foreign garbage dumping (Crittenden, 2003) and it was announced in 2006 that the contract would not be renewed after its expiration. Out of options and facing numerous Not-In-My-BackYard (NIMBY) movements as well as growing unease on what to do with the burgeoning city waste, the city council in September 2006 purchased a privately owned Green Lane landfill site near London and St. Thomas, both in southwestern Ontario (Spears, 2007).

Lying close to Highway 401, Green Lane landfill is also located a few kilometers away from a number of First Nation communities, including the Oneida Indian reserve, Chippewa of the Thames and the Munsee Delaware Nation reserves (Mascarenhas, 2007). The siting, however, was resisted by these nearby Indigenous communities, pointing out the potential risks of air, water and land pollution resulting over time. Although, the choice of a site close to populated reserves in the light of historical and contemporary issues raised ethical and political questions, the deal still went ahead. Similar objections from local politicians from nearby London did little to change anything since the landfill had received provincial approval “to expand” prior to the sale to Toronto city (Solid Waste & Recycling, 2006). This scenario represents a pattern in which members of local communities who do not directly benefit from the dividends of urbanization of major cities (including employment and revenue generation), are systematically forced to bear the environmental costs of waste emanating from such cities (Fletcher, 2003).
Agyeman et al. (2003) and numerous other environmental researchers have suggested that environmental justice can only be attained when all stakeholders have equal access to the elements of decision- and policy-making processes. Social and environmental activism aren’t just enough. When people who inhabit NIMBY project communities do not have considerable power, time, or resources to seek and effect change, the pattern continues. Unfortunately, this phenomenon is also observed in the widening inequalities occasioned by the continuing environmental racialization between affluent neighbourhoods (or cities) and their less fortunate counterparts. Environmental racialization describes a scenario whereby racial connotation is attached to a place to legitimize the tilting of the scale of environmental risks against an already marginalized population (Teelucksingh, 2007). The phrase covers the numerous ways that racialization and space are material and “tied to ideological formations and systems of power” (p. 649). Additionally, the influx of new immigrants and low-income earners to these underprivileged neighbourhoods reinforces this pattern (Ollevier and Tsang, 2007). This phenomenon played out in the Port Industrial Area of South Riverdale, Toronto, an area heavily populated by the low-income earners, new immigrants, and people of colour. This disadvantaged neighbourhood was the site of many high polluting factories where in the past, dumping of chemical waste into the sewage system led to health problems among residents.

1.3.3 Media Coverage of 2010 Haiti’s Earthquake
The case of the Haiti earthquake provides a classic example of how disaster assistance built around racialization, economic paternalism, and colonization can exacerbate disaster outcomes for survivors. On Jan. 12, 2010, a 7.0 magnitude earthquake struck Haiti, killing an estimated 220,000 people, leaving much of the country in physical and social ruins (United Nations, 2022). The event also caused some 300,000 injuries while some 1.5 million residents became homeless. Reeling from such unprecedented scale of destruction, Haitians were in desperate need of rescue and recovery aids, medicines, water, security, and other supplies (Canadian Red Cross, 2010). Unfortunately, the humanitarian assistance from foreign governments and charities in the disaster aftermath amplified the preexisting disaster discourse which routinely strips Haitians of their humanity, voice, and agency in the ground scheme of things (Mullings et al., 2015). For instance, Mullins and others argue that the unfavorable pre- and post-disaster discourses characteristically associated with Haiti (by foreign media, governments, and donors) contributed significantly to the
uniquely unpleasant disaster experiences of many Haitian survivors and that these negative framings have roots in the racial and colonial history of Haiti (p. 283).

A common narrative by western countries about Haiti involves her depiction as a country riddled with corruption, criminality, violence, and institutional ineptitude (Mullings et al., 2015). This narrative most probably arose from the perception that decades of humanitarian and donor activities have failed to ameliorate the social, economic, and political problems of Haiti (Pierre, 2020). This background provided a discourse used by western governments to justify their snail speed response in the immediate aftermath to the plight of hapless Haitians facing a totally collapsed emergency system and local government. Closely connected to this lost cause discourse was that of race (Balaji, 2011). Racialized discourses of disaster were demonstrated in the actions of the US federal government during this period. Mullings et al. (2015) pointed to numerous comments from both political and military leaders about the need to first (militarily) secure a typically violent country before sending in much needed supplies and rescue machineries. Western media continuously reeled footages which suggested to their audiences that Haitians were looting supply stores and properties. Synonymous with how Black survivors of the 2005 Hurricane Katrina were depicted as looters, rapists, and rioters (Petersen, 2014), this imagery feeds into the larger description of the Black populace as social threats thus, unworthy of quick response disaster relief without careful thoughts and security containment. Delays in providing crucial supplies and recovery coordination occasioned by such discourses surely must have caused untold number of preventable deaths.

Similarly, Western media’s longstanding portrayal of the island as a dysfunctional and dangerous country simply became the background in which to situate the viewers’ understanding of the unfolding chaos (Balaji, 2011). The news coverage of the post-disaster period however reflects a historic disposition of western news media to Global South disasters which often precipitate worsened outcomes for survivors by complicating the response and recovery activities with unfriendly discourses. This disposition encapsulates the binary risk thinking (Petersen, 2014) underpinning the framework of disaster journalism often applied to the same type of crisis in western versus racialized countries (Balaji, 2011) and it played out in full during the Haitian crisis.
For example, Petersen (2014) compared the US media’s coverage of Hurricane Katrina with the Haiti earthquake. Although the initial coverage of Katrina toed the racialized disaster discourse, it eventually transformed to reflect the media establishment’s shock and disappointment at the failure of the *almighty* American institutions and their presupposed competence at effectively responding to natural disasters. On the other hand, Haiti’s coverage reflected that US media has come to normalize and expect large-scale disaster deaths and destruction in the Global South. In the case of Haiti, nothing good was expected from the government or local institutions of a Global South country typically known for poverty, crime, incompetence, and corruption. Thus, while Katrina (with less than 2000 deaths) was described as a catastrophe, Haiti’s situation (over a quarter million deaths) was often described as a “routine crisis” (Peterson, 2014; 37). This attenuated labelling must have had implication for world’s attention and sympathy during the immediate aftermath, ultimately exacerbating Haitian’s disaster experience.

1.4 The Missing Piece in the Equality Research Puzzle

Relating the central topics of discourse and power imbalance to the instances of social, environmental and disaster discriminations above, it can be argued that risk inequalities persist because those who mostly bear the brunt lack the means to develop knowledge-producing structures that challenge the dominant discourses, nor do they hold the economic and political powers to influence decision-making processes. People can improve their disaster outcomes and thereby reduce vulnerabilities when they can control the prevalent factors contributing to such outcomes. Social discourse is one suitable tool for creating favorable conditions that guarantee good disaster risk outcomes. It can reflect how risk stakeholders shape risk outcomes according to their power and influence. Dominant discourse of disaster risks is created by the powerful members of the society (Hardy and Maguire, 2016). Thus, for marginalized parties (e.g., racialized groups, women and children, people with low income or low education, the disabled, etc.) to create favorable risk management processes, they must have sufficient scientific, economic, and political powers to contribute to decision making on such issues. Similarly, they must have privileged access to the instrument of discourses to project their own risk perspectives for social legitimacy. Social discourses of risks are therefore the products and instruments of the power hierarchies among the parties involved (Hardy and Maguire, 2016). These power and discourse differentials
are characteristically inherent in the risk debates underlining the management, policy, and
decision-making processes around a risk (Adekola, 2019).

Discourse is therefore an important (but missing) link in the tracing the relationship between
disaster vulnerabilities and political and socioeconomic realities. From observation however, it
appears that these all-important factors (i.e., power and discourse) that are inherent in disaster risk
management are routinely overlooked in disaster vulnerability and risk inequality research. This
leads to the formulation of the research problem that the thesis sets out to address.

1.5 Research Problem: Unveiling the Role of Discourse in the Power Dynamics of
Disaster Risk Management
Administration of all public risks including disaster hazards is codified into various laws,
standards, and guidelines. This codification informs the various practices and protocols observed
by risk managers in the management of disasters and equally shapes the understanding of risks and
potential vulnerabilities among other parties, especially the public (Blind, 2019). Therefore, the
context in which disaster risks are governed is situated within some unwritten social contract
between risk managers and the other stakeholders. This contract assumes that risk managers will
constantly provide updated risk frameworks that will ultimately drive a general understanding of
risks within the society. While this contract has been breached by either side at different times and
for different reasons (Hamilton, 2014), nonetheless, the power imbalance occasioned by the
legitimized authority and expertise of disaster managers still have far reaching consequences for
disaster management.

The importance of this framework of risk governance is even more pronounced when the
uncertainty associated with an event is high (either) due to the novelty of the risk or the perceived
magnitude of its consequences (Fischbacher-Smith and Calman, 2010). Risk uncertainties evokes
heightened social confusion, and this makes the public put their trust in whomever they see as
having any legitimacy of knowledge. Social actors with the wherewithal to widely disseminate
information can thus easily assume a level of legitimacy. We see this playing out in the social
confusion and thriving conspiracy themes associated with the Covid-19 pandemic (especially on
social media) arising from the multiplicity, contradictions, and uncertainty of medical advisories (Lavazza and Farina, 2020). The foregoing at once demonstrates the significance of discourse in risk management and as well narrates how risk discourse can be vulnerable to subtle power tussle among the different actors (e.g., corporations, government, social groups, individuals, etc.) in the risk management space. From coercion on one end to influence on the other, these actors occupy various positions on this power spectrum and exercise the privileges thereof (Bachrach and Baratz, 1962; Weale, 1976). Some actors hold such powers that they somehow, with the discourse they create, shape how events are legislated, communicated, framed, perceived, or even enforced. For instance, while government can enforce (through coercion) risk guidelines on other social actors (e.g., movement lockdown or compulsory face-masking), their policy framework is however (often) informed by the expertise of the scientific and technical community (influence). In-between these ends are other forms of power positions occupied by different actors whose actions, beliefs and inputs also shape the debate.

Aligning with Bourdieu’s (1998) submission that the field of discourse is highly contentious, I also posit that disaster risk management is a space open to competing ideas and where each (social, cultural, political, commercial, and even theological) vested interest seeks to frame the risk discourse to the best of their understanding and to further project their interest (Veland and Aven, 2013; Wardman, 2008). Essentially, these powers jostle for dominance within the risk management space either subtly or conspicuously. Often, this discursive contention is characteristically reflected in the promotion or suppression of salient arguments in the public debate regarding a risk threat. Depending on the prominence of different arguments, this contention drives public attention, shapes risk perception, message framing, trust, and communication (and feedback) to varying degrees in multiple dimensions through multilayered channels. Discursive contentions however, come with potential dangers: First, wealthy and powerful interests routinely use discourse to dominate the communication of risks and thus shape policy directions, public risk perceptions as well as understanding about their own vulnerabilities, and consequent risk-informed behaviors (Adekola, 2017). Second, dominant discourses create uneven outcomes for all parties involved since “with greater inequality in the distribution of power, those agents with more power are able to impose higher external costs on those with less power” (Boyce et al., 1999).
When these reflections are put together, they motivate questions on the roles played by social discourses in creating the power dynamics that shape risk management and social perceptions – and indirectly, the social realities of risks. Extant research (e.g., Adekola 2017) has highlighted *power* as one of the factors that influence informational and social response mechanisms through which amplified salient risk communications are expressed. So, the objective of my research is in determining the *process and outcomes* questions of power differentials in social amplification of risk in the Canadian disaster context. In this research, power differential is conceived as the difference in power between the various positions of authority that people occupy at a given time that results in any form of vulnerability of the less powerful party. Drawing from the discussions in the previous sections, we can accordingly set out the points of our research inquiry as enumerated in the next section.

1.6 Research Questions

We need to identify and understand the different dimensions of power wielded by social actors in the Canadian disaster risk space and the discursive methods through which power differentials are created. Power differentials could sometimes be subtle and difficult to discern (Guo, 2014), however, they give themselves away when we conduct a profound scrutiny of the consistent patterns noticeable in discourses. Covello et al. (1986) and Petts et al. (2001) suggests that the powerful actors that typically play important roles in shaping discourse for public consumption include the media, government agencies, professional organizations, scientists, corporations, non-governmental organizations, and individual. Each of these actors holds and wields different forms and combinations of power and influence, in hierarchical degrees. It is consequently important to then identify the exact identities of the major actors wielding these different dimensions of power in the risk management system in Canada. This leads us to the first research question:

*RQ 1: Who are the risk actors that significantly wield relevant dimensions of power in the Canadian disaster risk context?*

After understanding the power roles of each power actor and the relative power differentials among them, this insight positions us at a vantage point to adequately assess how these players discursively contend in the risk management landscape. At this stage, it is useful to lean on the utility of the Social Amplification of Risk Framework, SARF (Kasperson et al., 2005; Renn, 1991)
for clarifying the discussions on discursive contention of various dimensions of power. SARF (more on this framework in subsequent chapters) suggests that social actors typically act as individual nodes in a chain of risk message propagation and that what aspect(s) of such messages are passed on in the chain largely depends on what each considers salient to them. Amplification in this context, refers to attempts to both discountenance some aspects of a message (i.e., risk attenuation) or the eagerness to magnify (i.e., risk intensification). Speaking from this perspective, SARF permits us to examine how both dominant and alternative discourses on a given risk factor are naturally amplified and attenuated by different actors to suit and achieve some desired ends. Adekola (2017) suggests that such discursive amplification of power is mostly represented in areas of risk assessment, risk communications, and social trust (credibility). Thus, this study is poised to examine how power differentials are reflected in the discourses associated with these three areas. Accordingly, my second research question is:

RQ 2: How do the power differentials within the risk management system inform the social amplification of disaster risks?

In other words, this thesis examines what patterns of power differentials play significant roles in shaping the amplification of risk discourse. SARF suggests to us that risk signal amplification produces some constantly evolving real world social impacts. Although numerous studies have highlighted a few social impacts that social risk amplification produces, there is no record in the literature that suggests research has been done to verify the impacts of risk signal amplification and the power contention behind them especially in natural disaster context. Therefore, I ask:

RQ 3: What dimensions of social impacts can be associated with risk discourse amplifications occasioned by the power differentials among risk actors?

1.7 Significance of this Thesis
From a theoretical point of view, there is a need to continuously examine the place of the frequently evolving constructs of social power in disaster issues through some equally responsive and critical socioecological and disaster studies. Moreover, we must expand our investigation into the importance of power relations and ideological influences in how nations and communities conceive and shape the twin issues of vulnerability and resilience beyond the present confines of adaptability and transformability (Folke et al. 2010) lenses. In a world where long standing knowns
(aided by globalization, unprecedented urbanization, and a decentralized media) are quickly shifting boundaries, power relations as a concept are quickly evolving into unfamiliar territories and so it is for every domain it applies to.

The call for studies like this is even more important because it is not just enough to attempt to design strategies that are purposed to ensure equitable allocation of resources and support during periods of crisis without providing theoretical framework for correcting the root cause of such disproportionate vulnerability. As Sovacool et al. (2018) have pointed out, hazards alone do not constitute inequality but when combined with human factors, neoliberal capitalism, mismanagement, profiteering and crisis politics, disaster outcomes thereof are worsened. The urgency of this effort is succinctly captured in (Spence et al., 2020) argument that:

“a social justice and human rights framework [that] identifies the need to go beyond the immediate conditions of health burdens and focus on the causes of the causes: the fundamental structures of social hierarchy and social conditions”. (7th paragraph)

Spence and colleagues highlighted at least five factors that sustain social inequity in public safety: a) structural discrimination, b) income inequality and poverty, c) disparities in opportunity, d) disparities in political power, and e) governance that limits meaningful participation. All these factors are intertwined and can be considered as either causes or symptoms of power dynamics among contending stakeholders in the public safety domain.

Structural discrimination manifests in a systemic arrangement in which certain sets of people are already disadvantaged on account of bigotry, racism, sexism or ableism or other prejudicial factors. Poverty and economic inequalities mean that these individuals or groups do not have the means to pursue social justice nor are their concerns prominent enough to warrant intervention. Moreover, without political power, few meaningful changes can be effected in the quest for social justice and environmental inclusion. Finally, the usual insistence of most governmental policies on placing expert views at the centerstage of policy and decision-making renders local and experiential knowledge as “indigenous” and “unconventional”, thus limiting the participation of their holders,
even in vital issues that directly concern them. This study aims to contribute to expanding this course.

Looking at the significance from a practical angle, the unequal exposure to risks of disaster risks would only be expected to increase along with the frequency and severity of natural disasters caused by global warming and continual destruction of balance of natural ecological order. Thus, a deeper understanding of power differentials through relentless critical social disaster inquiries would enable us to identify the people whose conducts create contexts that bring about certain desirable or undesirable outcomes and therefore quantify their responsibilities for the purpose of better assessing and achieving environmental equality. Similarly, we can be better positioned to assess the performance of social systems and institutions which are vested with certain responsibilities, especially those of ensuring environmental equity and socioecological inclusivity. These are typical issues that are insufficiently addressed in social disaster research, but which are fundamentally important in “and assessing the sustainability performance of social arrangements in relation to social justice and equity” (Boonstra, 2016).

Although Canada has developed a comprehensive disaster and emergency framework, it seems however that it has no “national equity-based emergency management framework” (Spence et al., 2020). The present framework hardly prescribes how to best overcome the social inequities for the structurally vulnerable segments of her population. While Canada has made tremendous reforms towards social progressivism in the last few years especially in the areas of public health and safety, there are still evidences of systemic discrimination towards certain racialized communities, geographic areas, and socioeconomic classes (Nixon et al., 2018). Unsurprisingly, these disadvantaged communities have been at the most receiving end of more enduring natural disasters. For instance, some First Nations communities’ remote location, strong cultural connection, and heavy reliance on their environment for subsistence, and their unique and often vulnerable economic situation naturally predisposes them to disproportionate risks of natural disturbances and a pronounced impacts of climate change (Krishnaswamy et al., 2012).

Since Canada is as equally concerned about the future climatic issues and resultant hazards as any other industrialized country, enlarging the discussion towards how disaster risk reduction can be
more equitable is very important and long time coming. This study therefore intends to contribute to this serious conversation by deepening the understanding of how power differentials in public health risk management enable or constrain certain stakeholder groups in such ways that keep sustaining these inequalities. It is hoped that this study would contribute to the advancement of emergency management theory and structure, thinking, and processes, at least in Canada.

1.8 Structure of The Thesis
The thesis employed a multi-study format whereby two distinct, but successive studies were used to address the objectives of the thesis. The first study addresses the study objectives embodied in the first and second research questions while second study examines social impacts of risk discourse amplifications as described in the third research question. The chapters in the thesis are as follows: Chapter 1 introduced the reader to the background and objectives that the dissertation sets out to address. Chapter 2 reviewed literature associated with relevant concepts such as disaster risk models and discourses, risk communication and assessment, and a critic of social power in disaster studies. The discussion in the review foregrounded the theoretical framework as well as the need to develop a befitting conceptual framework that would be used in the study. Chapter 3 dived deeper into the conceptual framework adapted for this study i.e., the Social Amplification of Risk Framework (SARF). The chapter extensively discusses the development, critique, utility, and the significance of the framework for this study. Chapter 4 started by introducing the reader to the methods used in the first study of the thesis as well as the findings thereof. The chapter also provided deep analysis of the contexts that surrounds the existence, structure, and functions of important classes of social actors in the Canadian disaster landscape. Most importantly, the chapter equally identified the patterns power dynamics that shape the amplification of risk discourses. The chapter concluded with important discussions on the nature and implications of the discursive risk practices that characterize the amplification of social power in risk management. Similarly, chapter 5 discussed the methodological choices that informed the second study of the thesis. The chapter ultimately explored the social impacts of the power imbalance inherent in the social risk amplification as identified in the preceding study. Finally, chapter 6 discussed the combined significance of the two studies for the research and practice of risk inequality and disaster vulnerabilities in the Canadian EM system. The chapter also offered recommendations on ways
that both research and practice can contribute towards ensuring more equitable disaster management.

1.9 My Statement of Positionality as the Researcher
Positionality is a term that expresses a researcher’s value system and its relationship with the social and political context of the research (Darwin-Holmes, 2020). A researcher’s beliefs and values are ultimately reflected in their ontological and epistemological assumptions and how those come to bear on the research context, subjects, and the interpretation given to the results (Furlong and Marsh, 2010). Since researchers are not separate from the world they seek to study, positionality enforces a decent level of reflexivity that make the researcher acknowledge their preconceptions about subject under investigation, the research participants, and the research context and process (Grix, 2010). Onaifo (2016) suggested that unlike in quantitative research whereby positivist frameworks theoretically insulate the research from the proclivities and biases of the researcher, qualitative studies however are strongly influenced by the world view of the investigator. Therefore, qualitative studies ideally demand a significant level of investigator’s reflexivity through the foregrounding of their presuppositions and predilections (Darwin-Holmes, 2020).

Since this thesis has a considerable qualitative portion, it is important to provide context about my relationship with the research topic so that the reader can read this thesis through my eyes and thereby gain brighter understanding into the rationales behind my methodology, interpretations, and findings (May and Perry, 2017).

Growing up, I always had concerns for the environment even in times when I had no idea of the scale of damage that anthropogenic activities are causing to the environment. Unfortunately, my passion did not translate into any academic endeavor until my graduate program at Western University. However, what didn’t escape my attention was the global phenomenon that with successive episodes of natural and manmade disasters, poor people typically become poorer. Disasters often present the powerful with golden opportunities to enlarge their portion of the social good while leaving the powerless with fewer resources to recover, reposition or repossess. Having lived in the coastal city of Lagos, southwest Nigeria, I have repeatedly witnessed how recurrent ocean surges became opportunities for the high and mighty to dispossess poor landowners and
squatters of their lands under the claim of modernization and physical development. Such dispossession (mostly through undervalued purchase, outright coercion, or ejection) unarguably turn slums and low-income quarters into multimillion dollar resorts, high rise office complexes, and serviced apartments which are then better protected against ocean surges and other risks.

The idea for this thesis followed a discussion with a colleague at Western University on how public libraries mitigate and recover their resources from disasters in the face of dwindling budgets. That discussion spurred a passion I had probably given up. Before then, I had started taking interest in the concept of discourses thanks to Dr. Heather Hill’s class which I took in my first year. Things seem to have aligned with my curiosity and that was how I threw myself into finding more about the roles of discourse in disasters. While I won’t describe myself exactly as an action researcher, I believe I am passionate about critiquing social and political activities of global capitalists. Therefore, this thesis is about something that I deeply care about (i.e., disaster outcomes), a tool to probe deeper into it (i.e., social discourses) and a hope that I can provide a better insight into it towards a better society.

Ideally, I would prefer the research context to have been a country which I was most familiar with i.e., Nigeria but it is a known fact that many researchers often face bureaucratic dead ends especially when there is a possibility that the research findings might portray the government in bad light. Additionally, not many government and corporate bodies are transparent enough to deposit operational documents on publicly accessible repositories (e.g., websites or digital libraries). While facing a rapidly dwindling funding period, I had to make a choice to use my country of residence (Canada) as a case study. Thankfully, the research problem is a global phenomenon hence, seemingly Global North countries are also valid research contexts. However, this choice has a readily obvious problem; I am a newcomer in Canada and as such, might be judged to not be an insider in the scheme of things. I, on the other hand, argue that this outsider status affords me the opportunity to bring an external perspective (Darwin-Holmes, 2020) to interpreting social and political consequences of disaster management in Canada. While I hold some beliefs (which would inevitably influence my judgment no matter how minimal), I bear no allegiance or inclination whatsoever towards any political, ideological, or economic sides in the
contestation of discourses. This position enables me to get some dispassionate and clear-eyed view of the going-ons the research context.

Although like most watchers of global affairs, I could claim some familiarity with the social and political happenings in Canada to a fair extent (since Canada is a major economy known across the globe), I must also admit that the preconceptions I had about emergency management in Canada was totally misinformed. I had to re-orientate myself and my research methods along with the investigation, but the objectives and questions remained the same. Moreover, my position as a native English speaker was helpful in familiarizing myself with the Canadian history and politics, social settings, and economic landscape. Canada and Nigeria share a commonwealth heritage of British colonization; hence, the political, status, racial, and cultural undercurrents were not totally strange to me. To the credits of the private and public institutions in Canada, the single largest benefit to this thesis was the availability and accessibility of vital documents that were used in this research. This level of transparency was invaluable to my thesis timeline especially since the Covid-19 pandemic effectively shut down all public libraries and establishments which I had planned to consult as sources for research data.

1.10 Summary and Conclusion
As has been argued in this chapter, discourse plays important roles in creating, sustaining and even upstaging power dynamics among all social actors. Power dynamics was determined to be product of the relationships among actors with different power differentials. In the field of disaster risk management, social exclusions arising from such power dynamics create unequal risk vulnerabilities and disaster outcomes for all. This thesis aims to investigating the often overlooked but important socioeconomic, political, and legal ramifications of disaster risk discourse. Accordingly, the research objectives and relevant questions encapsulating these needs were formulated. The chapter also provides a context for the relationship of the researcher to the research study. Ultimately, this chapter serves as a solid launching pad for the reader to comprehend fully the discussions in the chapters to follow.
Chapter 2

Literature Review

2.1 Introduction
This chapter introduces and provides a literature review on some vital topics that are expected to enrich the discussions as well as place the research problem in perspective. Research points to a long history of disaster risk inequalities and environmental injustice along different social stratification factors. Some of the earliest studies on the existence of racial and socioeconomic class motivations behind the choice of environmental legislations include those of Burch Jr. (1976), Freeman (1972), and Lave and Seskin (1970). Years after these pioneering works were published, the 1987 United Church of Christ’s report (Toxic Waste and Race in The United States) and the 1990 “Conference on Race and The Incidence of Environmental Hazards” organized at the University of Michigan (Mohai and Bryant, 1991) are among other intellectual exploits, which brought to international attention the huge but conveniently ignored disaster inequalities in the United States (Brulle and Pellow, 2006). Downey (2016) and Bullard and Wright (2009b) also reported that race and class played significant influences in the economic recovery after hurricane Katrina especially between White and Black populations in the US cities of New Orleans and Gulfport. As has been argued (Jacques & Knox, 2016; Mullings et al., 2015; Selvaraj & Sandaran, 2019), risk discourses play a significant part in sustaining unequal risk outcomes, as it festers and legitimizes inequitable allocation of risk stabilizing resources among social actors. Therefore, the next few sections present a review of vulnerability, risks, and risk discourses as well as highlight the importance of the relationships between them.

2.2 Disaster Vulnerability
As with many other nations, Canada has seen a significant rise in the frequency and ferocity of disasters alluded to the worsening climatic instability and increased disruptive human actions (Public Safety Canada, 2019a). Although, all Canadians are exposed to one disaster risk or the other, they however are at differing levels of vulnerabilities to these risks. Vulnerability in this case refers to the twin factors of propensity to suffer damages (death, injury, or property destructions) resulting from the actualized risks and the resilience (or lack thereof) needed to bounce back from such damages. These vulnerabilities are in diverse dimensions such as the
physical, social, structural, cultural, economic, and institutional (Dotto et al., 2010). Physical vulnerability puts people who live near areas that are prone to a particular hazard than those without. In terms of structural vulnerability, people who live in urban areas where critical recovery infrastructures such as transportation, shelters, utilities, hospitals, and other emergency services (Dotto et al., 2010) are available, significantly receive better and faster attention than those who live in rural areas. For instance, the plains of Manitoba and Alberta frequently experience floods, probably more than other provinces, while the eastern maritime seaboard experiences tropical storms more than the hinterlands. Similarly, urbanization pushes human habitation into hitherto uninhabited places thus exposing such occupants to new risks. Second, social vulnerability factors such as age, gender, educational status, language barrier, social adaptability and other issues predispose at-risk populations in varying levels to the dangers of natural hazards. Moreover, the unequal ability (e.g., low economic importance or lack of insurance) to recover from unfortunate events adds more complications to risk behaviors or decisions in the during and aftermath of events.

Another important vulnerability factor is the role of local values that shape shared risk perception and responsive choices (Warner and Kinslow, 2011). Cultural risk practices as expressed by customs, beliefs, and values significantly determine social response to disasters. Finally, economic, and institutional vulnerability describe the capacity of the financial and governance system to adequately prevent or respond to natural hazards. The system of confederacy adopted by Canada indicates that disaster risk management is principally managed and attended to at provincial and territorial levels, with funding and occasional material support from the federal government through the Public Safety and Emergency Preparedness Canada (Public Safety Canada, 2019a). Provinces and territories experience different types and intensity of disasters and equally have different capacities to sufficiently mitigate or manage disasters. Thus, the disparities in provincial vulnerability often become glaring in cross-regional events. Provincial disasters managers include the Emergency Management Ontario, Nova Scotia Emergency Measures Organization, etc.
2.3 Disaster Risks
Historically, the idea of what constitutes a risk has been informed by three schools of thought: the realist, the interpretive and a hybrid of both (Adekola, 2017; Hansson, 2010; Wisner et al., 2004). The realist view describes risk as an objective aggregation of risk features that is independent of individual assumptions, prejudice, or values. This baseline view held by researchers in the positivist paradigm is considered as an objective and scientific approach to the study of risks. However, the relationship between disaster cause and effects are not always straightforward due to the evolving nature of risks (Fischbacher-Smith and Calman, 2010) and the multiple factors shaping the probability and consequences of risks, hence the validity of the realist view is often questioned.

The interpretive school of thought argues that risk is a socially constructed process that is meaningless without the consideration for how people perceive risk (Paul and Weber, 2013). Interpretivists argue that the idea of risk is incomplete without putting into consideration the structural, institutional, and organizational factors that shape risk perceptions. Therefore, a risk is as big as the values and assumptions, contextual importance given to it. The weakness of the interpretive view, however, lies in its alleged overemphasis on subjective values attached to risks and the tendency to assume that risk only exists if affected people believe it does. The hybrid model of risk, however, draws on the strength of both to suggest that although threats of risks do exist regardless of people’s belief, such threats are magnified or downplayed by how people perceive themselves to be impacted (Kasperson et al., 1988). Researchers in the third paradigm argue that the identification of both real and perceived aspects of risk assessment is needed to create a robust understanding of the construct of risk, hence risk perception should be an integral part of risk management (Adekola, 2017).

2.4 Disaster Risk Discourse
This thesis goes beyond the confines of study of social stratifications (income, race, class, age, gender, location, ableism, citizenship, ethnicity, political leaning, sexual orientation, religion, etc.) to examining the consequences of the relationship between risk discourse and power dynamics for disaster outcomes and risk management. As Wardman (2008) points out, risk debates are primarily
shaped by “powerful discourses, each with its own substantive content as well as internal and external power/knowledge dynamics” (p. 1631).

Risk discourse has always been a crucial part of disaster management and an effective tool for building environmental resilience (Fischbacher-Smith and Calman, 2010; Gurabardhi et al., 2005). Risk discourse, however, affords some actors the opportunity to disproportionately contribute to the decision-making debates (Rich et al., 1995). Differences also abound in how or what information are communicated among risk parties and to the public. Veland and Aven (2013) provide some technical insight into how diverse risk perceptions among different risk actors can inform a variety of risk communication approaches. They suggested that each actor’s risk perception is largely informed by peculiar “fundamental building blocks of the actor’s understanding of risk” (p. 34), hence, risk discourses naturally contend. We also find similar positions in Urquhart et al. (2017) and Bica et al. (2020), both who made significant findings about the disparities in how risk communications are conceived or received. Urquhart and colleagues examined the impacts of risk perceptions among technical experts, policy makers, outbreak managers and other important stakeholders on how the discourses surrounding pest risk analysis are being socially amplified. They identified that socio-political, affective, and cultural factors inform these perceptions. On their part, Bica et al. (2020) used hurricane visualizations to characterize the disparities in the framing of risks between non-experts (Twitter public) and the weather experts who provided them. Their study ultimately highlights how the disparities in communication and assessment proficiency among different groups of stakeholders influence the construction of risk discourses.

In the areas of public health, risk discourse has been found to be a remarkable tool for constructing social awareness and understanding of common public health issues such as the Bovine spongiform encephalopathy (mad cow disease) (Eldridge and Reilly, 2003), smoking and MMR vaccine debate in the United Kingdom (Adekola, 2019), E. coli outbreak in Germany (Raupp, 2014), and biosecurity and quarantine risks in Australia (McKell and De Barro, 2016), prescription medication (Ledford, 2013) and invasive pest control in Hawaii (Warner and Kinslow, 2011). In these studies, we find examples of how divergent public health risk discourses could easily become
instruments of contest in achieving desired aims of vested interests by acting as a vehicle conveying and normalizing ideas through which power relations are built, reinforced, overtaken, or totally upturned. For instance, Warner and Kinslow (2011) narrate how a local activist was able to whip up public sentiments by driving a discourse that appeals to local values but conflicts with that of agricultural officials who have communicated their intention to use insects to combat an invasive tree species destabilizing the local Hawaiian forests. The case illustrates how expert communication can become ineffectual against some well-orchestrated non-scientific counterarguments. An unrelenting campaign pivoted on superior knowledge of local values and sentimental predisposition of a community member brought into question the legitimacy and credibility of conservationists and government agencies.

Bakir (2005) compares the discursive strategies employed by both energy giant Shell Petroleum and environmental activist group, Greenpeace1 while contesting over the media representation over the controversial disposal of oil storage and loading facility, Brent Spar. The author analyzed the effectiveness of the risk discourse adopted by Greenpeace, especially how they were able to weave their campaigns around the fears of potential radioactive remnants in oil rigs and the impact of such on marine and coastal ecosystems. This vivid representation of present and long-lasting danger formed an irresistible discourse that couldn’t escape public consciousness and ultimately succeeded in turning public angst against the planned demolition. In another study of contest of risk discourses in environmental justice, Alam and Nilan (2018) also provide insights into the contest of ideologies that was reflected in the risk representation to local communities by both local conservationist group, Backsilmove and a business corporation. The bone of contention was the planned clearing of the city forests to give way to some real estate development. While mobilizing residents to resist the move, the activists preempted their opponents by creating widespread awareness among the locals, exploiting strongly held values and majorly focusing on framing the planned development as just another profiteering conspiracy of the government in bed with private interests. Finally, Weingart et al. (2000) has provided analysis of the pattern of discourses surrounding trends in the understanding and representation of climate change over two decades among critical stakeholders in Germany, particularly in the fields of science, politics, and

1 https://www.greenpeace.org/international/
the media. These examples and many others reflect the agelong but increasingly sophisticated approach at using discourses as a tool to shape risk acceptance and response among concerned stakeholders. Risk discourse does not, however, exist in a vacuum but is demonstrated in the areas of risk communication, expert assessment, and social trust (Adekola, 2019). The discussions above can aid us in taking a critical look at how risk discourses are shaped by different actors within the disaster risk management space. Central to this critical scrutiny is the concept of power relations among these parties, hence, the next section is aimed at addressing that issue.

2.5 Power and Power Relations
It is important to have a clear foregrounding of the central concept of this research i.e., power differentials (or power relations). As Boonstra (2016) points out, “a study of power can highlight how our own and other people’s abilities affect outcomes” (p. 2). There is a growing understanding among scholars that social inquiries need to continually reflect the influence of power relations on human interactions with their environment (see Hatt, 2013; Pelling and Manuel-Navarrete, 2011; Smith and Stirling, 2010) because a solid understanding of power relations can give better insights into human practices and the resilience, adaptability, and transformability (Olsson et al., 2014). However, Boonstra explained that many studies in environmental resilience often ignored or deliberately side stepped the ontologically contentious issue of power. This contention arises from the dilemma of what Boonstra (2016) referred to as “agency-structure dualism” of power. It involves choosing a side in whether power be regarded as strictly that which is embodied by social actors (personification of power) or, the products of social structures and events that regulate (enable or constrain) the relationships and abilities of these actors (reification of power). The task of defining the boundaries of power is complicated by the polymorphous nature of power (Elias, 2012), existing and transforming into various forms through space and time. However, since it is easy to agree that power entails the ability or capacity to effect a change by influencing outcomes, we can proceed from here to arrive at a workable definition by developing a decent convergence on this dilemma.

One can argue that powers such as military might, wealth, social connections, resources, or technology, political authority, etc. can be exercised in a manner that achieves the desired outcomes. That, however, does not explain how status and positions of power shape the events that
might deliberately or indirectly influence social outcomes for other people (Boonstra, 2016). In other words, power doesn’t only reside within the relationship among powerful actors but also in how the conditions created by this interaction enable or constrain the outcomes for others. These conditions are typically reflected in the social structures and events of the society that allow two given people to interact (Elias, 2012; Reed, 2013). Put more concisely, social structures dictate human actions, but social interactions also shape the kinds of social structures we build while a social event, on the other hand, refers to the unintended outcomes of social interactions, which in turn enables or limits the future actions of persons involved (Elias, 2012). Thus, social structures and events of power dictate the agency of social actors while the actions of these agents further (re)produce power structures and events (Giddens, 1979; Raik et al., 2008). Consequently, we can assume that a complete understanding of social power would require the consideration of both agency and structure of power. Having this understanding of social power as being both conduct-shaping and context-shaping (Hay, 2002) is important for a proper grasp of the perspectives that this study gives to the concept of power. Next, I shall define an acceptable conceptualization of power as would be used in this study.

2.5.1 Power: A Definition

Power represents the imbalance of opportunities and privilege among people who can be seen as stakeholders in an unfolding event. It is usually expressed in the capacity of an individual to influence the conduct of others (Boonstra, 2016). Power is not only context specific, but also doesn’t belong to one person, as it exists in the relationships between people and groups of people (Dugan, 2003). Power evokes diverse imageries in different contexts but there is a consensus that the assumptions about how different individuals construct their understanding of power are what motivates their attitudes towards the mechanisms in which such powers are exercised. In this work, we shall go with the definition of power as suggested in Veneklasen and Miller (2002):

“power can be defined as the degree of control over material, human, intellectual and financial resources exercised by different sections of society...power is dynamic and relational, rather than absolute –it is exercised in the social, economic, and political relations between individuals and groups. It is also unequally distributed –some individuals and groups having greater control over the sources of power and other having little or no control”.
This description of power aptly captures this study’s conception of power in the risk management space. These elements of relativism, inequality and dynamics are fundamental to the arguments in this study. Hofstede (2011) used the phrase “Power Distance” to quantify how actors in different rungs of the power hierarchy interact. Hofsted describes power distance as the “extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally” (p. 10). The wider the distance, the more the deference, recognition, and legitimacy that power elicits among people. Social communication research recognizes that power can be manifested in five distinct ways i.e., coercive, reward, legitimate, referent, and expertise (French Jr. and Raven, 1959). Later additions such as informational power and source credibility were made by Raven (1965) and Nesler et al. (1993) respectively. The exercise of these forms of powers are dependent on the social order sustaining the environment.

- **Coercive** power relies on the use of force or coercion to achieve behavioral response as intended.
- The base of *rewards* power is situated in the ability to offer (or withhold) some desirable benefits to subjects in tangible, affective or social forms.
- **Legitimate** power is derived from the social and legal recognition of lawfully constituted authorities as well as the responsibilities and expectations that come with wielding and subjection to it (reciprocity). Such powers are grounded in the acceptance of social and cultural norms that institutionalize hierarchical, reciprocal, equitable and dependent authority.
- **Referent** power is rooted in the respect a target of influence holds for the perceived superiority of the agent of influence in some areas. Such powers are recognized in the social reverence for influential people such as experts, celebrities, role models and mentors, etc. who possess admirable and reputable beliefs, traits, or deeds.
- **Expert** power is derived from the legitimacy of talents, skills, knowledge, or experience. Such powers engender trust and confidence from targets of influence due to the general perception that such experts know better than the rest and they are willing to share such knowledge altruistically and assiduously.
Raven argues that critical information and the knowledge associated with it holds some inherent privileges and as such anyone who holds and controls uncommon information, knows better, hence, has an inherent power over others. Information can initiate socially independent changes and this recognition informs the social acceptance of the informational powers of such people. As the uncertainty surrounding an event grows, so does the informational influence of those who know. Unlike other sources of power which are relatively stable, informational power is transient because your influence reduces with more information that you give away (Feldman, 1985). Therefore, having vital information and being able to control it is the power base of informational power. For instance, some national governments control their citizens' access to information to suppress political dissent. Similarly, corporations protect vital trade secrets from the public and/or competitors to sustain strategic advantages. The interplay of these various forms of power is somewhat complex. For instance, while informational power thrives on the scarcity value of the information being controlled, powers of legitimacy and expertise are however reinforced based on how well agents can impress their targets with the vastness of their information provision.

2.5.2 Resistance
According to Newton’s third law (of motion), every action has an equal and opposite reaction (Crowell, 2011). The concept of power cannot be sufficiently discussed without considering the resistance to it. As noted by Foucault (1978), resistance is another form of power often manifesting as a “tactical reversal” of domination by subjugated parties. Accordingly, Foucault posited that:

*Where there is power, there is resistance... this resistance is never in a position of exteriority in relation to power* (p. 95)

Although there have been several critiques of this Foucauldian view of power by various scholars, it is however established that resistance subtly or boldly exists whenever and wherever power relations occur among social actors. Adekola (2020) referred to this phenomenon as the looping process of power relations (p. 33). Barbalet (1985) posited that power and resistance are “distinct but interdependent” dimensions of power relations but such relationships can be easily missed if we ignore the social contexts while focusing only on how power is formalized (p. 531). One important property of the social context of power formalization (according to Barbalet) is that the acceptance of power relations among parties does not foreclose the presence of resistance.
Similarly, the absence of conflicts i.e., “overt resistance” (Hollander and Einwohner, 2004) does not necessarily indicate lack of resistance, for resistance can be of two kinds (Clegg, 1989):

“organizational outflanking, resistance to power may consolidate itself as a new power and thus constitute a new fixity in the representation of power, and resistance to the exercise of power which leaves unquestioned the fixity of the terms in which that power is exercised” (p. 207).

Resistance does not only limit power, but it also contributes to and shapes the outcomes of power relations (Barbalet, 1985). Since to resist power is to exercise power, resistance does not occur in a vacuum but in opposition to a form of power (Chokr, 2004). Resistance could be directed at individuals, groups, organizations, institutions, social structures, or practices. This form of power arises when a dominant risk perspective is being promoted to the marginalization (or exclusion) of other views. Less advantaged parties would typically resist this power imbalance not only by resisting the suppression but also by pushing their own views to prominence. As Adekola (2020) argues, “risk debates and the exercise of power are not one-way –they occur between groups on different sides of the argument” (p. 33). Although resistance is generally understood to be desirous of effecting change, sometimes it could simply be directed at constraining change (Hollander and Einwohner, 2004).

2.6 Power Dynamics
Power dynamics as purposed in this study, is the inherent a product of the collective negotiations around these power distances. It describes how various actors negotiate the (sometimes subtle) interplay of these power differentials among one another to achieve their desired objectives. Power is inherent in many risk issues that seek to facilitate attitudinal and behavioral changes (Guo, 2014) and as such, the resultant power dynamics have even greater critical roles to play in these dimensions. In the next few subsections, I shall attempt to highlight how power dynamics play out in the following aspects of risk management.

2.6.1 Power dynamics in Risk Assessment
Eiser et al. (2012) argue that disaster risk interpretation is based on the interaction between physical and human behavioral factors. Human assessment of disaster risks is a complicated process. The
assumption that people will make rational choices in the face of looming danger belies the complex situation under which people make responsive decisions. This is because risk interpretations are seldom done in isolation of other real-life issues. They are shaped by people’s own experience, personal feelings and values, cultural beliefs, and interpersonal and societal dynamics (Slovic, 1993). Pidgeon and Barnett (2013) equally suggest that public understanding of risks is usually based on mental connections with related phenomena, interpretation of historical events, and judgements about institutional competence.

Power dynamics manifests in how the nature of disaster risks are assessed and interpreted in a few ways. First, the power of legitimacy allows individuals in positions of authority to chart the course for risk management. They have the liberty to decide what risk issues become priority, how policies are framed and how resources are allocated for such purposes. Therefore, their views are already advantaged over those of other stakeholders. These sometimes-elitist views could have been narrowly consulted, thus may not reflect the positions of or benefit (all) other stakeholders. Because these excluded groups do not make inputs into the risk agenda design, they are at the short end of the power stick. Second, field experts typically have the potential to shape official risk assessment owing to the power of expertise (i.e., structural power (Barnett and Duvall, 2005)). As Jasanoff (1998) explains, mainstream risk discourse gives prominence to technical risk assessments above those of social perceptions and localized knowledge. One perspective of such power differentials is reflected in how this inherent privilege potentially eliminates official recognition for concerns, local knowledge and cultural practices among the at-risk public that are essential to how they activate social preparedness and resilience. Fischbacher-Smith and Calman (2010) note that while the concerns of the public center around the possible consequences associated with a hazard when judging its acceptability, expert opinions largely focus on the “probabilistic component of that consequence being realized” (p. 195).

Another potential loophole in the assessment aspect of risk management is the openness of evolving and emergent risks to manipulation and power-grab by those who are well-resourced to do so. Due to limited technical and social familiarity with novel risks, confusion and uncertainties usually arise hence, an ill-informed public is open to manipulations of risk perceptions by anyone that could parade any semblance of knowledge. The dominant risk assessment framework,
especially that accentuated by media prominence and supported by expert claims becomes legitimized as the mainstream. This creates some dynamics for power imbalance in the authority of risk assessment and evaluation. For instance, while the amount of lead content in ground water is a constant legitimate fear for households in mining areas, these concerns however, are routinely dismissed as irrational fears by mining corporations who often cite technical authorities and industry standards that prescribe higher lead contents as acceptable. This scenario demonstrates a typical clash of (technical vs. interpretive) risk perspectives in risk assessment, a very common power imbalance prevalent in environmental risk management and many risk policy frameworks in public use today (Adekola, 2017).

2.6.2 Power Dynamics in Risk Communication
The basis for responding to risk communication is premised on the recognition and acceptance of the legitimacy of power distance behind such communication – be it expertise, legitimacy, authority, or threat. In the domain of disaster risk communication, actors who wield these powers are always (re)negotiating their influence at different stages and gradients. Bourdieu (1998) asserts that the field of communication is prone to power play and competition among stakeholders with divergent interests and desired outcomes. Message framing is one of the most veritable tools that competing interests employ to achieve the aim of constructing a favorable discourse of the risk (Pidgeon and Barnett, 2013) as well as in shaping public trust and risk understating. Risk framing is a powerful tool for influencing public behavioral response and adherence. Therefore, public perception of risks, development of risk policies, and allocation of risk resources characteristically respond to how prominent risk arguments are framed and promoted by the different contending actors.

However, there are a couple of concerns associated with the influence of message framing; First, actors involved in communicating risks including the media, politicians, pressure groups, lobbyists, scientific experts, non-profit advocacies, and policy makers frame different arguments that they hope would go ahead to dominate the common narratives and even inform risk policy. This way, there is a potential for powerful interests with resources at their control to hijack or exploit the conversation as they often have the means to procure media access and scientific expertise (Murdock et al., 2003). Thus, the risk perceptions that the framing intends to evoke are
only as good as the altruism of the interests of the powers behind it. Second, genuine, and effective risk arguments stand the risk of being drowned out if not properly framed or backed by powerful actors that can legitimize them. Third, the cacophony of contending arguments presented by numerous powers at play may create confusing, misleading, contradictory, or overloading information among the targets especially concerning new or evolving risk issues where well developed scientific and social risk understanding are lean (Damghani et al., 2009). Since the larger section of the public do not know better nor have the technical skills to assess the actual threats posed by the risk, they end up relying on both credible and manipulated information available in the public domain. These predispositions make public risk communication and its associated development a challenging task for risk regulators, policy makers, disaster managers (Adekola, 2017; Fischbacher-Smith and Calman, 2010).

Finally, the media’s reach and influence, and credibility play very significant roles in shaping public thought process in relating to the risk because they have larger audience, a wider reach and are mostly responsible for breaking down expert knowledge to layman terms (Adekola, 2017). The influence of those with wherewithal to control the media cannot be overemphasized in risk communication. The wider their media reach is, the more dominant and popular their narratives are among the public. With the coming of social media however, there has been a growing decentralization of power of media elitism. The proliferation of influential channels and a cheaper media set up has continually lowered the barrier of entry for reaching large scale audience. Notwithstanding these fundamental changes, the “power contention” (i.e., dynamics) behind different narratives hasn’t been relaxed nor does it mean that all voices have equal pitch. Rather, the development has only given rise to new sets of power brokers in a new and evolving space that is even complicated with difficulty in identifying credible information from endless multitude of claims.

2.6.3 Trust/Credibility as Power
Power differentials can also be established in public risk discourse especially based on how stakeholders construct their social credibility to elicit trust and reliance (Adekola, 2020). The importance of trust in risk discourses is exemplified by how people naturally do not subject information to deep scrutiny if it is from a trusted source. They tend to apply what Cacioppo and
Petty (1984) refer to as “peripheral” path of persuasion to mentally process information from trusted sources. Routing through peripheral paths suggests that the receiver would not subject the information to thorough cognitive processing, but rather rely on external factors (e.g., source or channel credibility) to shape their thoughts. Alternatively, Cacioppo and Petts suggested that routing information through “central” path demands deeper mental analyses without relying on external factors. Both routes, however, are determinants of the amplification pattern that would emanate from the risk signal transformation chain. (Dis)trust of risk information would accordingly highlight different salient points to different categories of social stations.

Adekola also concluded that the trust in (the perceived) credibility of experts contributes significantly to direction of risk debates. Arguments supported by expert claims tend to find traction among decision makers and the public due to the perceived credibility (and sometimes, superiority) of scientific evidence. As mooted in the *Power Dynamics* section, the basis of power of expert is rooted in the deference of the public to the exclusive (or higher) knowledge that experts hold. This influence is even greater when the risk threats are emergent or quickly evolving. As Kasperson et al. (1988) pointed out, using the symbolism of expert credibility evokes public trusts and accelerates the acceptance of risk assessments. The acceptance of such scientific or technical arguments, often contends with local or experiential knowledge and even when both are in conflict, the former typically become the center of mainstream interests whereas its altruism or otherwise becomes secondary. This reflects how power (of expertise, in this case) is demonstrated in who or what parties in risk discourse place their trust in, and it has proven to be the rule than the exception. Whereas trust contributes to acceptance of risk arguments, distrust on the other hand, creates heightened scrutiny and controversies (Flynn et al., 1992) and both scenarios shape risk amplification in different ways. Finally, I must point out here that what constitutes “scientific” or “local” knowledge is not cut in stone, and this fluidity only echoes the complexity of the power dynamics jostling for the trust of concerned stakeholders.

### 2.7 Setting the Hurricane Emergency Context

This section introduces the unique system of emergency management and disaster administration in Canada. It provides a context for understanding the identity, roles and influences of various social actors wielding significant powers in the disaster management domain. Having this
understanding is crucial for grasping the relationship and contest of powers among these various actors as well as how the power dynamics inherent in their risk discourses produces varying disaster outcomes.

2.7.1 The Natural Hazard Landscape in Canada
Canada is a huge country with a vast landmass that consists of a diverse topography (Rockies, plains, Maritimes, and tundra), six time zones, and spreading out to connecting three different oceans. This exposes her to several forms of hazards that are peculiar to the different geographic locations of the country (Public Safety Canada, 2020b). Examples of common natural hazards across different parts of Canada include floods, droughts, ice storms, tornadoes, hail, wildfire, heat and cold waves, hurricanes, earthquakes, tsunami, and landslides, etc. (Dotto et al., 2010). The following subsections briefly discuss the three most occurring natural hazards in the country.

Wildfire
With enormous forests traversing the sparsely populated landmass of Canada, the frequent occurrences of wildfires are not unexpected. However, with worsening climatic instability, increasing urbanization and human encroachment to previously unpopulated areas, the effects and risks posed by forest fires are becoming more visible. Similarly, the growing recognition of the economic importance of trees, wildlife, insects, and other surface resources necessitates more attention to wild fires and fuels the growing discourse around the same issue. Forest fires or wildfires are common occurrences from May to September (Natural Resources Canada, 2020). From an average of 6000 fires a year between 1930 and 1960s, records of forest fires have risen to about 10000 annual fire events and is even projected to rise (Dotto et al., 2010). On average in Canada, wildfires burn 2.5 million ha/year, nearly half the size of Nova Scotia (Canadian Red Cross, n.d.). Major fire disasters on record in recent times include 2019 Alberta wildfires, 2018 North Bay 69, 2018 Parry Sound Forest fire, 2018 British Columbia wildfires, 2017 Alberta fires, 2016 Fort McMurray wildfire, and the 2014 Northwest Territories fires (Public Safety Canada, 2020c).
Floods
All parts of Canada are susceptible to flooding, caused by different natural and/or man-made activities such as snowmelt, excessive rainfall, rain on snow (the combination of snowmelt and storm rainfall runoff), ice jams, dam failures, coastal storms, tsunamis, cyclones, and hurricanes, etc. Floods threaten lives, homes, industries, and critical infrastructure such as roads, bridges, and power plants when they occupy flood prone lands. Floods in the maritime regions often results from storm surge and heavy rain dumping as after-effects of hurricanes. In the heavily glaciated Yukon and the Northwest Territories, spring ice break-ups contributes to swelling of rivers and run-offs. These are common in the Mackenzie River Basin; broken ice and warmer waters from the southern part of the basin move north on the river to where water is still frozen, leading to severe ice jams and flooding (Dotto et al., 2010). One of Canada’s most flood-prone areas is that of the Red River in Manitoba (Burton et al., 2015).

Flood management forms the core of the Government of Canada’s National Disaster Mitigation Program (NDMP) which provides a roadmap for collaborative funding among the federal, provincial, and territorial governments towards the aim of effectively mitigating, preparing for, responding to, and recovering from flood-related events (Public Safety Canada, 2020a). A joint effort between the Public Safety Canada and the Natural Resources Canada produces and continually updates the Federal Flood Mapping Guidelines Series. Flood mapping provides information on the boundaries of a potential flood event and serves as useful tools to support informed decisions and investments to reduce the impacts of flooding in communities across Canada (Public Safety Canada, 2019c). Recent occurrences of flooding in Canada include the 2009 Red River flood, 2011 Assiniboine River flood, 2013 Calgary and Southern Alberta Flood, 2017 Quebec floods, etc.

Hurricanes
Saffir–Simpson Hurricane Wind Scale (SSHWS), the international standard for determining the intensities of storms based on maximum wind speed sustained for at least a minute, classified storms as:

Tropical depression: <62km/h
Tropical storm: <119km/h  
Category 1 hurricane: <153km/h  
Category 2 hurricane: <178km/h  
Category 3 hurricane: < 208km/h  
Category 4 hurricane: < 251km/h  
Category 3 hurricane: >252km/h

Hurricanes are made up of masses of warm, humid tropical air with high winds exceeding 118 km/h and torrential rains. They usually begin as unstable tropical depressions but gradually garner tremendous power as they encounter warmer water and air, thus forming circular, stable structures filled with high wind and condensed water vapor with enough energy to cause destructive actions (NOAA, 2019). Hurricane’s destructive capability is characterized by high winds, heavy rainfall, storm surge and sometimes, weak tornadoes (Dotto et al., 2010).

Eastern Canada is the region most affected by tropical storms and hurricanes while the western seaboard rarely experiences pacific hurricanes (Dotto et al., 2010). Although not part of the tropical system, the eastern maritime provinces of Canada, (otherwise known as Atlantic Canada) such as Nova Scotia, New Brunswick, Newfoundland and Labrador, Prince Edward Island, and Quebec experience annual tropical and post-tropical cyclones due to their exposure to the Atlantic Ocean. Canada typically experiences the hurricane season in the order of the United States and Central America/Caribbean (June to November). In most cases, Canada experiences the extratropical storms or the transformed version of hurricanes (tropical cyclones) which occurs after it enter the typically cold waters of Atlantic Canada. However, there have been records of powerful tropical storms reaching Canada (Dotto et al., 2010). Though the Maritimes are at the common fronts that receive storms, the provinces of Quebec and Ontario occasionally experience powerful storms (e.g., the 1954 Hurricane Hazel) or its after-effects, such as strong winds and high precipitation. Although Canada is in typically cold waters (which weaken hurricanes), it is expected that this advantage would gradually be eroded due to global warming that might permit sustained hurricane strength in the upper Atlantic. Some notable hurricanes and tropical storms to have hit Canada include 1996 Hortense, 2002 Gustav, 2003 Juan, 2014 Arthur, 2016 Matthew, and 2019 Dorian.
The Canadian Hurricane Centre, CHC oversees monitoring and evaluating the course of hurricanes as well as providing public advisories.

2.7.2 The Emergency Management Landscape of Canada
Having given an insight into the nature of disaster risks in Canada and described the three most prevalent types, the following sections in this chapter will be focused on discussing the administration and management emergency and disaster risk landscape in the country. Usually, all events that pose a threat to social and public safety are officially encapsulated as “emergency” in the risk discourse of the federal, provincial, and territorial or municipal governments. Giving the background into how Emergency Management (EM) works in Canada provides a crucial understanding of the context in which this study situates the discussions of disaster discourses and the peculiarity of the emergency and disaster risk administration system in place in Canada.

Emergency Management (EM) at the federal and in every provincial jurisdiction of Canada adopts a Whole-of-Society (WoS), All-Hazards approach and Risk-Based emergency response system (Public Safety Canada, 2019a). EM activities, entities and organizations derive their institutional legitimacy from the enactment and implementation of the Emergency Act (Emergency Management Act (S.C. 2007, c. 15). Specifically, an All-Hazard based approach to emergency management refers to drafting legislations, guidelines, strategies, and responsibilities that take a holistic view of all hazards –manmade or naturally occurring. In this manner, each hazard is discussed as part of a larger public threat but also given its place according to its peculiarity of risks. An All-Hazard approach to EM is designed to enable a synergized approach to meeting the challenges of various known, unknown, or emergent hazards including the technology-induced emergencies.

“The all-hazards approach increases efficiency by recognizing and integrating common emergency management elements across all hazard types, and then supplementing these common elements with hazard specific sub-components to fill gaps only as required.” (Public Safety Canada, 2017).

This approach permits the emergency system to adapt a tailored response to different hazards drawing from a generalized playbook that does not only view each hazard in its peculiarity but
how it might also be related to other risks. In similar terms, the concept of risk-based strategy is premised on the need to identify, understand, and evaluate the severity of vulnerabilities to all-hazards:

“[Risk-Based] approach emphasizes the importance of assessing vulnerability to all hazards in order to determine the optimal balance and integration of measures to address vulnerabilities and risks. The presence of a hazard or a threat that is related to a vulnerability constitutes a risk.” (Public Safety Canada, 2017)

The idea is that the peculiar risk a community faces is a product of the sum of their vulnerabilities to all (known and unknown) dimensions of these hazards. Having the knowledge of such risks enhances the anticipatory and responsive capacities of all those involved in ameliorating these vulnerabilities as well as improving the general emergency management system. To build such capacities, a Whole-of-Society approach is needed.

**Whole-of-Society (WoS) Approach**

The WoS outlook in the EM system of Canada promotes collaborative and cooperative involvement of all individuals, organizations, and communities across Canada in partnership with emergency managers in all jurisdictions. Drawing from the recognition that effective and efficient EM must be a shared responsibility, the Canadian EM system assumes that “Whole-of-society partnerships based on effective collaboration, coordination and communication are key components of FPT emergency management systems” ((Public Safety Canada, 2019; 10). Therefore, Whole-of-society partnerships is one of the core principles of EM components. Individuals, communities, private and public sectors, volunteer and non-governmental organizations, and academia interested in engaging with emergency managers is considered a “Partner” (p.18). Lately, the concepts, aims and objectives of the EM approach have been codified into 2 major documents i.e., The Emergency Management Framework for Canada (2017) i.e. *The Framework*, and Emergency Management Strategy for Canada (2019) i.e., *The Strategy*. Although, other documents exist that highlight the EM thinking and systems in Canada, but none of those reflects the perspectives and desires of the current federal Liberal government along with all provincial and territorial (P&T) authorities. A common theme across both documents is the desire to achieve societal resilience as well as the recognition of the increasingly dynamic roles that
climate change play in EM decisions in Canada. The underlining belief is that climate change will continue to increase the frequency and intensity of extreme weather events (EM Framework 2017; 4). Similarly, both documents are written to reflect a close alignment with the (albeit trendy) international obligations of Canada in various pacts, treaties, or non-binding agreements e.g., Paris Climate Accord (2015), 2030 Agenda Sustainable Development Goals (2015), UNDRR Sendai Framework (2015), etc. The foregoing, in addition to domestic priorities, EM principle and strategies were developed to codified important considerations in achieving a wholesome societal resilience.

2.7.3 **EM Principles and Strategies**

The operational aspects of the emergency strategy are captured in what is known as the *EM Components*: Prevention and Mitigation, Preparedness, Response, and Recovery. Likewise, the essentials of policies, programs, procedures, guidelines, and activities of EM System in Canada are defined the following EM *Principles*:

1. **Responsibility**
   a) FG: exercises leadership at the national and international levels, and on lands and properties under federal responsibility.
   b) P/T Govts: emergency management within their respective jurisdictions.
   c) Partners: prepared for disasters and contribute to community resiliency.

2. **Comprehensive**: proactive, all encompassing, balanced efforts across EM components.

3. **Partnerships**: whole-of-society approach to collaboration, coordination, & communications.

4. **Coherence of action**: uniformity in complementary actions across all tiers and sectors.

5. **Risk based**: …vulnerability evaluation method

6. **All-Hazard**: integrated approach and synergized response to emergencies

7. **Resilience**: empowering citizens to share responsibilities and minimizing risks

8. **Clear communication**: …open and appropriate for different periods of emergency

9. **Continuous Improvement**: applying accumulated learning

10. **Ethical**: …decisions guided by primacy of human lives & dignity.

While the “key belief and goals” of the EM in Canada are encapsulated in these EM Principles, an “adaptable and flexible” application of these ten principles is considered imperative to achieving societal resilience in the face of disasters ((Public Safety Canada, 2019; 8)).
2.7.4 *EM Structure and Organization*

The *Emergency Management Act* invests in the Federal Minister Public Safety Canada the lead role in coordinating a multitier, multisectoral emergency management activities as well as policy development. Although other federal ministers are responsible for managing local risks in their respective departments, they are required to liaise with the Public Safety (PS) minister in developing risk-based assessments for their jurisdictions. The EM governance at the federal level also recognizes roles for Deputy Ministers, Assistant Deputy Ministers in their respective committees as well as the Senior Officials Responsible for Emergency Management (SOREM).

*Figure 2.1: FPT Governance Structure. Culled from 2019 The EM Strategy*

The Whole-of-Society outlook of EM in Canada requires that the PS Department maintain a working partnership with other Departments, Provincial & Territorial (P&T) authorities, first responders and voluntary organizations, communities, and other stakeholders. This network of partnership is known as the *FPT Governance Structure* (Figure 2.1). The Government Operation
Centre (GOC) and its various Regional Offices (RO) across Canada is the main coordinating arm of the PS Department for EM partnership and collaboration with P&Ts and other stakeholders. The Emergency Management Act also mandates provincial and territorial governments to create an EMO within their jurisdiction to assume the “primary responsibility for dealing with” emergencies. These regional EMOs are under the command of their respective Public Safety and Emergency Management Ministers. In alignment with the confederacy governance structure of Canada, each EMO is independent of each other and the national PS department. However, FPT governments routinely cooperate on “within the jointly establish FPT emergency governance structure…” (The Framework; 14). In the following section, I shall explain the roles and duties of important arms and agents of governments found in the environmental EM domain.

2.7.5 EM Roles and Responsibilities

Although emergency response and management are primarily local, both Federal and P&T Ministers in charge of public safety and emergency response occupy the high position in the joint decision-making network. Emergencies are first the responsibilities of the lowest tier of administration (communities or municipalities), but heightened and transregional risks can be escalated to provincial and federal levels as appropriate. When and if emergencies overwhelm provincial capabilities, federal authority through PS Canada is formally invited to step in. According to a consolidated version of the Emergency Act (2007), the minister in charge of PS Canada is “responsible for exercising leadership relating to emergency management in Canada by coordinating, among government institutions and in cooperation with the provinces and other entities, emergency management activities” (p. 2). The federal minister is also directly responsible for drafting plans, policies & programs, advising the government on threat assessment, providing relief assistance to other tiers (including troops mobilization), amongst other roles. The responsibilities of the other members of the hierarchy are summarized as:

“FPT Deputy Ministers are the second tier of the structure and are responsible for implementing ministerial decisions by setting priorities and assigning FPT Senior Officials Responsible for Emergency Management [SOREM] to take responsibility for action items. Working Groups report to the FPT Senior Officials Responsible for Emergency Management, submitting proposals and reporting on the results of their ongoing work.” (The Framework; 15)
The Working groups are constituted with partners from diverse sectors and serve at the discretion of the SOREMs, who in turn report to the chain of command higher up, in that order. Next, we look into the processes that are involved in how the functions of EM agents translates into concrete risk administration in Canada.

Table 2.1: Overview of the provincial level hurricane emergency management in Canada

<table>
<thead>
<tr>
<th>Province</th>
<th>Primary EM Organization</th>
<th>EM Laws &amp; relevant documents</th>
<th>EM Officers &amp; Coordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Brunswick</td>
<td>Emergency Measures Organization</td>
<td>Emergency Measures Act c.2011</td>
<td>Director of the EMO Regional Emergency Management Coordinators</td>
</tr>
</tbody>
</table>

NOTE: Quebec, a French-speaking province has been exempted from this table.

2.7.6 Provincial & Territorial Risk & EM Administrations
At the P&T tier, each region is responsible for drafting legislation and policy regarding emergency management and risk administration in their respective zones. While these regional strategies are expected to align with both federal and each other’s’ EM framework, they still retain individual
flexibilities that reflect and respond to the disaster landscape in their respective regions. Table 2.1 above provides a brief overview of the provincial level hurricane emergency administration in Canada. This overview is only limited to provinces known to have recorded hurricane emergencies in history.

2.8 Summary and Conclusion
In this chapter, I have provided discussions on critical power issues relevant to disaster discourse literature as well as the current state of arguments in critical disaster studies. Similarly, I have introduced definitions and discussions on important topics and concepts that are crucial to this thesis and the lines of arguments that were flown in later chapters. The chapter also provides an account on how studies on environmental injustice transformed over time into critical efforts that have shifted our attention to the complex relationships amongst the socioeconomic, political, and racial factors that precipitate environmental injustice and disaster risk inequalities. Most importantly, the roles that social and political discourses play in shaping and perpetuating these inequalities through risk communication and assessment were also discussed. I also provided insights into how discourse can be shaped by different models of risk governance adopted by powerful actors. The chapter also contains the discussions on how discourses can afford us a critical scrutiny of the power dynamics behind how various interests seek to shape our communication and understanding of disaster risks through subtle and taken-for-granted worldviews. The chapter ends with familiarization of the reader with the subject of the investigation –Canadian emergency management system. In the next chapter, we shall see the utility of the Social Amplification of Risk Framework (SARF) in shedding lights on risk discourses as both an instrument and product of power dynamics inherent in disaster risk management.
Chapter 3

Theoretical Framework

3.1 Introduction
Theoretical frameworks are needed in social research to guarantee a structured and organized inquiry that is well insulated from pre-conceptions and biases; hence their significance is primarily demonstrated in the conceptualization of research thoughts and processes (Grant and Osanloo, 2014). They are the blueprints that guide a researcher’s choices in the selection of a design approach, development of research questions and hypothesis, methods of data analysis and the topics included in the literature review. Similarly, Sarter (2006) (as mentioned in Grant and Osanloo, 2014) also pointed out that research findings need to be interpreted within a theoretical framework to reveal a clearer implication of the knowledge gained. Therefore, a framework is useful for this type of study which seeks to find answers to questions of social and political importance. This chapter provides discussions and justification for the theoretical framework, Social Amplification of Risk Framework (SARF) adapted in this study.

3.2 The Social Amplification of Risk Framework (SARF)
The rationale behind the Social Amplification of Risk Framework lies in the understanding that (real or perceived) risk remains largely uncompelling and of limited impact except when it is communicated to the society (Pidgeon and Barnett, 2013). However, risk communications are framed through risk signals (i.e., images, signs, and symbols) that interact with our psychological, social, institutional, and cultural processes (Kasperson et al., 1988) and it is these interactions that shape our different perceptions of risks. Consequently, it observed that risks of hazard events may attract considerable social attention by the public, media or other stakeholders yet institutional experts may consider them as low risk (risk intensification). Conversely, risk designated by subject experts as severe may receive less concern from the public i.e., risk attenuation. The Social Amplification of Risk Framework (Kasperson et al., 1988) was thus developed to explain the divergent risk assessments that inform the usually opposing views among different risk stakeholders. The framework focuses on explaining the disparities in different stakeholders’ assessment of risk as well as attendant social impacts (Kasperson et al., 1988).
The framework suggests that cognitive differences, institutional structures, social group behavior and individual responses can explain a person’s social experience of risk (Kasperson et al. 1988). It also recognizes the usual contention over risk as being either objective or subjective, but it proposes that while threats are real, our understanding of these threats is socially constructed (Pidgeon and Barnett, 2013). As such, the framework views risk perceptions as only limited by the contextual characteristics that stakeholders attach to the event i.e., risks draw different amplified responses in different contexts. In Kasperson’s et al. (1988) words:

“The social structures and processes of risk experience, the resulting repercussions on individual and group perceptions, and the effects of these responses on community, society and economy compose a general phenomenon that we term the social amplification of risk”. (p. 178)

3.3 Social Amplification of Risks
Kasperson et al. (1988) used the “amplification” metaphor drawn from communication theory to illustrate how risk signals originate from information sources and then pass through a series of intermediating transmitters before ending up with the receiver. The metaphor describes how signals passing through different stations of transmission (i.e., social agents) are subjected to transformations through filtering mechanisms. Each transmitter alters the received messages by intensifying or attenuating some aspects, adding, or deleting others, and then finally sending a new cluster of signals on to the next transmitter or the final receiver where the next stage of decoding occurs (Kasperson et al., 1988; Renn, 1991). Thus, transformation selectively process signals which may heighten some salient aspects of the signal, increase, or decrease the quality of the information conveyed, and reinterpret available symbols (among other things). Likewise, in the cycle of disaster and risk debates, different stakeholders (scientists, experts, news media, politicians, cultural groups, social media users, community networks, etc.) all act as stations of amplification (Brenkert-Smith et al., 2013). The social amplification of risks occurs due to the cognitive filtering mechanisms that these social actors (stations) apply to different elements of the risk message (Kasperson et al., 1988; Renn, 1991). When the elements they consider salient receive significant attention, thus eliciting an increased level of awareness and response, the risk is intensified. However, when the filtering mechanisms suppress the importance and attention given to threat levels, thus reducing, or failing to evoke significant reckoning, attenuation occurs.
Therefore, risk amplification could either be in the form of intensification or attenuation. Attenuation process diminishes the need (or urgency) to adopt risk-informed practices even when such threats are well documented and have precedents. The primary factor responsible for such amplification (or attenuation, as the case may be) is thus the risk perception of each amplification station.

Risk amplification is a dynamic process as one set of risk-informed behaviors creates secondary and tertiary responses such that the ripple effects they produce leads to tangible impacts in the society (Renn, 2003). SARF employs the metaphor of a stone dropped into the pool to explain how secondary and tertiary responses to risks amplification create rippling effects in society, sometimes beyond the risk domain itself. As a stone drop causes widening ripples, so does the rippling effects symbolize the wider impacts that risk amplification reproduces in the society (Pidgeon and Henwood, 2010). Kasperson and colleagues identified seven key steps for amplification. These are:

i. Filtering of signal (e.g., only a fraction of all incoming information is actually processed)
ii. Decoding of the signal
iii. Processing of risk information (e.g., the use of cognitive heuristics for drawing inferences)
iv. Attaching social values to the information in order to draw implications
v. Interacting with one's cultural and peer groups to interpret and validate signals
vi. Formulating behavioral intentions to tolerate the risk or to take actions against the risk or risk manager; and
vii. Engaging in group or individual actions to accept, ignore, tolerate, or change the risk

The Social Amplification of Risk Framework (Figure 3.1) demonstrates the strategic importance of message framing for public perception and social preparedness. Accordingly, SARF identified four kinds of communication contents:

i. factual (e.g., the emission of an air pollutant is X mg per day),
ii. inferential (e.g., the emission poses a serious health threat),
iii. value-related (crafted to reflect emotional images e.g., “Silicon Valley-initiated”), and
iv. symbolic meanings (evoking credibility e.g., "written by a group of Nobel laureates").

A skillful mix of the above can be used by social agents to stimulate either attenuation or intensification of risk messages to achieve desired consequences of a risk discourse among the populace. For instance, taking advantage of a well appreciated social value may increase credibility
for weak evidence while adding or deleting symbolic meanings may go a long way in modifying the consequences of the original message (Kasperson et al., 1988).

3.4 Stages of SARF
Amplification occurs through a two-stage mechanism: informational mechanism and response mechanism (Kasperson et al., 2003). Renn et al. (1992) alternatively refers to theses as risk perception and secondary responses processes.

3.4.1 Informational Mechanism
First, as signals pass through different agents, filtration processes based on some socio-cognitive factors (e.g., symbolic connotations, volume, the extent of dramatization, source and channel of communication, values, trusts, etc.) lead to transformation of the signals. Broadly speaking, when an individual receives a risk message, they cognitively process and filter these signals, checking out for aspects that they hold true or that reinforce previous notions. They also attach social values to the information to draw perception and/or interpretations. Therefore, signal transformations along each node on this chain produce personal and social understanding among these agents and consequently, some first order behavioral responses. Critical components shaping the informational stage include information sources, channels, and (individual and) social transmitters. Likewise, the amplification arising from the interactional processes among these components are influenced by factors such as volume of information accessible and that of media coverage, extent of risk dramatization, message framing and quality of associative symbolism in risk messages, and generally, the predominant narratives surrounding the risk (Kasperson et al., 1988). Kasperson et al. (2003) and Kasperson et al. (1988) suggest that amplification mechanisms of risks could be demonstrated through the following pathways: i.) heuristics and values, ii.) social group relationship, iii.) signal value, iv.) stigmatization, and v.) trust and confidence. Other identifiable pathways are emotions (Morganstern, 2015) and cultural practices. Due to their importance, I shall briefly discuss these dimensions:

i. Heuristics and values.
Given the complexity and uncertainty of hazard events, human cognition cannot fully comprehend the entire picture of the unfolding events, hence they use simplifying
mechanisms to construct risk evaluation and appropriate response. Such heuristic simplification processes are often inadequate, largely subjective, and prone to errors and when combined with (personal and group) values, they reflect how people make unpredictable decisions on which risk signal elements they chose to respond to (and amplify) or ignore (thus attenuating).

ii. Social group relationships.

People have social, political, and economic affiliations with some prefixed ideologies and beliefs. For instance, the present concern for climate change and global warming seems to be delineated along global political ideologies with a large majority of conservatives (with support from business interests in the energy sector) being dismissive of the gravity of such claims (Collomb, 2014; Manzi and Wehner, 2015). The qualities of these group affiliations weigh heavily on how members respond and influence the rationality they bring to risk issues (Rayner and Cantor, 1987). As the polarized bubbles swell, so do the different alignments in risk interpretation and management.

iii. Signal value.

The significance attached to an event by the public seems to be in part predicated on the informative value they could deduce. Usually, new, and emerging risks carry enough uncertainties to warrant heightened social attention and response, even if the outcomes are not as substantial as other risk events that occur frequently. It seems when the public do not have all the facts together (information vacuum), their attention is heightened towards the risk subject and as such more behavioral adherence are noticed. Public response to such signal values, hence, goes ahead to inform more amplification processes.

iv. Stigmatization.

Kasperson et al. (2003) describes how risk events have created a social stigma in form of labels, imagery and markings for people, place, environments, products, and technologies. Stigma arises from negative imagery associated with unwanted characteristics of a risk. Imagery is how people construct a mental picture of a person, social groups, places, or products as a simplified way of understanding the features of such. Labels and markings
develop out of such heuristic imagery, and these are used to evaluate the risk situation. Therefore, labels such as “Chernobyl” construct an undesirable massive nuclear disaster stigma even if the place in question has no nuclear siting. Similarly, using the phrase “Wall Street” has come to be associated with corporate greed since the 2008 financial meltdown. The argument here is that people construct an idea of the threat level by using stigma of undesirable contexts to convey the gravity of the situation. The import of such stigma-induced signal also transforms into what would trigger additional further social amplification and responses.

Social distrust was a later dimension added to the list by Kasperson et al. (2003) after some literature and theoretical reviews. One way of seeing social trust in public and corporate institutions is in the stakeholder’s assessment of their managerial handling of the event. Renn and Levine (1991) listed the qualities of such assessment as competence, objectivity, fairness, consistency, and faith. The extent to which risk managers observe these qualities engender trust among the concerned stakeholders. On the other hand, beyond the perceived competence and transparency of authorities in charge, trust could simply describe the parity of values among the stakeholders (Siegrist and Cvetkovich, 2000). In this way, trust in enhanced when all parties see each other as working from the same playbook. Whichever shade of trust is at play, it goes a long way in reflecting how stakeholders express their response mechanisms. Negative perceptions tend to heighten risk perceptions and elicit stronger public reactions informing social distrusts and other secondary behaviors (such as public protests).

3.4.2 Response Mechanism
The response mechanism describes a series of high-level consequences resulting from amplified risks. First order responses to risk amplifications produce secondary behaviors among social groups which in turn get amplified so that another stage of amplification may occur to produce third-order consequences. As these secondary impacts occur, they reverberate through individual and social spaces and subsequent reactions to these further precipitate additional cycles of amplification to occur (Renn, 1991; Renn et al., 1992). These behavioral consequences produce social impacts that may spread, or ripple, to other parties, distant locations, or future generations.
Examples of impacts of rippling effects of amplified risks may include stricter disaster protocols; public protests; social (dis)trust in institutions; enduring mental perceptions, images, and attitudes; skepticism of expertise and technologies; proliferation of acclaimed expert knowledge, and a generalization of responses to other similar risk events and hazards. This rippling of impacts is an important element of risk amplification since it can highlight the connection between simple discursive choices and the temporal, sectoral and geographical scales of impacts (Kasperson et al., 2005).

3.5 Criticism of Classical SARF
Several scholars have scrutinized the validity of the claims made by the proponents of the framework. While some questioned the epistemological foundation of the model, others pointed out the limitations of its applicability to certain risk issues, especially considering the evolution of risks in later years after the original framework was developed. A major criticism of SARF raised by Petts et al. (2001) borders on the inability of the framework to account for the role of power and expertise in risk amplification. Wardman (2008) equally mentioned SARF’s failure to adequately account for the significance of “context and power in determining the availability of opportunities of different actors to influence substantive risk outcomes” (p. 1629). Comrie (2015) attributed this shortfall to the narrowed conceptualization of the framework to only the who factors (social actors) that shape social amplification at the expense of the what factors (qualities of such actors) thereby neglecting the significance of their inherent capabilities in shaping issues in risk discourse. Moreover, the inability of the framework to account for how key actors use the media in risk communication (Petts et al., 2001; Rayner, 1988) limits its capability to shed light on the roles of power behind risk amplifications.

Furthermore, Rayner (1988) highlights a flaw in the amplification metaphor underlining the framework which has to do with the easily misleading assumption that there exist some baseline (true) risks capable of being distorted through some social processes of amplification. Equally, the ‘term’ amplification could be misconstrued as exaggeration (Rip, 1988) whereas it, in a manner of speaking (at least, as intended by the proponents) refers to both intensifying and suppressing processes. Another set of serious arguments against SARF came from Murdock et al. (2003) and
Penning-Rowsell and Handmer (1990) that the communication model of the framework assumes a somewhat erroneous conceptualization of risk communication as a simple and one-way path where risk information emanates from sources and is transmitted unto end users. Such static conception of the communication pathway they suggested fails to capture the complex, back and forth interactions among the social actors in the information mechanism stage.

In response to these criticisms of the framework, Kasperson et al.’s (2003) argued that although risk does have real consequences, the conception of the framework does not in any way intend to present risks as (always) having a baseline state. The concept of amplification does however entail some measures of judgement and construction which often differ among groups of stakeholders. “Thus, there is no such thing as ‘true’ (absolute) and ‘distorted’ (socially determined) risk” (Pidgeon et al., 1999 cited in Rosa, 2003 p. 50). Similarly, the idea that the framework views risk communication as a simple process was also dismissed since social risk construction is a product of interactive process at different levels involving various parties. Bakir (2005) corroborated this by arguing that whereas SARF seems to present a linear theoretical perspective of risk communications, it is equally able to “detect complexity and multi-directionality within communication” (p. 689). Kasperror and colleagues also corrected the notion that the media was conceived as the primary driver of amplification positing although the media is the biggest beneficiary of amplification process, however, that no single component can sufficiently initiate amplification without the complex and interactive connection among other parts. Finally, Bakir (2005) suggested that the criticisms of SARF surrounding media issues are results of how each researcher applied the framework and not the consequences of some inherent shortcoming of the framework itself.

Yet, SARF in its original form does not serve the purpose of this inquiry as it does not explicitly provide a construct for power relations. Although later reviews brought significant changes to the theoretical scope of the framework, its utility and significance, nonetheless, have been proven in numerous recent studies from different subject domains (see e.g., Adekola, 2019; Duckett and Busby, 2013; Fellenor et al., 2018; Jagiello and Hills, 2018; R. E. Kasperror, 2017; Nguyen and Nguyen, 2020; Wirz et al., 2018). These studies, through different reviews and adaptations,
exhibited the flexibility of the framework to be adapted for suitable use for different contexts and research goals. They also demonstrated that when the roles of power dynamics are accounted for in an amplification, the framework does well to highlight the not-so-obvious processes of risk amplification. For example, by examining how the dynamics of power act as common denominator in the complex web of social interactions among various actors and processes of risk management (see discussions in the Literature Review chapter), an amplification framework (that integrates power) can give clearer insights into how social amplifications of risks are underlined by power differentials that privilege certain risk arguments over others i.e., power amplification. The necessity of accounting for the significance of power relations is risk amplification is premised on these twin factors; first, the disparities in risk amplification among different actors arise from the divergent cognitive transformation and interpretation they give to risk messages. Hence, the varying risk assessment, perceptions, and discourses they so build dictates the different levels of importance they give to the same risk. Second, we also know that certain actors are more influential in determining the direction of risk management debates and policy options than others. Therefore, if a power imbalance privileges one party’s discourse over another’s, then what we have is essentially a case of power amplification –manifesting through discourses. SARF can therefore be modified into an ideal framework for examining how power dynamics motivate the amplification of certain discourses over others which ultimately produce some latent power amplifications within the disaster risk debates.

The utility of some other theoretical models (e.g., cultural theory and psychometric theory of risk and rational choice theory) have been tested for theoretical suitability for these objectives (see e.g., (Eiser et al., 2012; Renn, 2008; Slovic, 1993), however, none of them have been able to show enough robustness to accommodate the perspective of power differentials in social risk construction (Adekola, 2017). Comrie (2015) argues that in addition to the aspects covered by both cultural theory and the psychometric paradigms, another key advantage of SARF is that by recognizing and combining the dynamic natures of risk perception and communications, SARF demonstrates how changing perceptions (through accumulated learning) (Eiser et al., 2012) create feedback loops in the communication process in ways that continue to amplify risk signals unto larger scales. Finally, Adekola (2017) identifies the dimensions in which power amplification drives key processes in risk management (see Table 3.1).
Table 3.1 Factors shaping the social amplification process

<table>
<thead>
<tr>
<th>Information Mechanism</th>
<th>Response Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Power</td>
<td>• Trust and Credibility</td>
</tr>
<tr>
<td>▪ Setting the risk agenda</td>
<td>▪ Source of information (experts vs. known source)</td>
</tr>
<tr>
<td>▪ Evidence and Interpretation</td>
<td>▪ Transparency and openness</td>
</tr>
<tr>
<td>▪ Long standing professional practices</td>
<td>▪ Inclusiveness</td>
</tr>
<tr>
<td>▪ Media access</td>
<td>• Power (Resistance)</td>
</tr>
<tr>
<td>• Social/professional group relationships</td>
<td>• Culture and Signal Value</td>
</tr>
<tr>
<td>• Expertise</td>
<td>• Emotion</td>
</tr>
<tr>
<td>▪ Too much weight attributed to technical expertise</td>
<td>▪ Distribution of cost and benefits</td>
</tr>
<tr>
<td>▪ The construction and development of experts</td>
<td>▪ Gains and losses</td>
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<td>▪ Domain specificity</td>
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<td>▪ Paradigm blindness</td>
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<td>• Communication</td>
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<td>▪ Language in use</td>
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<tr>
<td>▪ Interactive and quality of feedback process to clarify</td>
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<tr>
<td>meaning and discuss sensitive issues</td>
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</table>


3.6 “Power Dynamics”: Need for Modification to SARP

If it is evident from the foregoing that risk amplifications among social agents are influenced by the power dynamics and that the transmission of risk signals (with consequent rippling effects) hardly occur in a linear fashion, it is therefore reasonable that no understanding of the social amplification of risk is complete without properly accounting for the roles of power amplification therein. Reviewing the original framework to characterize the roles and significance of power dynamics among social agents within the risk management domain is thus important for this study. Power is a critical underlying factor shaping the information mechanism of risk amplification. Adekola (2017) argues that “risk communication is embedded within institutional, productive and structural dimensions of power” (p. 258), thus the interplay of power, expertise, communication,
and trust would amplify different aspects of risk to different parties in distinctive ways, i.e., the same risk could mean varying threats for different individuals and social groups. However, these distinct parts sum up to create a negotiated but collective sense of risk that consequently inform how and what risks messages are framed, whose voice is heard, and how policy guidelines are developed, etc. Modifying, therefore, the constructs of the framework to account for this variable is important, especially given the continuous evolution of public risks and the increasing multidimensionality of communication channels. Consequently, Adekola proposed the Policy Evaluation Risk Communication (PERC) framework as a modification of the SARF to account for the influence of power dynamics in risk discourses. This new framework will be introduced next.

3.7 Policy Evaluation Risk Communication (PERC) Framework

PERC demonstrates that power, expertise, communication, and trust/credibility are the factors that primarily influence the evaluation of risks and uncertainties under contending multiple discourses for policy making. Adekola (2017) developed the PERC framework by modifying the variables of the SARF model to reflect the importance of these factors in the risk communication policy and decision-making framework. The primary claims of PERC are that social amplification of risk drives the evolution of risk debates and that public health risk policy arguments are typically enmeshed in the interplay of power and expertise (Adekola et al., 2019). Therefore, an inherently biased perspective is perpetually maintained in risk policies due to the underlining power imbalance associated with the positions of those with dominance. This inherent bias goes on to decide who or what the issues are in risk management, risk preparedness, social response, etc.

Adekola (2019, 2020) and Adekola et al. (2019) used the PERC framework (Figure 3.2) to analyze the social amplification of policy debates surrounding smoking, vaping, and vaccination risks in the United Kingdom. Findings from these case studies revealed that various dimensions of power do manifest in risk communication via technical expertise, control of communication and creation of trust (through scientific credibility). Additionally, scientific expertise plays central roles in risk amplification thus placing enormous responsibilities on experts in times of uncertainties. Power is expressed in technical expertise through how scientific knowledge is often privileged above the local or experiential knowledge in policy debates. Similarly, power manifests via the control of
communication in a way that confers some sort of legitimacy on those who have the most resources to push their narratives.

*Figure 3.2 PERC framework*


It is symbolic that the same critical factors that shape the amplification stages identified in the original SARF framework (communication and expertise) have also been identified as the aspects of risk discourse through which power can be manifested. This demonstrates the utility of the PERC framework in investigating power amplification inherent in risk discourses. While the above description aligns well the arguments in preceding sections, the point of divergence lies in the fact that this thesis is not interested in policy decision making perspectives but in how these power dynamics shape discourses and high order social response. Second, Adekola’s conception of the framework did not go beyond the informational mechanism stage of the process to explain how public response can reflect the social impacts of these amplifications. In this study however, the goal is to exploit the affordance occasioned by major social media platforms to fill this shortcoming. Building on this theoretical advancement above, the PERC framework shall be
adapted for developing a conceptual model which would guide the methodological decisions in this study.

3.8 Research Framework: Power-Amplified Risk Discourse (PARD) Framework
Borrowing a leaf from the epistemological essence of the SARF, PARD considers power as a risk factor that can be amplified (intensified or attenuated) through a series of transformations among social actors involved in a risk domain. Just as how risk signals can be transformed through interaction with the socio-cognitive elements of social agents, risk discourses are transformed through interactions with the powers inherent in the social capacity and structures of risk actors. Amplification of risk signals occurs due to the cognitive filtration mechanisms, resulting in the escalation of certain aspects of risk messages and the dismissal of others (Kasperson et al., 2005; Renn, 1991). Similarly, risk discourses are amplified depending on the dimensions of power inherent within and among the actors involved in the amplification chain. Different actors (in)directly promote favorable discourses across the chain while indirectly suppressing contending discourses. The capacities of the powers behind the amplification ultimately define what the dominant risk discourse turns out to be. However, the contentions among these power players eventually produce primary and secondary social risk responses. Multiple iterations of the amplification-response cycle create some rippling effects within a society, which in turn, ultimately bring about unpredictable social impacts in the society.

The PARD framework (Figure 3.3) designed for this study is an adaptation of the PERC but in this case, the aspects of risk management (communication, expert assessment, and trust) in which power dynamics have been proven to manifest are the parameters for analyzing the initial amplification process. The motivation behind this adaptation is that since the objective here is to examine the role of power dynamics in how risk discourses are conceived and executed, the adaptation could be justifiably narrowed down to only the “power” variable of the PERC framework. In addition, since we know the aspects in which power dimensions are critical in risk debates (Adekola, 2017; Petts et al., 2001), our focus accordingly shifts into these aspects of risk management. Second, PERC was limited in its applications to the first stage of amplification and not to the response mechanism processes, this thesis intends to bridge this gap by unravelling the social consequences of power-induced amplification in the appropriate public discourse space i.e.,
social media. Finally, this study is not interested in working in the domain of public health or policy making. Rather, the goal is to evaluate how all social actors (decision & policy makers inclusive) construct disaster risk discourses.

*Figure 3.3 Power-Amplified Risk Discourse (PARD) framework*

The adaptation contains some minor modifications to the PERC variables; one, *expertise* is hereon conceived in terms of risk “assessment” i.e., capacity to understanding risk elements and communicate such to other actors. Two, *policy choice* has been replaced with “other secondary effects” to reflect the change in direction of social impacts being sought since this thesis looks beyond the policy effects of risk discourses to include all political, economic, social, technological, environmental, and legal (PESTEL) consequences of risk power amplification. However, the ontological connections between these labels remain the same. In keeping with the tradition of the PERC however, a few things remain constant. First, the adapted framework assumes that social risk amplification occurs through multiple channels, as different groups of stakeholders engage each other via multiple means e.g., social media, press release, websites, mainstream media, telephone hotlines, discussion panels, etc. In each of these communication channels, social actors establish their power differentials either deliberately or systemically in a manner that perpetuate
risk amplifications. Second, risk amplification is multidimensional i.e., it occurs through various aspects of risk management as well as on a personal or group level. For instance, individuals have social and professional affiliations, and the peculiarities of these affiliations ultimately shape their interpretations (transformation of risk signals). Renn (1991) gave the example of how editorial ethics in journalism serves as a key amplification factor by placing censorship on images, graphic details, selection of story to be told, message framing, etc. that are considered acceptable for publication. Such censorship naturally would enhance or suppress certain voices within the risk debate. This symbolizes the many dimensions in which risk amplification occurs, even before it become exposed to the large stakeholders. As it is obvious that power is a central variable of critical social research, the next section provides concrete measures (or dimensions) of power that would be employed in this study.

3.9 Operationalizing the Concept of Power
To start, it is practically impossible to offer an exhaustive list of the various dimensions in which power can be operationalized, due to its already explained polymorphic and transitory nature (Boonstra, 2016). However, with a focus on describing the subtleness of power relations in disaster risk management, this study shall employ Lukes’ (2005) proposes three-dimensional view of power, a perspective that identifies how exercising power can be tangible or indirect:

(a) decision-making power is exercised by those who prevail in decision-making situations, with tangible outcomes reflecting in the conformity of the behavioral response that ensues (Adekola, 2020).

(b) nondecision-making powers, –to decide is what is being decided (Lukes, 2005) –is a more basic form of power manifesting in the selection of the risk agenda that makes it to the decision-making table, or even in the risk debates. Such “agenda control” (p. 111) powers are less obvious, but they largely influence how the decision-making power is exercised, since issues that risk agenda setting is largely a reflection of what questions are asked or whose expertise is called upon (Adekola, 2020). This way, certain aspects of the debates are primarily amplified beyond others. Additionally, Lukes points out that nondecision-making is a means by which calls for change can be stifled even before being voiced.
ideological power has the capacity to shape public perception of risk, response behaviors and risk normalization through impressions inbound in a variety of socialization processes. For instance, some actors favorably use the control of media and control of information (e.g., what is disclosed or concealed) to legitimize their own views of risk. Such legitimized views of risk typically drive the dominant discourses.

Furthermore, power is also reflected in social relationships and the external variables regulating them. Boonstra (2016) explains that power can also manifest in how social structures and events constrain or enable human behaviors i.e., power does not just refer to direct relationships between two (groups of) people but also the indirect relations between individual actors and a host of other people which shape the conditions that allow two given people to interact (Elias, 2012). Similarly, Giddens (1979) put forward the idea of “agency and structure” to describe patterns of social dependency which characterize the social system’s structures and functions which in turn largely influence the social abilities of actors. Whereas people have agencies to act, such abilities are enabled or constrained by the social structures under which they operate. The uniqueness of the social structures and functions built thereof also shapes the interactions among stakeholders culminating in crystalized societal practices and the capabilities of individuals or groups to effect change as well. The implication of this for risk discourse is that the patterns of social relationships and structures could end up amplifying the views of certain privileged groups while stifling those of disadvantaged groups. Risk debates do not occur outside the evolving social realities of the past, present, and possible future changes –"exogenous environmental contingencies” (Clegg, 1989). If this is true, then one must consider power differentials existing in the larger environmental context in which risk debates occur and how they bear down on powers relations inherent in risk communication. Therefore, in constructing the power dimensions that would be useful for identifying and signposting the power differentials among stakeholders, Adekola (2020) typology of power dimensions (listed below) is applicable. An adapted version useful for this study, however, is provided in Table 3.2 below.

(a) Nondecision-making power,
(b) ideological power,
(c) agency and structure,
(d) tactics of domination and resistance, and
### Table 3.2 Dimensions of power in risk communication adapted from the literature

<table>
<thead>
<tr>
<th>Aspects of communication</th>
<th>Dimensions of power in risk communication</th>
<th>Manifestation mechanism</th>
<th>Typical questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication process</td>
<td>Nondecision making power</td>
<td>Control of agenda</td>
<td>Who decided (and what decisions on) what issues make it to the policy agenda</td>
</tr>
<tr>
<td>Ideological power</td>
<td>Media Discourse</td>
<td></td>
<td>How is risk communicated, interpreted (or not) and by whom, for whom and to whom?</td>
</tr>
<tr>
<td></td>
<td>• Interpretation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Framing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control of risk information</td>
<td></td>
<td>Where, when and how much is revealed or concealed?</td>
</tr>
<tr>
<td>Stakeholder relationships</td>
<td>Agency and structure</td>
<td>Social (professional) relationships</td>
<td>Who interacts with whom and how are views exchanged?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Societal (hierarchical) structures</td>
<td>How is expertise defined, develop, and trained?</td>
</tr>
<tr>
<td>Tactics of domination and resistance</td>
<td>Policies, regulations, penalties, open letters, strikes, boycotts, litigation.</td>
<td></td>
<td>Was the intended action realized or not?</td>
</tr>
</tbody>
</table>


### 3.10 Critical Realism of Disaster Risks

This section provides some philosophical grounding for the conceptual framework adapted for this study to show its significance and pertinence. Positivism and constructivism are two long-standing research philosophies that social scientists have frequently employed. The validity dispute between both schools of thought is well known in social science research, with each side staking claims of relevance and applicability. Gergen (2009) explained that social constructionism describes a process where the social realities of individuals are shaped, perceived, and interpreted through different worldviews. Therefore, the constructivist perspective holds the view that there is no
absolute reality but that which is socially constructed – two individuals living in one world will encounter different experiences. Scholars within this school of thought usually engage their topics of research through an interpretivist method of enquiry. An interpretivist epistemological approach rejects objectivity of knowledge and rather assumes that people and their social experiences are unique, and this should form the ground rules for understanding human and social phenomena (Alvesson and Sköldberg, 2017). On the other hand, positivism is of the belief that there exist incontrovertible realities about the world we live in. Methodologies in this paradigm employ quantitative approaches, which attempt to replicate how establishing universal laws control the natural world through a set of scientific rules of method (Barbour, 2014).

For all the disagreements between both paradigms, there is however a consensus about the provisional nature of known knowledge across different domains, hence, some researchers are of the opinion that both paradigms are not necessarily at constant disagreement. Thyer (2012) proposes that the “positivisms' contention that much of the world is an objective external reality needs not conflict with the position that much of the world of human beings is a social construction” (p. 118). Rosa (2003) also argues that human perception and cognition is limited and that we relate with real issues by a cognitive system of approximation, which by itself, is primarily deficient. Consequently, we are unable to have a perfect understanding of our physical world and any explanation of such realities we could attempt to muster would only be subjective and fluid, varying by individual, time, and space. Rosa thereby proposed the concept of “hierarchicalism,” which claims that while all types of knowledge are true to an extent, they all remain not infallible. Rosa posited that:

“Hierarchicalism comprises variations in the quality of knowledge claims along a continuum, ranging from those of considerable agreement to those of great disagreement. Knowledge claims, while always short of absolute truth, admit to degrees of approximation to what is true” (Rosa, 2003; 63).

Put more succinctly, some knowledge ranks higher than others on the scale of nearness to realism. Again, Rosa proposes a “realist ontology” which postulates that an object exists regardless of human perceptions or belief, and therefore opposes the idea of an entirely constructed reality. The
author argued that while you can’t manufacture something out of nothing, there must have been that reality from which our (approximating/incomplete) senses have subjectively abstracted from. Drawing from this justification, Rosa also argues that this case for ontological realism can also be applied to risk. This realization is captured in new epistemological approaches with ontological views expressed in terms such as “critical realism” (Maxwell, 2012):

"Critical realism combines ontology (the belief that there is a real world that exists independently of our beliefs and constructions) with a constructivist epistemology (the belief that our knowledge of this world is inevitably our own construction, created from a specific vantage point)". (p.180)

This hybrid approach seems to have created a compromise that expressly permits social scientists to incorporate a mixed method approach into their social inquiries. Critical realism aligns with the philosophical assumptions of SARF that while risks of natural disasters are real and formidable, our knowledge and perceptions of such risks are not independent of social realities (Pidgeon and Henwood, 2010). Therefore, SARF seems to fit well into the epistemology about this dual nature of risk.

One may be pressed to ask the question about what exactly is being amplified in the SARF model: the (real) risk or the constructed idea(s) of risk? On the surface, it appears that the interpretivist approach should ordinarily be sufficient to address this question since we are dealing with social perspectives of risk. However, it doesn’t appear so straightforward anymore when we consider the plurality of the perspectives that various actors of amplification would bring to the fore and in how scientific facts, perceptions, and risk experiences are constructed. In providing answers to the question above, I will contend that while ontologically speaking, risk is real and objective, our approach to investigating its amplification must be foregrounded in the understanding that risk perceptions are not absolute, and as much as its knowledge is being socially constructed, so also are the gaps between knowledge and reality. In this study, I have aligned with this dual nature of risks as both real and constructed in line with the assumptions of critical realism. The advantage of this paradigm is that it allows us to hold an [objective] risk to scrutiny from different shades of
social, cultural, ideological lights of subjective understanding. This is the philosophy I would be adopting in this research.

3.11 Summary and Conclusion
This chapter reviews the theoretical framework employed in this thesis –SARF. Profound discussions regarding the trend, utility and critiquing of the framework were also provided. Most importantly, this chapter dived into critical review of the framework to justify its appropriateness for use in this study. The review approached both ontological and epistemological contexts of disaster risks and the suitability of SARF to study them towards the aim of fulfilling the study objectives. This chapter sets the grounds for launching into the first study of the thesis that seeks to provide answers to the first and second research questions.
Chapter 4

Discourse, Power Dynamics, and Risk Amplification in Hurricane Risk

4.1 Introduction

This chapter presents the methods used in the first study of this thesis as well as the findings and discussions thereof. This study examines the duality of discourses as both tool and product of the power dynamics at play in disaster management within Canada. Specifically, the aims of this study are to i.) unravel the identities of the major actors in the disaster and emergency system as well as highlight the dimensions of the powers and influence they embody, and ii.) discuss how the power relations (i.e., dynamics) among these players precipitate the power amplifications that ultimately result into differential disaster risk outcomes as observed in contemporary times. Thus, the study essentially was designed to proffer solutions to the research objectives reflected in the first and second research questions:

*RQ 1: Who are the risk actors that significantly wield relevant dimensions of power in the Canadian disaster risk context?*

*RQ 2: How do the power differentials within the risk management system inform the social amplification of disaster risks?*

This study adopts a critical paradigm to the study of disaster risk discourses. The critical approach examines power imbalances and argues that power, inequality, and social change shape reality and negotiated truths (DeCarlo, 2018). It questions the prevailing assumptions and the taken-for-granted conventions thus pushing the researcher to acknowledge the role of power and social positions in the topic of inquiry. These are the central objectives of this study.

4.2 Research Design: Case Study

This study employs case study research methodology. Yin (1994) defines case study as a research strategy that can investigate a contemporary phenomenon within its “real life context” (where the investigator has little or no control) (p.13), especially when the boundaries between phenomenon and context are not clear. Case study’s applicability for capturing the variability of research contexts surrounding a complex social reality makes it useful for accomplishing research
objectives thereby providing insights into why processes lead to outcomes (Yin, 2009). Barbour (2014) equally pointed out that case study research permits a researcher to make “instructive comparisons” and is extremely effective in “enhancing the comparative and analytical potentials of research” (p. 8). Although it is predominantly associated with qualitative approaches, it can nevertheless also utilize a combination of the qualitative and the quantitative (Yin, 2009).

Yin (2009) suggests that case studies could be used in any exploratory, descriptive, or explanatory studies. While the exploratory case studies seek to identify a phenomenon and open issues for further inquiries, the descriptive category attempts to explain natural phenomena occurring in a research setting. On the other hand, the explanatory study connects the phenomenon occurring in a process with identifiable outcomes or effects. Explanatory cases are useful for deciding the causative relationships among variables and this can lead to developing a theory or testing an existing one (McDonough and McDonough, 2014). This study is a combination of the exploratory and explanatory research because the aim of this study is to not only highlight the numerous dimensions of the complex power dynamics among risk actors but also to develop a link between power dynamics and the outcomes of social risk amplifications.

4.3 Research Context: Embedded Single-Case Design
This study used the “Type 2” case study design (see Figure 4.1) i.e., an embedded-single case design proposed by Yin (2018). To make theoretical generalizations about the Canadian disaster risk discourse, the study observes a single case-study of hurricanes, albeit with multiple units of analysis (Yin, 2018) (for example actors, locations, expertise, sub-organizational units, history, social impacts, etc.). While the single case study design has limited generalizability, this however is not a direct concern in the present study because the aim is not representativeness; rather the focus is on the analytical generalizability of the study. Yin (2018) makes a distinction between statistical generalization and analytical generalization. Statistical generalization attempts to make generalizable assumptions about a whole population based on the inferences drawn from a sample. However, analytical generalization does not consider case(s) as sample of other (or all) related cases but an avenue to shed light (and possibly validate) theoretical principles. Therefore, the generalizations based on a single case study could be useful to “apply to a variety of situations,
well beyond ‘like cases’ represented by the original case” because the employed theoretical principles “will have formed the groundwork for your analytic generalization(s)” (Yin, 2018; 79). Thus, this study does not aim to find a representative case of all disasters, but to validate theory applicable to other disaster cases. Essentially, one case is enough to examine the theoretical principles that this inquiry sets out to achieve, i.e., social amplification of hurricane risk discourses. Also, the choice of single case study design is justifiable because it aligns with the conditional objectives that Yin (2009) specifies including a.) a critical test of existing theory (PARD Framework) and, b.) an extreme or unusual circumstance (hurricane risks).

Figure 4.1 Case study design typology.

NOTE: Adapted from Yin (2018). Reprinted with permission)

Canada practices a holistic (All-Hazard) emergency management framework which while recognizing the peculiarity of each hazard, still applies a consolidated playbook and strategy to dealing with all of them. The fact that these different risks0110 (e.g., flood, tornadoes, wildfire, landslides) share similar contexts justifies the use of a single case study method since similar
theoretical principles apply to them all. In accord with the arguments above, Murray et al. (2012) explained that case studies as a research strategy can sufficiently capture the complexities of disaster risks situations in Disaster Risk Management (DRM) and Disaster Risk Reduction (DRR) Studies. Case studies have been used in a wide variety of (inter)disciplinary domains including healthcare, social science, engineering, and education, etc. The procedural design for the case design is given below in Figure 4.2.

*Figure 4.2 Multiple Case Study Procedure*

![Diagram of Multiple Case Study Procedure](image)

Adapted from Yin (2018). Reprinted with pre-permission

In the next section, practical details will be discussed of the methodological choices made during the collection and analysis of the data used for this study. In between the description of these methodical steps, theoretical rationale that informs them would be concisely provided.

### 4.4 Methodology of Data Collection and Analysis

#### 4.4.1 Data Sources and Collection Methods

The study used multiple data sources on hurricanes and tropical storms including different types of physical and online, primary, secondary, current, and historical, journalistic, and peer-reviewed, personal, and official types of data (Table 4.1). These data were mostly collected and reproduced
through content and document collation. To obtain data that can proffer answers to the first and second research questions, the study primarily relied on electronic documentary evidence from provincial and federal governments, professional societies and business organizations, disaster risk experts, media, NGO/humanitarian organizations as well as other relevant public archives. Digital documents were used because they offer quick access to discourses unlike audiovisual media that involves longer analytical span. Documentary data sources enable the identification of key actors and features of event that unfolded within the debate, and they as well permit us to establish and test the validity of interpretations which is essential for drawing study conclusions (Briggs et al., 2012, quoted in Adekola, 2017). Database search between (April and May 2020) employed a dynamic combination of keywords such as hurricanes, Canada, emergency, risk, natural disasters, tropical storm, extratropical storm, CHC, framework, insurance, mitigation, response, preparedness, recovery, resilience, policy, database, guidelines, etc. Media records were obtained from the Nexus Uni\(^2\) repository through the university database. Nexus Uni (formerly known as LexisNexis) is a frequently updated archive of Canadian media publications.

<table>
<thead>
<tr>
<th>Source type</th>
<th>Number of documents</th>
<th>Date range</th>
<th>Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPT Source</td>
<td>16</td>
<td>2011 – 2020</td>
<td>Webpages, article, public documents, policy paper, reports, etc.</td>
</tr>
<tr>
<td>Risk Insurance Experts</td>
<td>7</td>
<td>2011 – 2020</td>
<td>Reports, magazine, brochure/manual, articles, etc.</td>
</tr>
<tr>
<td>Non-Government Orgs.</td>
<td>6</td>
<td>2010 – 2020</td>
<td>Web pages, blogs, independent publications</td>
</tr>
<tr>
<td>Media</td>
<td>25</td>
<td>2011 – 2019</td>
<td>News reports, articles, opinions, editorials, new stories, etc.</td>
</tr>
</tbody>
</table>

4.4.2 Classification of Data Sources and Selection Criteria
The entities that authored, published, or produced the data used for this case study have been classified into the following four group of major actors. This classification is a subjective grouping based on prior observation of literature.

\(^2\)https://www.lexisnexis.ca/en-ca/about-us/about-us.page
• Media (print, broadcast, and online)
• Government (federal, provincial & territorial)
• Risk Experts
• Non-Governmental Bodies (e.g., minority groups, NGOs, communities, non-profits, etc.)

The primary criterion was the authorship of the document by any of the social actors listed in the categories above. Other inclusion criteria are premised on the date of production (2010 – 2020) and contents’ specific focus on hurricanes or natural disasters in Canada. The publication date range was justified by the need to accommodate any evolution in risk principles occasioned by changes in the political administrations of the country. While the primary criterion produced massive quantities of document, introducing the other factors drastically reduced the quantity to a wieldy but still considerable size and this process produced the final set of documents that were used for the study. The list of analyzed documents is reproduced with some annotations in Appendix 1. These annotations reflect contexts such as the actors they were sourced from, date of production (or publication), location, scope, etc. Documents that fitted the above criteria were then analyzed for their contents.

4.4.3 Data Analysis
A summary of analysis is provided in Table 4.2 below. The study employed both document analysis and Critical Discourse Analysis (CDA) of publicly accessible disaster communication records and other historical publications from the highlighted players who have put forward different arguments in the risk debate. By juxtaposing these arguments and their potential interests with the identities of these actors, we can identify the different shades of power being amplified. These qualitative analyses employed MAXQDA®, a software commonly used for qualitative analysis in social science. After the documents were coded and memo-ed, the thematic patterns of individual and corporate identities and agencies of relevant actors in the Hurricane risk management discourse were drawn out. In the following sections, the analytical methods used to analyze the variety of data used in the first part of the inquiry is introduced.
Table 4.2 Analytical methods for answering research questions

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Data sources</th>
<th>Analytical method</th>
<th>Unit(s) of analysis</th>
<th>Conceptual focus of analysis (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To unmask the different dimensions of power wielded by different actors in the Canadian disaster management debate</td>
<td>RQ 1</td>
<td>Document analysis</td>
<td>Individuals</td>
<td>Identities</td>
</tr>
<tr>
<td>To understand how these power dynamics influence the social amplification of disaster risks.</td>
<td>RQ 2</td>
<td>Critical discourse analysis</td>
<td>News, Articles, Reports</td>
<td>Language, History, Relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Executive summaries, Memos, White papers, Bills &amp; Acts, Policy papers, etc.</td>
<td>Signs &amp; Symbols (historical &amp; present), Stigma, Ideologies</td>
</tr>
</tbody>
</table>
4.4.4 Document Analysis (DA): Analyzing documents, archival and historical data

Document analysis is a systematic procedure for evaluating both printed and electronic documents and it is particularly suited to qualitative case studies (Bowen, 2009). Document analysis permits an analyst to evaluate document data sources and make sense of their completeness, purpose (relevance), recency, significance, and determine their appropriateness for the study at hand. One major strength of document analysis is that it is useful for data triangulation (Yin, 1994); triangulation establishes credible documents that confirm across multiple sources the prevalence of observed themes (Bowen, 2009; 29). This is most useful for further consultation especially for mixed methods. Subsequently, selected documents (within the same actor groups) were organized according to context and content similarities. These associations sought to make logical connections among these documents by recognizing the common themes within their contents, authorship, audience, relevance, political and economic undertones, etc. This process permitted data triangulation for substantiating the documents that provided some readily observable patterns of discourses within the documents. Through this step, it was possible to identify important themes that would form the basis for further data interrogation in subsequent methods.

Bowen (2009) states that document analysis is typically an iterative process that involves some elements of content analysis and theme formulation. The content analysis aspect was useful in this case to identify powerful and important actors. Likewise, the elements of the theme formulation were responsible for revealing and evaluating the influential roles of the actors so identified above. While document analysis can be used as stand-alone methods in research, in this study it was used to foreground the ensuing Critical Discourse Analysis (CDA) used in answering the second research question. With this strategy, it was possible to iteratively and sufficiently analyze the patterns in which identified power amplification influence and dictate the direction and magnitude of the social discourses of disaster risks and the societal impacts. In the next subsection, a detailed introduction to the sometimes-divergent understanding of CDA is provided.

4.4.5 Critical Discourse Analysis, CDA

CDA is an interdisciplinary method of studying the discourse in (written or spoken) language. CDA considers language and discourse as essentially ideological and playing a subtle but key role in producing, reinforcing, and normalizing inequalities embedded in social practices (Lin, 2014).
CDA is therefore useful for scrutinizing all forms of social and linguistic practices whereby power relations promoting inequalities are established or sustained, for example, the power undercurrents in what may appear as routine conversations or texts (Fairclough, 2003). CDA considers discourses as “both socially constitutive and socially shaped” (Khosravinik, 2013) and this presents a unique socially oriented opportunity for critical inquiry to unbundle the power asymmetry represented in language and communication practices in a given social or professional context. One advantage of CDA over other linguistic methods (such as discourse and conversation analyses) is that it does not succumb to the traditional constraints of linguistic categories (Khosravinik, 2013). Rather, it focuses on how textual framing can be used to examine the social character of texts which have causal effects in ideologies, beliefs, and attitudes (Fairclough, 2003). As mentioned above, CDA is seldom used alone, but in the company of other analytical methods such as document analysis, content analysis, etc.

Several theoretical and methodological perspectives of CDA have been put forward by important scholars such as Teun van Dijk, Ruth Wodak, and Norman Fairclough. However, these perspectives expectedly answer to the disciplinary differences amongst these researchers (Baker, 2006). From a socio-cognitive theoretical perspective (that bridged cognitive, linguistic, and social theories), (van Dijk, 2009) came up with the Critical Discourse Studies (CDS) that explains the three-layer model of the relationship among discourse, cognition, and society. On the other hand, the Discourse-Historical CDA framework by Reisigl et al. (2009) involves using a collection of sizeable text samples (corpus) occurring in a specific field context to analyze the relationship between texts and the discourse found within the macrolevel of the field. Although largely drawn from linguistic theories, its focus on how texts and genres construct a set of ideologies (or discourses) gives insights into how discourses are reinforced or reproduced through popular discursive processes over time. Finally, Fairclough’s Dialectical-Relational approach (Table 4.3) integrates systemic functional linguistics theories of semiotics, practice theory, linguistics theory amongst others to develop methodological guidelines for analyzing discourses (Fairclough, 2013). This approach has at its core the concept of power and how it relates to (institutional and social) structures and events shaping the interaction of all actors. Unlike previous scholars, Fairclough’s framework provides the analyst with both linguistic and social theoretical instruments to identify transformations in discourses.
Despite the differing analytical approaches given to CDA, there is a common assumption (Lin, 2014) underlining these disparate approaches and these include:

1. CDA is a critical social research method: It is committed to contributing to the understanding and tackling of social problems, especially those that are caused or exacerbated by public discourse such as racism, sexism, classism, homophobia, etc. and their resulting social consequences.

2. CDA is consequently problem-oriented rather than theory or discipline-driven and emphasizes presenting its practical implications and applications in accessible language to the public or relevant parties while ensuring not to reinforce or introduce another (unintended) social power gap.

3. CDA is interdisciplinary and demands flexibility and diversity in its approaches to tackle complex issues.
4. CDA considers the interests, expertise, and resistance of those groups that are subjected to discursive injustice.

5. CDA stresses researcher’s own reflexivity – it is important to reflect on the analyst’s own privileges in relations to the topic under review and make such transparent while theoretically justifying why certain interpretations and readings of discursive events seem more valid than others.

Examples of the questions that CDA can answer are presented in the Box 4.1 below. Although, not intended to be totally assumed, these nevertheless, formed helpful guidelines for this study. In analyzing the data, special focus was given to the description and scope of published sources used whereas the evolving evidence were also presented in chronological order to reflect the incremental understanding according as to how the debates unfold.

*Box 4.1 Thematic Guidance for Data Analyses*

<table>
<thead>
<tr>
<th>Data Analysis themes (adapted from Adekola 2017*, Petts et al. 2001*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How did the risk debate emerge and evolve?* (# historical trends)</td>
</tr>
<tr>
<td>2. Who were the key stakeholders involved (elaborate on their nature, size, and resources)?*</td>
</tr>
<tr>
<td>3. Upon whom lies the burden of proof?*</td>
</tr>
<tr>
<td>4. Whose questions were asked in the policy inquiry relating to the risk?*</td>
</tr>
<tr>
<td>5. Whose expertise was called upon in the policy inquiry relating to the risk?*</td>
</tr>
<tr>
<td>6. How did the various stakeholders frame the risk?*</td>
</tr>
<tr>
<td>7. What was the nature of language used in risk communication?*</td>
</tr>
<tr>
<td>8. What were the nature, source and availability of information, evidence, knowledge?*</td>
</tr>
<tr>
<td>9. What risk perspective was legitimized, who made the decision and where did the power come from?*</td>
</tr>
<tr>
<td>10. What events occurred to enhance or curtail trust and credibility?*</td>
</tr>
<tr>
<td>11. which areas of risk are covered, and which are ignored in the media?*</td>
</tr>
<tr>
<td>12. who or what provides the peg for the story?*</td>
</tr>
<tr>
<td>13. who is quoted or interviewed?*</td>
</tr>
<tr>
<td>14. Is blame and responsibility assigned?*</td>
</tr>
<tr>
<td>15. What explanations are offered?*</td>
</tr>
<tr>
<td>16. what are exogenous factors forming the contexts around the debates</td>
</tr>
<tr>
<td>17. who stands to benefit/lose from the perpetuation of ideologies or the change to such?*</td>
</tr>
</tbody>
</table>
4.5 Analyzing Hurricane Discourse Using CDA

Having explained the underlining principles behind CDA approach to be used in this study, the next step is to adapt this model for the analyses as well as explain how this technique would be suited to answering the second research question (RQ2). This study employed Fairclough’s CDA approach which takes a critical look into the dialectical relationships between semiosis (including language) and other elements of social practices. The model considers semiosis as an irreducible part of material social processes. Fairclough’s approach was similarly adopted in the study of social media, and political discourses of council housing in the United Kingdom (Thomson, 2018). Accordingly, my adaptation of Fairclough’s model as used in this study is represented in Figure 4.3 Adapted CDA Framework based on Fairclough’s 3-Dimensional Framework. The idea is to examine the discourses underlining the social and discursive practices which in turn confer or sustain powers and privileges on specific actors.

Figure 4.3 Adapted CDA Framework based on Fairclough’s 3-Dimensional Framework
Similarly, these privileges are expected to perpetuate themselves by establishing more discourses. At other times, the power contention throws up new discourse that goes on to create new practices as well as a new set power brokers. Building on Richardson (2007) implementation of the dialectical-relational model, it is possible to use CDA to investigate the dialectic relationships among text, its production and consumption as well as wider society in which they all take place. Richardson explained that Fairclough’s view of CDA considers discourse as a circular (dialectical) process in which:

i. Social practices influence texts, via shaping of the context and mode in which they are produced, and

ii. Texts help influence society via shaping the viewpoints of those who read or otherwise consume them.

In this study, the CDA analysis followed a three-dimensional analysis pattern (Richardson, 2007) as explained in the three steps below.

- **Step 1: Textual Analysis**
  Textual Analysis examines how ideas (propositions) are structured, and how such propositions are combined and sequenced. Textual analysis is the initial part of doing CDA. It forms the basis for micro-examining discursive events at linguistic, semantic, writing system and the relational levels. Techniques for textual analysis (e.g., Content Analysis) are however too superficial to reveal the power asymmetry embedded in social discourses. Something more critical is needed in addition to that. This would lead to the analyst being able to ask the question “what is present and what could/should have been but not present”.

- **Step 2: Discursive Practice Analysis**
  At this stage, the discourses within the texts are analyzed. However, before we can understand the discourses, we need to have a good understanding of the different practices that are associated with the production and consumption of texts. Practice is the goal-oriented construction and reflection of social realities through actions that involve identity, ideology, belief, and power. The aim of discursive practice is to describe both the global context of action and the communicative resources that participants employ in local actions (Richardson, 2007). In different knowledge-producing
fields, there are distinct practices observed by the producers of the texts, aimed at fostering a desired consumption pattern among the end users i.e., the producer and the mode of production encode meaning into the text (choice of certain story to tell, words to use, etc.). There is a dialectical process at play here. The consumers of these texts also engage with the producers based on how they respond to text. In effect, both producers and the consumers dynamically engage, constrain, and respond to each other. Of course, there are also external factors that shape these encode-decode cycle, such as trust, assumed audience and their preferences, knowledge parity between both, etc. A CDA researcher must be able to identify and reveal the discursive practices at play in this exchange. This is where the analysis becomes discursive (rather than textual).

- **Step 3: Social Practice Analysis**  
The final step is to examine the wider context of the cultural or institutional practices that the discursive exchange is part of. The researcher begins by questioning the power assumptions within the social practice that the discourse emanates from or responds to. This is the point at which the analysis becomes critical. This dimension allows us to analyze how discourses are implicated in the (re)production of social, economic, or political hegemonies and inequalities. It employs the qualities of textual analysis and discourse analysis to unravel the social relations subsisting under a critical lens. Again, CDA assumes a two-way relationship among the parties involved in social context. Mutual engagements among parties involved in the debates result in shifting practices and acceptable norms from each other. While each party project their value judgements on defining what perhaps is a shifting expectation, other discourse participants would respond accordingly to accommodate the changing atmosphere while doing their best to preserve the advantageous practices. CDA thus recognizes the dynamism in power asymmetry and putting such into consideration is essential for conducting a sound analysis.

### 4.6 Limitations of the Research Method

Being a sole-authorship project, this study cannot be entirely free from the pitfalls of a single-coder bias and oversights. While an extensive amount of time and cognitive energy was invested in ensuring constant reflexivity, open-mindedness, and self-awareness during the analysis, the interpretation of the data might not be totally above the analyst’s social and political biases and preconceptions. The second major limitation of the research method revolves around data
collection. The onset of the Covid-19 pandemic shut down many private and public institutions where important documents could have been accessed. Thus, access to important and useful documents that could have been obtained in public and academic libraries, public archives, information centers, physical offices, etc. was foreclosed. Consequently, data were strictly sourced from online channels including government portals, websites, digital libraries, academic databases and repositories, and blogs. This approach has obvious shortcomings such as the limitations with searcher’s retrieval skills, lack of control over data availability, paywalled access to crucial documents, limited historical records, etc.

Findings and Discussions

4.7 Identities and Influential Roles of Powerful Actors in the Canadian Hurricane Emergency and Risk Discourse

This section presents an exposition on the identities of the major actors involved in the discursive management of hurricane emergency in Canada. Findings from the document analysis reveal that these are the actors that have made significant contributions to the risk discourse on hurricane management in the country. Insight into their identities and their influential roles in the system is necessary to sufficiently situate the reader’s understanding about the nature of the powers and influence that these actors exert in the hurricane management sector and the dynamics of these powers shall also be discussed in the sections that follow. Understanding the power dimensions that they wield is essential to answering the first research question:

RQ 1: Who are the risk actors that significantly wield relevant dimensions of power in the Canadian disaster risk context?

4.7.1 Federal and Provincial Discourse Actors
   a. Public Safety Canada

The PS Canada department is the main Emergency Management (EM) coordinating arm of the federal government. It is empowered by The EM Act as the overarching EM organ of the federal government. Since Oct. 26th, 2021, PS Canada has been split into two co-ministries: PS Canada and Emergency Preparedness Canada, each with overseeing cabinet ministers. https://pm.gc.ca/en/mandate-letters/2021/12/16/president-queens-privy-council-canada-and-minister-emergency
government of Canada with executive powers to mobilize, manage and coordinate personnel, material, funds, and other resources (Govt. Doc8). The department is also primarily responsible for developing and implementing emergency policies, plans and regulations for the GC but is equally involved in assisting other arms, tiers, and partners in developing and implementing their individual policies, plans and programs. Beyond being the heartbeat of multisectoral and multilevel EM governance in Canada, it also coordinates national efforts in establishing the four component areas of EM: mitigation, preparedness, response, and recovery. The Public Safety (PS Canada) Minister oversees the department’s activities in emergency coordination among Government of Canada (GC) institutions (Govt. Doc6). He has oversight over many EM agencies such as the Government Operations Centre (GOC) and the EM Regional Offices (RO) which interfaces with provincial EMOs and non-governmental organizations in the respective provinces. The PS Canada coordinates institutional knowledge retention and sharing among all GC arms and organs for the purpose of achieving continuous resiliency and disaster learning. For instance, the department maintains an AHRA risk register and database:

“A risk portfolio or profile can be created from the register, helping to compile common risks in order to assess interdependencies and to provide a relative order of risk events based on their ratings by groups. This register will be maintained by PS with data from each successive cycle of risk assessment. The register will permit easy access to the risk data for analysts and decision-makers.” [Govt Doc4, p. 59]

It is the duty of the PS Canada to determine the gravity of projected risks developed by various agencies and departments (Govt. Doc4):

“During the winter quarter, experts from federal institutions are convened to conduct Risk Analysis based on the risk event scenarios developed during the fall quarter. This activity is the main objective of risk scoring workshops, which will be planned by PS [Canada]. Initial results from the risk scoring workshops will support institutions in assessing their level of readiness against priority risks” [Govt Doc4, p7].

These central roles afford the department a significant opportunity to largely influence the allocation of resources and the scale of attention accorded the different types of both manmade
and naturally occurring emergencies. The influence of the PS Canada can extend to the provinces and territories through the Regional Offices which works as the operational link between provincial emergency operations and that of the federal GOC during emergencies, especially when federal assistance is required or invited.

b. Environment and Climate Change Canada, ECCC

Colloquially referred to as Environment Canada, ECCC is the GC department overseeing all weather and environmental agencies in Canada (Govt Doc4). It is responsible for enforcing environmental laws as well as communicating weather topics with the public and other stakeholders within and beyond the national border. ECCC also provides far reaching inputs into the development of environment and environmental policies and regulations. The areas of focus of the agencies under the ECCC include climate change, weather service, water, air & environmental quality, pollution control, etc. The department publishes consolidated reports from its various agencies to provide rich and connected insights into the environmental and meteorological state of things. ECCC’s weather functions carries enormous significance because many of its agencies and organs have no regional equivalents and as such, it serves a truly national role in informing and communicating both weather and environmental issues. The weather department primarily concerned with hurricane communication is the Meteorological Service of Canada (MSC) division. MSC’s Storm Prediction Centers (SPC) which are scattered across the Atlantic and six other provinces are the real operational organs of the division and the weather monitoring, evaluation, and communication bodies for the ECCC. Within the SPC, the Canadian Hurricane Centre (CHC) is the organ specifically responsible for hurricane services.

c. The Canadian Hurricane Centre, CHC

The Canadian Hurricane Centre, located in Dartmouth, Nova Scotia is an agency with specific focus on tropical & extratropical cyclones and other related marine weather issues. It provides timely hurricane warning, watches, predictions, and tracking. The CHC is officially responsible for designating a hurricane’s severity level in the Canadian zone of responsibility, ZR (bordering the US to the south and 200 nautical miles offshore in other directions). It is also primarily responsible for assessing the nature of danger that the storm poses to different regions in the
maritime and proximate regions (Govt. Dov9). Although, most of these functions are carried over from that of the United States’ National Hurricane Centre (NHC), the CHC is still responsible for officially making cyclone declarations as well as providing tailored weather statements for the Canadian public. A core function of the CHC is to develop and release statements on hurricane tracking as well as the impacts of such for communities in the path. The CHC provides summarized periodic updates (situation reports) about the status of a storm especially as it affects Canadians. They disseminate information in a variety of forms: forecasts, watches and warnings, general information about tropical cyclones and their threats), public awareness presentations, stakeholder training, and scientific papers and presentations. The CHC also keeps a database of historical accounts and description of all shades of storms that had impacted any territory within Canada. Once a hurricane completes a post-tropical transition, the CHC becomes primarily responsible for issuing weather statement since the NHC is specialized forecasting agency focusing on storms that are strictly tropical in nature.

d. The National Hurricane Centre, NHC

The NHC is located inside the Florida International University in Miami, United States of America. The NHC bears the sole authority to give emerging tropical storms or cyclones identification labels (name and/or number code) having been designated by the World Meteorological Organization (WMO) as the overseeing body for the Atlantic and Eastern Pacific regions (Govt Doc13). With such international obligation, the NHC thus has the sole power to designate a storm into a hurricane category, and it is such labeling that other weather organizations (including the CHC) work with. Similarly, it is the NHC that declares what/when extratropical transition (the transition) is, and not usually the CHC. The NHC is also the first agency to issue Warnings and Watches, tracking, and hydrological characteristics (e.g., rain volume and wind scale) for developing tropical storms. The watches/warnings collected from meteorological data by the NHC set the pace and largely influence the communication contents of other meteorological bodies including the CHC. This superimposition of function leads to Canadian emergency managers relying heavily on the American designation and description of storms to conduct disaster preparedness and response decisions, especially in the early (pre-transition) phase of the storm.
e. Regional Emergency Management Organizations (EMO)

Provinces and territories are individually responsible for overseeing emergency management in their respective zones (Govt. Doc6, Govt. Doc9). Each region maintains an emergency oversight body, typically referred to as the Emergency Management Organization (or in some cases, Emergency Measures Office), EMO. Regional EMOs occupy a strategic and central position in the scheme of EM things in Canada. The multilevel governance structure (Henstra, 2013) places enormous EM powers and responsibilities on these provincial emergency managers. EMO bears enormous responsibilities in the following areas:

i. Risk Assessment and Planning

Where resources and expertise exist, regional emergency authorities have the power to solely determine what risks face their population and the extent of their vulnerability. They also retain the propriety to exercise appropriate response, planning, and implementation they deem fit to meet the assessment outcomes. Regional administrations have the powers to design and implement programs and objects that are necessary to mitigate, prepare for and assist in responding to known and unknown risks in their zones. Since each region has peculiar or dominant environmental emergencies they deal with, the structure and function of planning in each region is largely unique and tailored, according to overarching EM laws in the jurisdiction. Emergency planning also reflects the EM principles adopted in the region as well as the political agenda of the administration in power at different points in time. The EM plans are often distilled into policy guides, regulations, programs, and regulations which may also be abstracted into municipal by-laws for local authorities.

ii. Developing and Communicating Situational Awareness

The function of gathering, analyzing and synthesizing risk information from various sources (including intelligence services) is one the regional managers are best suited for due to their median position between federal and local administrations. By having direct access to both federal and local emergency architectures as well as partnership with strategic non-governmental actors, regional managers governments are at a vantage position to develop a well-rounded situational awareness and communicating such to government department/agencies and the public (if/when appropriate). Similarly, the decision making on
what, how and by what protocols these risks are communicated solely rests with provincial authorities.

iii. Disaster Mobilization
Providing materials, transport, and personnel in the anticipation and actual responding to emergences rests largely with the regional emergency managers, especially when it comes to extreme weather events which typically overwhelm municipal and county authorities’ capacities (the first responders by law and practice). Regional EMOs are thus required to developed capacity for mobilizing resources on behalf of these local authorities. Before disasters strike, provincial managers do provide logistics for establishing relevant emergency response structures in areas proximate to known vulnerabilities. Alternatively, they partner with non-state actors to develop and maintain shelters for emergency eventualities. When emergencies eventually happen, provincial responders are better positioned to mobilize men, machinery, and resources to assess damage and respond as appropriate where/when needed. In some cases, planning might involve coordination with federal and fellow P/T agencies. Moreover, regions are actively involved in designing emergency policies and plans for local administrations, most usually due to the limited financial resources and expertise of the latter (Henstra, 2013).

While these areas show potential and ongoing collaborations with federal, regional, and municipal agencies, they equally reflect the independence and prerogative of the regions to shape EM strategies according to how they deem fit. EMOs, being the strategic bridge between federal and local disaster administrators carry enormous decision-making influences in determining who or what is included/excluded from the risk discourses in their respective zones. The term “partner” (as advocated in the EM Framework) is a broad and unspecified construct that can only be interpreted at the discretion of the regional authorities fitting with their agenda. Thus, EMOs are empowered to exercise discretionary responsibilities in the areas of emergency mobilization, setting risk and collaboration agenda, and public communication.
f. Senior Officials Responsible for Emergency Management, SOREM

The Federal/Provincial/Territorial (FPT) SOREMs occupy both strategic and operational roles in the scheme of things at both provincial and federal levels of EM. The body of SOREM is made up of representations from regional Emergency Management Organizations and Public Safety Canada (Govt. Doc 9). It provides an opportunity for federal and regional collaboration in achieving operational cooperation and uniformity in plans, programs, and activities. Strategically, this forum also meets to agree on policy recommendations that would be forwarded to the provisional committees of FPT Deputy Ministers and the Ministers Responsible for Emergency Management on how to enhance emergency cooperation.

4.7.2 Canadian Media

Although there are few truly national (tabloid and broadsheet) dailies in Canada in terms of circulation and readership (News Media Canada, 2021), the following top news media which have some considerable national coverages in the country were perused in the Nexis Uni® repository: National Post, CBC, Canadian Press, Global News, Toronto Star, and The Globe & Mail (PR Solutions, n.d.) were employed as media sources in this study. While there are numerous community newspapers in the maritime provinces, their localized coverage limits the strength of their reach as well as their usefulness for this study. The electronic media outfits operate on a national scale but only CBC and Global News do not operate a print service. The CBC is a radio/TV broadcasting crown corporation having been transformed into an autonomous entity from its public broadcaster predecessor, Canadian Radio Broadcasting Commission (CRBC). On the other hand, both the Toronto Star (colloquially known as The Star) and the Globe & Mail are privately held and controlled broadcast services. It appears that unlike the neighboring United States, there is no sharp ideological polarity among most Canadian media platforms. Still, one can read through the nuanced ideological differences between Global & Mail, National Posts ⁴ and The Toronto Star, the three news giants in Canada. Ideologically, while the National Post tends to lean mostly Right (Mastracci, 2019), the Globe & Mail has over the years been associated with

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⁴ Since the National Posts no longer distributed in the Canadian Maritimes since 2006, it was not considered for this study.
center-right editorial leanings (Winter, 2011). Historically, the Toronto Star on the other hand, has shown some left leanings, repeatedly endorsing liberal and progressive candidates:

“Historically, the Star’s political endorsements have generally leaned left, in keeping with the newspaper’s alignment with the Atkinson principles, a set of progressive values named for former legendary publisher Joseph E. Atkinson. In the previous 14 federal elections between 1968 and 2015, for example, the Star endorsed the Liberals 10 times, the NDP twice and the Progressive Conservatives twice”.
(Wallace, 2018)

Influential Roles of the Canadian Media

i. Discourse selection and framing
The Canadian media has the capacity to shape the understanding of the public about a topic, primarily through the agency to select news agenda and how to represent them i.e., media framing. Editorial choices on what events, news stories or reports to include in its reportage is a uniquely significant power that the media holds. By selecting events to report, interviewing, and quoting experts who interpret those events, and by assembling and distributing news services, news organizations create an important component of public discourse referred to as media discourse (Stallings, 1990). Media framing is a discursive strategy (Richardson, 2007) used by news organizations to shape debates on risks. Framing can be used to convey the important elements in a story, how and why an issue should be seen as a problem, how it should be handled, and who is responsible for it (Asplund et al., 2013). As an example, The Toronto Star, which was observed to extensively report on human and social costs to hurricane events, characteristically reported on the preparatory and anticipatory activities of at-risk people and communities before Hurricane Dorian’s landfall. By electing to focus on the non-technical concerns of the storm’s impact and framing the human \textit{cum} social costs as the real issues, the newspaper can call national attention to debates around intangible but important topics such as livelihoods, evacuations, social capital and community support, local experience, survival strategies and other associated issues that often fall into the cracks in institutional planning. However, in the aftermath of the storm, socioecological issues are often framed by the paper as pressing concerns rather than the infrastructural impacts of the storm only:
• Nova Scotia public schools close for a second day as Dorian cleanup continues (Sept. 9, 2019)
• Rare birds, including brown pelican, attract admirers in wake of hurricane Dorian (Sept. 20, 2019)
• How one Halifax community is pulling itself together after Dorian (Sept. 10, 2019)
• Halifax issues voluntary evacuation for high-risk areas as Hurricane Dorian approaches (Sept. 6, 2019)

In both phases, selective focus and framing is the two-pronged tool that was used to emphasize certain aspects of an event as social priorities in pre- and post-stages. On the other hand, The Globe & Mail, known more for pivoting towards fiscal conservatism, tends to select their news and opinions around debates risk ownership and responsibilities. They typically frame their arguments for more privatized responsibility in building resilient communities:

• [Disaster Costs]: Climate, flooding devastation: Why no national strategy? (April 11, 2016; B4)

• [Opinion] Ottawa, Irma, and the perils of government flood insurance (Sept. 9, 2017; B5)
• [Opinion] Insurance in the age of climate change (Jul 10, 2017; B4)
• [News Report] Canadian insurers brace for a wetter future (Sep 9, 2017; B5)

Habitually siding with the risk insurance industry, their debates are often framed to accentuate the rising costs of rebuilding homes and businesses destroyed in storms and why social welfare is a bad idea for supporting “building back” goals of resilience.

ii. The Media as tool for dominance, fear, and space for contest
While the media can act as institutionalized memory for the public, it is also a forum for different shades of the arguments to engage each over contentious issues. However, we know that access to the media is (in itself) a power resource (Herman and Chomsky, 1988; McGivern, 2016) among contending actors. A recurrent theme within the Canadian media space is the argument and counterargument over the roles of government in disaster relief funding and risk management generally. These debates featured prominently on both (both traditional and internet) news media.
As an example, a reporter’s subtle argument against the Disaster Financial Assistance Arrangements (DFAA):

“Ottawa [Government of Canada] is essentially underwriting a growing chunk of disaster risk... The idea is to find a better way... The objective is to create a regime that costs less, reduces moral hazard, and sends all the right signals to consumers, developers and regulators.” (Media doc3, B5)

In the above, The Globe & Mail’s Barrie McKenna presented a risk industry-friendly argument against DFAA and other government-assisted relief funds. Although this was just one of many arguments over the issue – a strong one it was – he wasn’t alone in the narrative. Many other reporters and columnists in the media space voiced similar sentiments. And because the media is a tool for dominance for those who have the resources, it can unwittingly become the public relations (PR) tools in the hands of the powerful to establish, control and perpetuate the dominant risk discourses (Herman and Chomsky, 1988) and spread predetermined perspectives of risks. For instance, in echoing the views of the risk insurance industry, the Globe & Mail’s Gloria Galloway’s (Media doc13) focused heavily on the rising costs of disaster coverage, occasioned by the worsening global climate. Persistent reporting and emphasis on such narratives can generate heightened awareness among consumers on the progressively mounting dangers of property ownership.

There is also a danger that the media becomes complicit in the suppression of alternative views of risk by unintentionally fringing out contending discourses through unreporting or underreporting. An example would suffice here: The Globe & Mail’s Jacqueline Nelson wrote a piece titled, “Canadian insurers brace for a wetter future” (Media doc7). The focus of this article (flood) reinforces the notion that water (and not the wind) is the primary concern of the hurricane’s impact. This reportage reemphasizes the argument that floods associated with excessive rainfall and surges that come with the storm fronts is the major issues with hurricane aftermats. However, the preoccupation with the flood problem is subtle reflection of the powerful access and hold that the risk insurance industry has on the media. While there are actors who are equally worried about the wind element (e.g., field farmers and fishermen at sea), their voices do not have equal
representation with the media, hence the wind debate is attenuated in favor of the flood problem debates.

**iii. The Media’s role as Broker and Intermediary of Knowledge**
The media plays the role of knowledge intermediary between the expert's and the public. Media reports can break down complex technical topics and deliver them to the public who are typically uninterested in technical details. Bulletins, situation statements, weather track and other press release from weather agencies (e.g., NHC, CHC) are largely written in technical manner that is somewhat incomprehensible to the lay public. It is the duty of the press to explain these terms and relate them to the public in simpler terms for them to understand and evaluate the potential dangers and the extent of their vulnerability. As an example, Anna Paperny’s report for *The Globe & Mail* (*Media doc12*) employed simple analogies to explain to their readers how hurricanes form and why the Canadian Maritime typically strip the tropical cyclones of their tropical characteristics (i.e., extratropical transition). This capacity empowers the media to shape risk narratives according to how they deem fit.

Although this practice has been largely challenged by social media’s decentralization of information brokerage (albeit with its own attendant pitfalls), the mainstream media remains the largest news source for the public, especially in periods of high uncertainty or novel crisis. Traditional media remain important spaces for engagement among all stakeholders, and as a source of information for online and social networks newsfeed (Stoddart et al., 2016). Thus, the media’s input into risk debates constitutes a major driver of public perception of risks and their place in it.

### 4.7.3 Risk Experts
Risk experts in the hurricane discourse was categorized along professional sectors into 3 classes listed below. However, this study focused attention only on the risk insurance experts who support and help shape discourses produced by the industry.

1. *Environmental experts*
2. *Academic experts*
3. *Risk Insurance experts*
Why The Risk Insurance Industry?
During the analysis, I decided to single out the insurance industry based on the following observations: first, the risk industry is a commercial and profit-driven one, whose motivation in sustaining certain discourses in the risk debate is very powerful. It thus tends to make ample contributions to risk debates with the goals of creating and sustaining favorable practices as well as suppressing contrary views. Indeed, highly pervasive is the arguments of, for and on behalf of the industry in different types of publications e.g., press, social media, blogs, etc. Second, the industry runs on the advice and recommendations from experts belonging to various professional bodies (including those in the environmental, academic, and technological fields). Ultimately, the insurance industry employs expertise from these other fields to formulate and enhance the quality of their narratives. As an illustration, to determine a profitable risk billing system for different consumer profiles, risk insurers would typically match the (academic experts’) hypotheses on what climate change implies (for the severity and frequency of natural hazards) with theories on the increasing dangers of urbanization (proposed by environmental experts). Among the strategically important insurance actors in the hurricane-related disaster insurance in Canada, the trio of Insurance bureau of Canada (IBC-BAC), The Institute for Catastrophic Loss Reduction (ICLR), and the Canadian Council of Insurance Regulators (CCIR) seems to be the most significant, going by their prominence and quantity of contribution to the debate.

IBC-BAC
The IBC describes itself as the "national industry association representing Canada’s private home, auto and business insurers" (Insurance Bureau of Canada, n.d.). It has a mandate to advocate (read lobby) property and casualty insurance to government, regulators, and consumers on behalf of its members spread across Canada. It works through various channels to create awareness and increase insurance culture among Canadians as well as campaign for profitable business environment for its insurer members.

ICLR
The ICLR is multidisciplinary disaster research center located within the Western University London, ON. It is described as "world-class center for multi-disciplinary disaster prevention research and communication" (ICLR, n.d.) and was established by the Property and Casualty
(P&C) insurance industry as an independent, not-for-profit research institute. It draws experts from wind and seismic engineering, atmospheric science, risk perception, hydrology, economics, geography, health sciences, and public policy domains. The ICLR has established four research priorities: reducing wind and earthquake damage to housing and infrastructure; understanding disaster risk management and prevention, enhancing government science related to natural disasters, and; improving community actions for disaster mitigation.

**CCIR**
The Canadian Council of Insurance Regulators (CCIR) is an association of insurance regulators that advocates for an effective insurance regulatory system in Canada. The CCIR represents regulators from the Canadian federal government, as well as each province and territory. The CCIR operates a number of committees and initiatives. These include the electronic commerce committee, the property insurance working group, the travel insurance working group, and the Insurance Core Principles Implementation Committee. The body works to promote processes that would strengthen regulatory services, consumer protection laws and to promote harmonization of regulations across various jurisdictions within Canada. The Insurance Core Principles (ICP) Implementation Committee is concerned with protecting insurance customers and transparency within the industry. Within the EM and risk administration in Canada, the insurance industry plays a significant part through the following roles:

**Influential Roles of Risk Experts**

1. *Discretionary power to include/exclude consumers in risk protection and consequences*
The insurance companies have the discretion to decide who qualifies for risk protection, how they’re billed or what profile a consumer fits into. The processes involved in these considerations are typically opaque and unverifiable. Regulations do little to help in this regard: insurance regulatory oversight in Canada is shared among federal and governments of the ten provinces and three territories (OSFI, 2021). The federal oversight is largely limited to regulations concerned with the financial soundness of the industry (solvency). The provinces on the other hand (through their Superintendents of Insurance), cover issues of market conducts of insurers in their respective zones including claims, premium ratings, and underwriting decisions (IBC-BAC, n.d.). Although largely independent of each other, the different provincial regulations have somewhat similar
goals. While many provinces regulate the billing rates on P&C premiums, the factors that inform how individuals and businesses are profiled are largely left to the industry to determine. The cliché is that:

“[i]nsurers take many factors into consideration when determining the likelihood that you may have a loss. A common misconception is that a policyholder who has never made a claim should pay less, or very little for insurance. While it is true that your claims history is important, generally the location [amongst other factors] of the risk is also very important” (IBC-BAC, n.d.).

To further complicate this phenomenon, insurers are increasingly using algorithms (known as Insurance Artificial Intelligence, InsurTech) to make decisions about their clients and the services they deserve (Wilhem, 2021). AI is also being used for consumer risk profiling, automated intervention, fraud detection and prediction, etc. (Burgos et al., 2022). It is reasonable to expect that presumptions and bias of the experts behind the design and development of InsurTech could be easily reproduced in these machine-driven decisions. Therefore, just like those accruable to human agency (or even less discretional), the gravity of the machine-learned predictions and/or decisions made by these algorithms have far reaching effects …who would be underwritten or not, what pricing would fit a certain risk profile, what risks are covered, what claims are entertained or disputed, etc.

ii. Important player in achieving and shaping resilience meaning
Although, there is no sharp convergence on the definition of disaster resilience (Parker, 2019), there is a general understanding that resilience demonstrates an individual or community’s ability to adapt, recover and better reposition for disasters without compromising long-term prospects for development (Combaz, 2014; DFID, 2011; Grünewald and Warner, 2012). This study posits that resilience is about capacities to resist, overcome and adapt to disasters and to reduce vulnerabilities to hazard risks. Insurance coverage is one of those capacities that enables an individual or community to rebound from disasters. Having risk coverage against hydrometeorological hazards is a strategic capacity for those living in the Maritimes and who are being repeatedly exposed to increasing bouts of tropical and extratropical cyclones. Repeated exposures to hurricanes or any other significant environmental fury precipitates economic and financial stress on impacted
populations. Risk transfer is one important tool for creating resilience against what is certainly a recurrent event (IBC-BAC, n.d.). The profit-centered decisions about who or what will be insured against what and to what extent of liability goes a long way in creating and reproducing socioeconomic stratifications among and within communities. Insurance companies in neoliberal economies (such as Canada where publicly funded relief is being scaled back) hold this ace without much challenge. It is hard to conceive of a community or an individual living in hurricane prone areas to achieve long term resilience without insurance coverage. Related to the argument made in the preceding section, the insurance companies opaquely and automatedly create liability profiles for risk clients and these profiles determine who (and by how much they) are insurable. In this regard thus, resilience is significantly shaped by the decisions and whims of the insurance industry.

iii. Create discourses around known and unknown risks

Environmental risks do not just exist in material sense only, but they are also discursively manufactured (Krahmann, 2008). Spurred on by the contemporary neoliberal arguments in favor of privatizing and personalizing risks responsibilities, as well as the convenient fitting of the (politically correct concept of) resilience into the neoliberal framework (Joseph, 2013), the insurance industry often weaves discourses of risk continuity and *unknownness* to entrench their place of importance into environmental risk management. The industry promotes the narrative that risk is an unending threat to personal and social safety, from which there is no respite but only growing exposure i.e., rationalizing the logic of permanent precautionary action.

“Certainly, as the world’s population grows and we accumulate more wealth, it’s not surprising that disasters are becoming more expensive...Grappling with the threat of future natural disasters is an important exercise for all countries...Coping with natural disasters is one of the greatest challenges Canadians will face in the future, particularly in light of growing evidence that extreme events may occur more frequently as Earth’s climate warms.” {RiskExp Doc2; 2 & 3}

“Prairie droughts are only one of many significant consequences of climate change that Canada will likely face. As the Earth warms, high latitude countries like Canada are expected to experience the strongest impacts, including an increase in the frequency and intensity of extreme weather events. This means that Canadians can
expect to be confronted more often with natural hazards, such as storms, forest fires, heat waves, floods and droughts that will test their resilience and challenge their ability to adapt to the new climatic conditions.” {RiskExp Doc2; 17}

The first narrative is that, while there is certainly no escaping from the risks, there is a logic in taking personal responsibility for self-protection and assurance against known and unknown threats. Second, the concept of unknown and emergent risks, however, is centered around shifting interpretation and imagination of risks. Beck et al. (1992) explained that continuous market demands can be created by varying the definition and perception of risks and vulnerabilities. In agreement, Krahmann (2008) points out that the selective generation of fear is an underlying strategy that drives the market for risk coverage. By offering to contain the unknown risks, the risk practitioners create a market in which they simultaneously set the risk perceptions as well as their liability under it. More discussions on this in coming sections.

iv. Setting the pace and direction for urbanization and development
Through risk profiling, insurance companies have the capacity to designate an area as posing high or low environmental risk to human occupation.

Further, it is expected that areas that were once immune to storm-surge impacts will be affected by storm surge in the future, and low lying areas will be affected by storm surge more frequently. {RiskExp Doc.6; 8}

“By 2050, hot summer days in excess of 30°C are projected to occur on average about once every two days in southern Ontario and once every four in Calgary. This frequency is more than four times current rates...A sea level rise of up to 95 centimetres is expected in some coastal areas.” (RiskExp Doc 2; 20)

Since land appropriation is largely shaped by perceived risk status of an area, risk designation typically informs the pace and direction of physical development of a place as high-risk areas suffer unfavorable reputation and valuation. This ultimately produces stigmatization and asset devaluation for landowners or existing residents.

Moreover, the industry has cultivated the practice of rewarding risk mitigation and avoidance measures and this practice has translated into several consequences for physical development. For
instance, policyholders are often rewarded with discounted premiums for using flood proof building materials, elevated driveways, windproof structural designs, etc. Similarly, by overbilling or withholding coverage from policyholders whose properties are perceived not to be (say) fitting for a particular location, the industry indirectly determines what is built there as developers would typically consider their eligibility for risk coverage as an integral part of their investment decisions.

“For example, the installation of sewer backup mitigation measures can affect payout caps (the amount that an insurer will pay to a homeowner in the event of a sewer backup claim) and, in some circumstances, the availability of this type of coverage.” {RiskExp Doc. 6; 13}

4.7.4 Non-Governmental Bodies
Under this generic grouping, I have classified all non-governmental actors involved in EM, whether they make partnership into the working groups or not. Notable examples in this grouping include private organizations, Canadian aboriginal groups (such as Assembly of First Nations Congress of Aboriginal Peoples (CAP), Inuit Tapiriit Kanatami (ITK), Métis National Council (MNC), and Native Women’s Association of Canada (NWAC)), disaster relief groups, trade unions and peer groups, racialized and minority communities and associations, etc. Most of the actors under this grouping operate largely at the provincial level, cooperating strategically with provincial and territorial EMOs while delivering direct operational goods to municipal or local emergency responders. In this study, non-state stakeholders involved in emergency management (particularly for hurricane events) were classified along their operational or strategic functions. The intention is to highlight the identities of these actors based on the nature of their activities. These activities could involve being operationally active in providing tangible services (e.g., relief) to at-risk communities or using intangible inputs (e.g., advocacy and development) to strategically shape emergency principles that (in)directly shape better emergency outcomes. Both relief and development activities are related, but different forms of aid, with each having both humanitarian and development components (Humanitarian Coalition, 2021).
1. **Humanitarian & Relief Agencies [NGOs]**

The prominent humanitarian and relief NGOs in the Canadian hurricane emergency space include the Canadian Red Cross, St. John Ambulance, The Salvation Army, Médecins Sans Frontières (MSF), Humanity First Canada, Disaster Aid Canada, etc. Relief NGOs play critical roles in the during and aftermath stages of a disaster. The primary objective of humanitarian actors is to save lives, alleviate social impacts, and maintain human dignity in the face of devastating events. Relief agencies typically maintain disaster-ready funds sourced from donors but can also embark on emergency fundraising efforts if extreme events overwhelm their capital and resource capacities. These funds are used to provide shelter, clean water, sanitation services, protection services, health care, and livelihood support.

2. **Cultural and Advocacy Groups**

Many Indigenous groups are prominently active in activities such as developmental aid, legislative lobbying, policy advisory and development as well as aboriginal rights campaigns. In environmental context, these groups among other things, work to raise disaster risk awareness and provide survival skills training among communities and vulnerable populations (minority groups, children, immigrants, pregnant women & nursing mothers, physical and mentally challenged, etc.). For example, some Indigenous nations advocacy groups are undertaking enlightenment campaigns in hard-to-reach areas to educative communities on disaster evacuation procedures. Also, the Canadian Red Cross through its Centre for Disaster Management Excellence teaches volunteers the crucial skills they need to manage all types of disaster response. Beyond advocacy, these groups are also well accustomed to local traditions and cultures of the grassroots, hence they hold some significant leverage as center point actors that can bridge communities and institutional actors e.g., government or corporations. The advocacy, relief and intermediary functional roles are often exercised on local and international stages, depending on the capacity and reach of the agency. Typically, NGOs position themselves as non-discriminatory, non-partisan nor ideological, thus further cementing their acceptability as neutral arbiters in the socioecological and disaster risk causes.

**Influential Roles of Non-Governmental Bodies.**

These activities and roles of these groups have conferred on them qualities that make them indispensable in the EM and risk administration space as outlined below:
i. Development Aid as Soft Power

However, these bodies are largely in advisory roles and do not wield much legislative, executive or economic power to effect changes in the emergency principle and operations in any jurisdiction within Canada. In their functional capacities, non-state members of these bodies rely largely on the invitation and instruction of state actors in their discharge of duties. EM partners do not have the powers to conduct emergency intervention (response and recovery) outside the direction of EM strategies of the authorities they are partnering with. Similarly, their programs in the pre-emergency phase (mitigation and preparedness) must largely align with the principles of their state partners. Much of the power of these stakeholders lie in the public advocacy and policy development inputs. Nonetheless, this group exercises some soft power that is largely focused on development aid for vulnerable communities. Development aid is geared towards addressing the underlying socioeconomic issues that precipitate or worsen risk or disaster vulnerabilities which may have led to an emergency (Humanitarian Coalition, 2021). Whereas humanitarian aid is designed to save lives and alleviate suffering during and in the immediate aftermath of emergencies, development aid responds to legal, socioeconomic, political, and systemic stratifications that hinder disaster resilience and sustainable livelihoods and works towards removing them.

ii. Speaking Up for the Oppressed and Marginalized

Minority groups (such as Assembly of First Nations, Coastal Zone Canada Association, etc.) are also involved in building sustainable communities through close relationship and self-help partnership with vulnerable populations. This affords them the opportunity and assumed responsibility to speak on behalf of these communities. They therefore position themselves as the agent championing the cause of the less powerful who can use their significant resources to bring to spotlight the plight of the marginalized. For instance, in September 2016 the PAHO/WHO, in partnership with the Pacific NorthWest Border Health Alliance Indigenous Peoples Workgroup organized a Vancouver, British Columbia summit of delegates from Indigenous communities from 10 different nations in the Americas. The primary aim of the gathering was to form a unified front that would advocate for “full participation of Indigenous Peoples” in disaster reduction initiatives, a cause the organizers claimed is necessary for an “effective” DRR. In the resulting press release,
PAHO/WHO framed itself as the rallying point of the desires of the Indigenous Peoples in the Americas to be heard, recognized, and included in disaster reduction measures that concerns them:

“Building on a growing recognition that mainstream methods of disaster preparedness and mitigation have left Indigenous Peoples and their deep knowledge on the sidelines, PAHO/WHO is calling for new disaster risk reduction models based on close collaboration with the communities often most affected by catastrophes, both natural and man-made” {ORS Doc 1}

4.8 Dimensions of Social Power in Canadian Hurricane Risk Management

In the preceding section, the identities, and influential roles of the major actors in the hurricane EM system in Canada at both the federal and provincial/territorial levels were discussed to answer the first research question (RQ1: Who are the risk actors that significantly wield relevant dimensions of power in the Canadian disaster risk context?). It demonstrated the nature of powers that these EM actors exert in the hurricane management space, either by virtue of their roles and responsibilities, the product, and services they offer, or the activities they engage in. These insights are important in giving context to the discussions that follows in the succeeding sections. The discussions that follow shall be delineated along the classification of individual actors as given in the previous sections. As a note of reminder, the dimensions of power considered in this study include the following:

- a. nondecision-making power,
- b. ideological power,
- c. power of agency and structure, and
- d. tactics of domination and resistance.

Power is encoded in privileges that status, authority, and position bring. Such privilege could be acquired through advantageous access to social resources such as wealth, knowledge, education, or pedigree (Thomson, 2018), hence the power in such privilege confers the capacity to influence, dominate, control, or coerce the less privileged others. The internalization of such privileges even among the dominated groups creates a hegemony of sorts.
4.8.1 Nondecision-making Power
Through critical discourse analysis, the following actors were found to significantly wield some significant non-decisional power in the management of tropical cyclone in Canada.

1. State Actors.
The nondecision-making powers on hurricane management is largely domiciled with the federal, provincial, and territorial (FPT) governments in Canada. These powers are functionally exercised through their various arms, organs, and agencies. The structure of these roles informed by these powers are typically derived from legislated and/or executive provisions. These powers are almost equally shared among these two tiers of government. However, it is evident that provincial actors play more significant roles in shaping the conduct and context of EM in Canada. While the federal government occupy mostly strategic decision-making roles, the provincial level authorities dominantly exercise both strategic and operational powers. As provided for in the Emergency Management Act, federal responsibilities are largely limited to providing leadership on developing EM principles, policies, and guidelines. Occasionally, however, when operational response is demanded of the central emergency responders, they exercise their influences through disaster declarations, executive powers to mobilize funds and resources as well as liaise with foreign governments for managing common cross-border threats (Govt. Doc9). In these instances, the PS Canada department exercises most of these functions on behalf of the Government of Canada (GC). Thus, the Public Safety Canada sets the pace for defining what national risk priorities are.

Another avenue for the federal government to exercise her powers is through the CHC’s sole responsibility to make hurricane declarations especially when the tropical storms enter Canada’s ZR. Disaster declaration serves as the official acknowledgement of evolving emergency in any parts of the nation. Declaration sets into motion commensurate machineries of the state to prepare and respond to an imminent or unfolding crisis. Moreover, the CHC is deeply involved in setting the hurricane risk agenda for the nation. It identifies and recommends topical issues worthy of meteorological research on hurricanes and tropical storms to the MSC. By occupying a central role in communicating hurricane risks, CHC’s actions consequently carry enormous implications for activities required by federal, provincial, and municipal authorities to prepare for, respond to and recover from a hurricane event. Decisions to be made regarding these activities are heavily influenced by outcomes of the assessment and evaluation conducted by the CHC and similar
weather warning bodies. The CHC thus occupies an essential spot in the network of actors involved in hurricane management. Discussing CHC’s roles in shaping hurricane narratives cannot be complete without mentioning the precursory influence of the National Hurricane Centre (NHC). CHC’s assessment of tropical storms is usually preceded and influenced by that of the NHC. Although not a parastatal of the government (of Canada), its evaluation and communication of hurricane issues are significantly influential in informing the CHC’s own position as well as informing the Canadian public partly because of the considerably higher capacity and investment in storm prediction and tracking of its parent body i.e., the National Oceanic and Atmospheric Administration (NOAA). The international obligation of the NHC affords it the responsibility to communicate with cross border audiences. Similarly, its importance stems from the fact that tropical cyclones reach the United States’ Zone of Response before (if) they reach Canada’s ZR.

On the other hand, the regional emergency organizations are empowered to provide both strategic and operational emergency leadership in their jurisdictions. Curiously, while the local and municipal governments are the designated primary responders to emergencies under the EM Act, they however, are easily overwhelmed by hurricane landfalls and are the least prepared to respond to natural disasters that often transcend municipal boundaries both fiscally and geographically (Henstra, 2013). It is usually the regional managers that have the wherewithal to respond to hurricane landfalls. As noted earlier, provincial governments do exercise their executive emergency powers in the areas of defining provincial risk agenda, risk assessment (determining nature and extent of risks), planning and executing appropriate mitigation and preparedness strategies, providing logistics for disaster response activities, etc. Similarly, provincial authorities are heavily involved in the designing of municipal emergency management regulations. Moreover, the responsibility for making disaster declarations anywhere in the country lies primarily with the provincial governments and it is the duty of the P&T managers to declare the disaster response level for an incoming hurricane, as well as the appropriate mechanism to set in motion. During Hurricane Dorian (Govt Doc8), the Emergency Operation Centre (EOC) of Prince Edward Island’s EMO was responsible for determining the response designation (e.g., Level 1 == Enhanced Monitoring).
By being able to prescribe the status of a disaster response (via labels such as this), provincial governments can decide the pace of attention, response and resources dedicated to an event. Various provincial EM Acts invest in provincial Public Safety Ministers (or their Territorial equivalents) the powers and responsibilities to declare and administer states of emergency as appropriate for each extreme event in parts or entirety of their regional jurisdictions. The responsibility for carrying out the dictates of such declaration is specified in each regional EM Acts. While the CHC can make hurricane declarations, the provincial governments are the ones empowered to transform such declarations into operational crises through their own disaster declarations.

Regardless of the operational dominance by the provinces, the decision-making powers exercised by various organs and entities of the federal government have subtle multiplier effects that also reflect on operational scales. For instance, the focus of many provincial and industrial stakeholders in terms of the general emergency management practices is influenced by the principles and policies collaboratively designed amongst all FPTs governments but championed by the federal actors. For example, the Sendai Framework that has widely informed the societal resilience approach of many provincial and territorial managers was subscribed to on behalf of the nation by the federal government (Govt. Doc9). Additionally, the primal role occupied by the PS Canada could also reflect operationally at the provincial and territorial level through the active roles being played by the Regional Offices. In active emergencies, these regional offices provide essential support and collaboration between provincial EMOs, their EM partners and with federal emergency response machinery, especially the GOC.

Across both federal and regional boundaries, the body of SOREMIs appears to occupy a significantly sensitive decision-making role in the EM chain of command. Their influence spans a wide range of issues, including determining inclusion of EM partners into working groups, determining what issues make national risk priorities, executing policy provisions at operational levels, etc. During the AHRA cycle, SOREM makes the important decision of what risk scenarios make the final entry into the planning and priority setting exercises for the next AHRA and Emergency Management Planning cycles (Public Safety Canada, 2011). Essentially, the SOREM
determines what the ultimate national priority risks are in each AHRA cycle. The SOREMs also provide leadership and direction for the all-important and strategic working groups and non-governmental organizations who are dealing with crisis of national security consequences. They significantly contribute to the composition of the partnering working groups which are essential aspects of achieving a WoS EM practice as well as societal resilience. Therefore, who or what constitutes the working groups is largely determined by the SOREMs. There is no overemphasizing the fact that a partnership based WoS approach is an important step highlighted in the 2019 FPT EM Strategy for achieving the ultimate EM goal i.e., societal resilience. What this means is that the SOREM has some very sensitive responsibilities in the implementation of the EM principles and strategies at the federal and provincial tiers.

Within both federal and provincial emergency management arms and organs are found technical experts who assist the government in designing, developing, and reviewing laws, policies and programs that are aimed enhancing all the four components of the EM strategy (Prevention and Mitigation, Preparedness, Response, and Recovery). Risk experts involved in EM in Canada cut across various domains of knowledge: law, environment, technology, social & economic science, insurance, engineering, etc. Decision makers in government extensively rely on the input of scientific experts and this is evidenced by the premium placed on technical opinions in designing emergency policies and in the various stages of policy implementation. For instance, DPD experts are responsible for conducting the often strategic and complex risk identification and analysis stages of the AHRA cycle. In the risk evaluation stage, whereby risk assessments are collated to formulate a comprehensive, whole of government AHRA, the use likelihood-consequence model is a hallmark of technical risk definition. Therefore, the systemic imprint of technical experts in various actions and activities of the government demonstrates the predetermined dominant view of mainstream science and/or that of privileged experts in shaping underlining emergency principles for the nation or a region.

2. Non-State Actors.
The media is always instrumental in putting topics on the front burner of public debates. The media has the capacity to select topics and thus set them as agenda for public debates by ensuring that it
continues to make headlines. Similarly, it can entertain opinions from different sections of society (including the experts, lay public or the government) and thereby give varying prominence and/or legitimacy to discourses from different actors. When the mainstream media gives prominence to a topic, it quickly transforms into a subject of social debate while those issues which are sidestepped are easily relegated from public consciousness. This gatekeeping role essentially makes them a significant contributor to issues that become the input for policy agenda.

Similarly, the framing of the topic significantly influences the direction of the public debate. Since the media is crucial broker and intermediary of risk communication (between technical experts and the lay public), how they frame salient messages of risk assessments goes long a way in either amplifying or attenuating the risk perception among different stakeholders. If the issue is framed as being of present concern (amplification), it tends to generate immediate and intense public debate (especially, when backed by expert opinions or symbolic importance). Conversely, when the media downplays the significance of the issue (attenuation), it may not attract an equally intense debates as the former. When debates generate enough public attention, they can easily transform into the subject of political debates and policy issues within the political class. We have seen the instance of how facial masking and vaccination (ordinarily a public health issue) curiously became a faultline between ideological opposites across the globe during the Covid-19 pandemic. As stated earlier in this work, these capacities to shape the public understanding of risk topics are quite unique to media actors.

The risk insurance industry also contributes significantly to shaping and controlling the agenda of hurricane risks. Given the many sympathetic voices among newspaper columnists (*Media Docs* 7, 13 & 18), the media is a vital partner for purposing their risk arguments that favors the industry. The industry has formed a strong bond with media actors to put forward contending narratives that would expectedly contribute to (if not drive) the direction of hurricane-related emergency policies. By making evident the need to be resilient against unknown and emergent hurricane risks, it is expected that policy makers and the public will shift attention and resources to design resilience-adequate policies and investments into those risks. Similarly, the contribution of other risk stakeholder such as Indigenous communities, racialized groups, relief agencies, religious communities, etc.) to controlling the risk agenda was observed to be relatively nonsignificant when
compared to other risk parties. While these non-state actors (especially humanitarian organizations) are deeply invested in policy advocacy, the leverage they possess to ensure that submitted policy briefs translate into actual policies and legislations is weak. The process is typically slow, long, arduous and relies heavily on favorable political happenstances.

4.8.2 Ideological Power
Within the state actors, the PS Canada, CHC as well as the regional EMOs are the active arms of the government that mostly wield ideological influence in the hurricane risk discourse. These organs of government have a uniquely immense leverage to wield ideological powers in using risk discourse to shape risk perceptions among all stakeholders. First, FPT agencies have legitimacy of being and authority of action to legislate and design its risk policies. Combining both administrative and extensive technical capabilities, they can identify, assess, and communicate risks classes and implement emergency measures as well. Moreover, the government agencies have extensive communication reach, probably more than any other actor in the risk discourse. Thus, they possess some profound capacity to communicate (and thus shape) risk arguments to other actors and the general public in very effective and influential ways. Additionally, these agencies of government have the capacity to employ technical and subject experts who conduct simulations, studies, risk assessment and evaluation of evolving risks. These institutions therefore produce enormous risk frameworks (in form of legislations, policies, bylaws, guidelines, and other publications) that becomes the reference for all other parties in the risk debate (e.g., Govt. Docs 10-16). This power presupposes the importance of the state's risk narratives above all others. These communicative actions are followed up with resources mobilization and other socioeconomic implementations that leaves no one in doubt of the risk narratives being pushed by the government within the general discourse. Again, being able to surmount the high financial and technical barrier to assessing and evaluating hurricane risks places the government at a unique position to by and large inform risk perceptions among the public and set the pace for other actors. Similarly, the role and responsibility for designing and implementing emergency policies, plans and programs afford them the power to shape communication and assessment aspects of EM as it deems fit.
As suggested in earlier sections, the strategic position of the media as an agent of knowledge translator also confers on it an important capacity to frame and shape ideologies. For example, the editorial choices on who, what, and when to quote plays into this agenda perfectly as the common stories being told in the mainstream media tend to become the golden understanding of risk issues among the larger section of the public (Horsley, 2016; Richardson, 2007). Perhaps this understanding among discourse actors accounts for their struggle to define and shape risk perceptions using different channels of mass communication. For instance, messages that align with risk individualization appear mostly on right-wing media (Media Docs. 11 & 16). On the other hand, the insurance industry also wields its ideological powers mainly through the construction of emergent and unknown risks as well as their inscrutable definition of risk consumer profiles (Krahmann, 2008). The definition of what risk profile and billing that each consumer receives from the industry has a multiplier effect within the society. Its unique ability to dictate the pace for understanding socioeconomic consequences for known, unknown, and emergent risks as well as setting terms for individual’s risk exposure under these conditions confers on it some wide-reaching and strategic advantage to shape risk ideologies. It is therefore reasonable to conclude that the public understanding of risks and people’s exposure to them are partially but strongly premised on the risk ideologies constructed by the industry. Similarly, the industry can shape public understanding about risk by employing the media as a tool to routinely push ideological narratives that suit the above highlighted practices. The fact that the media keeps giving prominence to “experts” or drawing credibility using symbolic values adds some legitimacy to risk narratives of the industry (e.g., Media Docs. 15 & 16). This is in addition to the ample literature that it produces on its own both in print and digitally.

Finally, judging by their fewer contribution to risk discourse, to a relatively lower degree, non-governmental organizations also make ideological representations to decision makers, media, and the public on various environmental issues that affect them locally. However, because the resources available to these groups are limited, their control of the risk narratives and the prominence of such is drowned out among the cacophony of more powerful voices from the government and the risk industry. While there have been instances in which developmental groups were able to ensure a change in narratives, such changes are usually drawn out, expensive and slow. In places where these advocacy groups work among local communities to create awareness,
the results are usually localized and fragmented. At best, such advocacy works must be in line with the overarching EM principles of the administrative authorities where such communities are located. These systemic hindrances suppress any ideological power that these set of actors might want to wield within a risk discourse.

4.8.3 Power of Agency and Structure
Earlier in this work, it was highlighted that power is not only embodied in human actors but also in the structures and functions of social relationships among actors interacting in a domain. What people can do with the influences of their socioeconomic status is equally moderated by their position among (and relationship with) other actors. In this instance, the government of Canada and their provincial counterparts occupy the most strategic influential agencies. First, FPT governments are empowered by various legislative and executive frameworks to decide the direction of risk policy implementation and enforcement. These twin factors of implementation and enforcement trounce all other forms of power and influence within the risk debate. Government at different tiers can dictate to all other actors the pace and direction of risk and emergency management within their respective zones of jurisdiction. What the government evaluates to be the risk priority issues of a community or region significantly becomes the prominent subject of risk debate since all other actors are naturally expected to abide by government’s rules which ostensibly have been made in the people’s interests and consent by proxy. Although we have seen instances in which alternative subjects become integral to the risk discourse, such cases are exception to the rule.

Second, by being able to mobilize resources (personnel, funds, and machinery) towards the cause of stated risk objectives, other issues that do not make these priorities are zoned into exclusion from not only public attention but also economic importance. Given that Canada observes a holistic EM approach, the exclusivity rule that applies to one risk issue also applies to many others, thus giving little room for contrasting narratives to fester. Thirdly, the WoS approach of EM requires all other stakeholders to patriotically key in into the government’s plans policies and programs in the spirit of good citizenship and corporate responsibility. Thus, on occasions where a stakeholder might have a differing risk orientation or assessment, the government’s approach is to be primarily
considered as the standard before the accommodation of any other approach. However, this agency to exercise influence varies within the different tiers of the government. Whereas provincial and territorial governments enjoy significant autonomy from the federal government, municipal or regional municipal administrations, however, do not have EM or risk administration measures that are significantly independent of that of their provincial plans. This imbalance is not only a matter of legislative structure but also that of resource capacity to act. In this regard, structure of EM and risk administration in Canada permits more agencies as we progress up the chain of command.

On the other hand, the strategic role occupied by the media as the central hub among these risk discourse parties affords it the ability to communicate risk debates to all, facilitate an exchange of views thereby, and provide syntheses of new risk discourse. However, both the consumption and production of media contents provide feedback loops that ultimately shapen and influence one another. In other words, news makes the people and people also make the news. This dialectic relationship between news makers and consumers is a unique characteristic of the agency and structure of the media. In no other structure does a dialectic agency shape the influence of actors in a discourse this much. Although there is a growing level of distrust for the mainstream media (a symptom of the post truth era), the prevailing free society that Canada is still preserves some level of reliance on the public media for information. This precipitates a structure that places the media at the center of information gatekeeping for the larger of the public, a phenomenon that makes their agency to report and frame news, give prominence to narratives, and interpret technicality a very essential delicate, and contentious role. By all standards, Canada is a free speech country where the freedom of the press to report and write stories are largely unhindered. Therefore, the agency of the media to write on environmental issues is not stifled by political interference but only limited by its geographical coverage, capacity, professional ethics, and editorial agenda. In the absence of stifling state control, the media usually becomes a ground for voicing the cacophony of perspectives.

On its part, the Canadian risk insurance industry operates in a free market economy, a reflection of the larger neoliberal economic system the country observes in nearly all domains. Although there are regulatory oversights at both federal and provincial levels, these oversights are mostly
concerned with the viability and conduct of the industry rather than the business models. Consequently, insurers have enormous agency to play profit-driven roles in entrenching resilience and risk management mechanisms across the nation. Although there are publicly funded disaster support programs (e.g., DFAA), the insurance industry still carries the single largest responsibility for providing recovery funding for individuals and business owners. Anyway, insurance coverage is noted as a precondition to enjoy the DFAA benefit. The above listed reasons leave a property owner little choice than to seek the refuge of insurance coverage given the increasing severity and frequency of natural hazards. Similarly, insurers make little effort at transparency regarding their customer profiling and risk billing processes, hence they wield an important power in shaping the gaps between the insured, underinsured and the insured-nots.

Another demonstration of the neoliberal economic model is the opportunity for private enterprises to conduct self-serving technical assessment of risks towards the purpose of defining elements emergence and future of risks. Like the industry’s practice in other countries of the world, the Canadian risk insurers can create discourses around the future of risks and then develop economic models according to their own rationalization of such assessments. For illustration, an insurer may judge from some opaque data crunching that a coastal town would experience major degradation in few years to come, and consequently fix rates that would permit a projected profitable coverage of customers living in that community.

4.8.4 Tactics of Domination & resistance

i. Domination.
Players in the risk discourse demonstrate their dominion over one another through both subtle and not-so subtle means. Domination in this regard summarizes actions and processes through which one actor exercises supremacy, control, or influence over others. It appears that the most prominent tactics of control in the Canadian risk discourse is through legislation and other executive-backed regulations (e.g., EM Act 2007, Ontario’s EMCP Act 1990, etc.). Governments at different tiers have all developed legislated laws and bylaws that set the framework for emergency management and risk administration as well as public conduct in emergencies. Roles, responsibilities, and protocols have equally been designated among various actors according to various legislations and policies. This way, the instrument of control has been abstracted from the legitimacy of governance
in the eyes of the public whereas punitive consequences (e.g., jailtime, fines, blacklisting) exist for non-adherence to such protocols. Similarly, co-opting non-state actors into EM activities as partners while asking them to operate strictly on the terms of their respective governments is another notable tool of domination in Canada.

Second, the use of institutionalized practices to control and moderate risk perception and public conduct is rife in the Canadian risk management space. Such practices play on the stereotypical recognition of some players as having legitimacy or clout to act in certain capacities even if such actions are not backed by any known laws nor serving altruistic motives. For instance, when extreme events (such as hurricanes) occur, there is a media frenzy to air the opinions of subject experts from different fields (e.g., Media Doc. 4). Technical expertise is thus framed as having competence to explain the happenings of the event and as such the public has come to subconsciously accept their reliance on the media as the mediator of knowledge between their lay understanding of associated issues and the “objective” and superior opinions of experts. Similarly, the media practice of giving expert’s perspectives more prominence and legitimacy indirectly suppresses alternative perspectives from those (for example) with local historical knowledge.

There is also the institutionalized practice that is built on the tripartite cooperation of government, science and media which sustains a hegemony through knowledge production and consumption. Discourse coordination amongst these three powerful actors produces reinforced risk narratives that give little or no room for resisting alternatives. I choose to site an instance of the concept of resilience (Govt. Doc9), which appears to be the latest buzzword in environmental and socioecological circles. Although the concept of resilience probably points to different implications for each of these parties, there is however a concordance that resilience is an integral aspect of disaster mitigation and recovery which has become even more important due to the consequences of global warning. This shred of consensus is nonetheless enough to motivate a united front from these actors on the resilience message even if they have divergent understanding on how to implement its measures and at what cost. Similarly, the three actors in their unique ways continuously push the legitimacy of risk experts to define what the real risk issues are. By laying strong emphasis on the narratives set by technical experts and not on the socioeconomic and
ecological issues important to common actors, the dominance of risk debates according to technical expertise is sustained.

Third, the P&C insurance industry’s practice of customer’s classification into risk profiles has been proven to be a time-tested method of convincing (least the consumers themselves) that insurance coverage (and its premiums) is largely a product of their personal qualities and choices (Risk Exp. Doc6). Shifting the focus away from the hazards to the personal liabilities of individuals and businesses complicates the scrutinization of risk protection policies. Since no alternative billing models are entertained by the regulators, customers are bound to the dictates of the insurers. In similar terms, with fear of disaster uncertainties as a potent tool, the industry exploits the fear of missing out to perpetuate consumer choices in risk coverage. The tactic of rationalizing disaster persistence as well as that of continuous need for protection ensures continuity and legitimacy of business for the insurers.

ii. Resistance.
Although domination tactics are usually considered as normal and thus taken for granted, in many cases however, they are resisted by those being dominated. As mentioned earlier, resistance is by itself a significant form of power as it forces domineering actors to recalibrate their strategies in the least. The level of resistance, however, varies depending on the capability of the resistor to challenge dominant discourses with alternatives or by simply crafting their own counter-dominant tactics. Resistance strategies could take different forms including litigations, petitions, protests, blockades & standoffs, occupations, civil disobedience, awareness & advocacy, electoral patronage, boycotts & divestments, etc.
Table 4.4: Dimensions of Power in the Canadian Hurricane Emergency

<table>
<thead>
<tr>
<th>Nature of Power</th>
<th>Actors significantly wielding such powers</th>
<th>Power exemplified in… (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nondecision</td>
<td>PS Canada</td>
<td>• Defining and coordinating emergency risk priorities for FPTs on mitigation, preparedness, response, and recovery.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mobilizing funds, personnel, and resources</td>
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<td></td>
<td></td>
<td>• Developing national policy and programs</td>
</tr>
<tr>
<td>Provincial EMO</td>
<td></td>
<td>• Designing emergency mitigation, planning and response protocols.</td>
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<tr>
<td></td>
<td></td>
<td>• Strategic and operational emergency leadership.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drawing peculiar environmental risk agenda and regulations for provincial &amp; municipal jurisdictions.</td>
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<tr>
<td></td>
<td></td>
<td>• Jurisdictional emergency declarations.</td>
</tr>
<tr>
<td>SOREM</td>
<td></td>
<td>• Oversight of working groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dictating who/what makes an EM partner</td>
</tr>
<tr>
<td>Technical experts</td>
<td></td>
<td>• Disaster risk identification, assessment, evaluation, and advisory to FPTs &amp; Industry</td>
</tr>
<tr>
<td>Risk Insurance Industry</td>
<td></td>
<td>• Developing EM laws and regulations across FPTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Risk perspectives in industry &amp; professional literature, contracts, or regulations.</td>
</tr>
</tbody>
</table>
| Media | • Selective prominence given to risk actors/arguments.  
|       | • Intermediary of knowledge between highly technical issues and common understanding of risk issues. |
| CHC, NHC | • Hurricane declaration  
|       | • Severity level designation and forecasting determines scale of attention given to storm.  
|       | • Setting hurricane risk agenda |
| NGOs | • Advocacy and policy brief development  
|       | • Awareness and social campaigns |

| Ideological | Media | • Risk discourse selection & framing  
|       | • Space for dominance of discourse  
|       | • Significant contribution to public debates.  
|       | • Platform for fear and risk perception cultivation.  
|       | • Framing EM duties as patriotic acts |
| Risk insurance industry | • Inherent stigmatization of people/places  
|       | • Fear of the unknown as tool of risk perception control and business continuity.  
<p>|       | • Significant control of media resources to shape risk debates |
| PS Canada, CHC | • Reinforced risk communications through long-term knowledge production |
| Provincial EMO | • Reach and scale of communicative channels |</p>
<table>
<thead>
<tr>
<th>Agency &amp; Structure</th>
<th>FPT Governments</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>• Reinforced risk communications through long-term knowledge production</td>
</tr>
<tr>
<td></td>
<td>• Legislations, executive orders, decrees</td>
</tr>
<tr>
<td></td>
<td>• Control of massive state resources</td>
</tr>
<tr>
<td></td>
<td>• Implementation of the Whole-of-Society principle</td>
</tr>
<tr>
<td></td>
<td>• International obligation to observe agreements, pacts, etc.</td>
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<tr>
<td>Media</td>
<td>• Role of press as watchdog and gatekeepers</td>
</tr>
<tr>
<td></td>
<td>• Center point of knowledge exchange among all parties</td>
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<tr>
<td>Risk insurance industry</td>
<td>• Primary source of risk information for all</td>
</tr>
<tr>
<td></td>
<td>• Inclusion/exclusion privileges over risk clients</td>
</tr>
<tr>
<td></td>
<td>• Capitalist and profit-oriented justifications</td>
</tr>
<tr>
<td>Tactics of Domination &amp; Resistance</td>
<td>Domination Risk insurance industry</td>
</tr>
<tr>
<td></td>
<td>• Free market and neoliberal arguments</td>
</tr>
<tr>
<td></td>
<td>• Risk responsibilization measures</td>
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<td></td>
<td>• Risk individualization business models</td>
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<td></td>
<td>• Risk client profiling</td>
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<tr>
<td></td>
<td>• Inscrutable and self-serving risk rationalizations</td>
</tr>
<tr>
<td></td>
<td>• Significant control of media resources</td>
</tr>
<tr>
<td></td>
<td>• Standardization &amp; control, regulations, and enforcement.</td>
</tr>
<tr>
<td>FPT Governments</td>
<td>• Punitive measures (sanctions, arrest, fines) for violations.</td>
</tr>
<tr>
<td></td>
<td>• Institutionalized practices</td>
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<tr>
<td>Resistance</td>
<td>Non-Governmental Bodies</td>
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<tr>
<td></td>
<td>• Petitions</td>
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<td></td>
<td>• protests, blockades &amp; standoffs</td>
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<td></td>
<td>• occupations and civil disobedience</td>
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<tr>
<td></td>
<td>• awareness &amp; advocacy</td>
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</table>
While there are (often subtle) resistance among the powerful actors in the Canadian risk management space (i.e., FPT governments, media, and risk insurers), resistance from non-state and minorities groups (as in many parts of the world) is however more pronounced. In these instances, resistance is more social and political than economic or financial. Put more broadly, minority groups and NGOs have been known to achieve more results by engaging political and legislative agenda as a means of controlling other variables (e.g., decolonization, wealth redistribution, hazardous project siting, coastal reclamation, etc.) rather than physically confronting private corporations or observing economic boycotts. The National Inuit Strategy on Research (NISR) from the aboriginal group, the Inuit Tapiriit Kanatami is a typical example here. On the other hand, improving socioeconomic chances of marginalized groups is considered a long-term (albeit painstaking) strategy at creating seats for such communities at the decision-making tables. Arguably, the biggest form of resistance is exemplified in the continual (re)negotiation of the Indian Act (originally of 1876) owing to the increasingly strong and ongoing contentions driven primarily by various Indigenous groups in Canada (Indigenous Foundation UBC, 2009).

4.9 Power Amplification in the Hurricane Risk Discourses
In the preceding sections, I gave an insight into the identities of major actors that exert significant influence in the hurricane risk management in Canada and discussed the dimensions of the social powers that they hold as well (Table 4.4). In this section, the aim would be to meet the goal of the second research objective by providing an answer to the second research question:

*RQ 2: How do the power differentials within the risk management space inform social amplification of disaster risk?*

In this venture, my focus would be on discussing the discursive and social practices that create, sustain, or resist these powers and influence (identified in RQ1) and how the contentions among them create the power differentials that results into social amplification of hurricane risks. Hence, I will be examining the patterns of power dynamics that characterize the social amplification embedded in the contention of various discourses around the risk. Since discourse is an instrument (and as we have seen as well, a product) of power, what we are looking for in the risk amplification by each social actor behind the discourses are essentially the power amplifications embedded in such discourse contentions. Therefore, this study takes the route of answering the above research
question through examining the power amplifications implicit in the discursive and social practices of each class of notable participants in the hurricane risk debates as highlighted in the preceding chapter. As stated earlier, these practices are what create, sustain, or embellish the powers and influences of the highlighted actors. Similarly, these practices can suppress the alternative arguments (i.e., resistance) from marginalized or otherized groups. This section is divided into two parts; the first part (section 4.9.1) highlights brief overview of the various discursive and social practices within each class of social actors while the second part, (section 4.9.2) provides deeper and insightful discussions into how these contending practices negotiate each other to dictate a largely fluid power dynamics as well as the implications of these for social realities of hurricane risk management.

4.9.1 Discursive and Social Practices

4.9.1.1 Discursive & Social Practices among Non-Governmental Bodies.

Below are some of the discursive and social practices evident in the hurricane risk discourse among non-state actors. The list is by no means exhaustive, but it reflects some of the significant practices discernable from both historical, social, and discursive practices.

• Grassroots Credibility.

Calls for deeper involvement of the Indigenous (non-mainstream) expertise in the disaster assessment, preparedness, and mitigation processes has become a central practices of modern humanitarian ethos. NGOs typically work with communities and thus have come to appreciate the significance of local and cultural knowledge and its importance for disaster preparedness. For example, PAHO/WHO and other humanitarian organizations present themselves as having immense connection to the local population and its culture. They therefore like to flaunt this credibility with wordings that reflect their appreciation and closeness to grassroot knowledge. Consider PAHO/WHO representation of the indigenous knowledge:

“disaster preparedness and mitigation have left Indigenous Peoples and their deep knowledge on the sidelines...” {ORS Doc 1}
By using the phrase “deep knowledge”, the PAHO positions upfront their acknowledgement of the rich cultural experience that the Indigenous Peoples possess about managing natural disasters. There is however a tendency for grassroot developmental organizations to develop paternalistic dispositions. The discourse of paternalism is rife among humanitarian, and relief NGOs. The often reflect the tendency of community-assisting agencies to speak on behalf of the people being affected, thus leading to the passivation (van Leeuwen, 2008) of the voice and agency of the people being spoken for.

- **Rectifying Ecological Injustices through Calls for Diversity and Inclusion.**
  There is a growing trend of positioning modern environmental solutions as an avenue to amend historical disaster inequalities faced by minority and racialized communities. Humanitarian and grassroot organizations are beginning to call for disaster interventions to Indigenous communities on their own (latter’s) terms. Underlying this turn in critical reflexivity is the widespread adoption of the “diversity and inclusion” mantra. For instance, it is known that many Indigenous Nations are already feeling the worst of the global warming impacts (United Nations, n.d.). Therefore, there has been growing call for using Indigenous technology (which has endured over time) to solve local problems. Arguments reflecting this practice are often supported by rhetoric of ongoing discrimination and the historical socioeconomic injustices meted out to them by colonial settlers.

  “Often impoverished, isolated, and discriminated against, they [Indigenous Peoples] frequently lack access to health care, transportation, safe drinking water and adequate sanitation, making them particularly vulnerable when disaster strikes… Climate change further exacerbates the difficulties faced by vulnerable Indigenous communities. Deforestation and forest fragmentation in the Amazon, melting ice in the Arctic, rising sea levels and ocean acidification all put Indigenous groups in danger when extreme weather strikes” {ORS Doc 1}.

Advocating for the inclusion of Indigenous disaster views is an extension of the larger call for critical reflections on the age-long marginalization and demonization of the Indigenous beliefs by westernized society and mainstream media.
•  **Inherent Recognition of Technical Knowledge Supremacy.**  
As much as humanitarian organizations advocate for the recognition and inclusion of Indigenous environmental knowledge in the designs of policies and programs for the different aspects of disaster management, nonetheless scientific assessment is still tacitly or unconsciously framed as the primary drivers of social information about disasters. For instance, The Canadian Red Cross (CRC) wrote that the:

> “Hurricane season is in full swing in the Atlantic Ocean. Earlier this year, meteorologists predicted it would be one of the busiest seasons in recent years…”  
> {ORS Doc 2}

In this example, “meteorologists predicted…” infers that the technical experts are still the authorities that must be listened to. Moreover, nowhere within the same document was any alternative perspectives on the impending hazard presented or mentioned. Such self-contradiction demonstrates the continuation of the entrenched legitimacy of scientific opinions.

•  **“Responsibilization” of Disaster Preparedness.**  
Neoliberal disaster practice dictates that preparedness is an individual responsibility in which individuals and communities must take the lead role (Joseph, 2013; Tierney, 2015). Therefore, any failure to act and the injury resulting thereof are consequences of the dereliction of responsibility on the part of the victims. This kind of narrative is what is being demonstrated in the hurricane disaster preparation advisory from the CRC that:

> “Preparing for hurricanes is much like preparing for any other emergency or natural disaster. Once you know the risks, you should have a plan for your family and an emergency preparedness kit” {ORC Doc 3}.

The CRC is assuming that it is the duty of the individuals to know the risks and what to do to keep safe from the harm the risks might bring. This notion of individual responsibility is reflected in phrases such as “…you should…”. Although, humanitarian agencies work closely with the people at the grassroots, and they readily flaunt their deep understanding of conditions at these levels, however, the complexities of social and economic factors that precipitate opportunities and hindrances to preparedness could also be lost on the NGOs as well. Similarly, the opinion that
“preparing for hurricanes is much like preparing for any other emergency or natural disaster” not only ignores the complicated realities of disaster preparedness but also the uniqueness of the situation that individuals and businesses face when preparing for an impending storm.

- **Pluralized Perspectives on Weather Interpretation.**
  There is a social practice among Indigenous Nations whereby each community have their own set of beliefs and rules that guide the assessment, predictions, interpretation, and communication of weather patterns. Within these nations, weather and environmental knowledge were historically passed on by word of mouth. This may account for the varieties of historical accounts that shape local knowledge.

  “All cultures have developed methods of translating weather. Locally, the First Nations people have passed down this information through oral history. ... Saskatchewan has five different First Nations who each have a different perspective on the topic of weather”. {ORS Doc 4: pg. 5,12}

4.9.1.2 Discursive and Social Practices in The Media.

The following practices were observed to be relevant to the hurricane and the larger disaster discourse within the Canadian media space. The news media (press and digital) occupy a central role in the media space, thus in this study I would be interchanging both terms especially in contexts where both seem to have the same functional usage.

- **Entrenching the Supremacy of Technical/Scientific Knowledge.**
  The media is complicit in creating and perpetuating a discursive atmosphere in which scientific and technical views are legitimized as the ultimate. Media practitioners posit scientific perspectives as the yardsticks against which all other opinions are to be confirmed. While there is diversity of knowledge perspectives, that of western science is seen as the mainstream. Take for instance:
“Scientists have called it a once-in-a-50-year storm and the most “damaging storm in modern history of Halifax,” with approximately 100-million trees being uprooted, broken or tossed around” {Media Doc1}.

In the above excerpt, the message framing presupposes that scientific opinion is ultimate in evaluating the physical impact of the hurricane through the following inherent strategies. The statement was framed in a way to problematize the comparison of hurricane impacts across history and then a scientific opinion was presented as the (most) qualified and legitimate solution to unravelling that problem. Likewise, giving coverage to social concerns but giving authority to scientific and technical opinions is a common discourse that informs journalistic practices in disaster coverage. Media may give attention to the stories and opinions of the people but they place ultimate legitimacy on the opinions of the experts. When disasters occur, the opinions and accounts of survivors, victims, and non-experts are framed as "witness voices", largely serving the purpose of giving context and sharing observations or experiences, whereas the final and authoritative say (to give an acceptable explanation for the events) is given to the experts by the media. For example, while carrying the story about the sinking communities that coincidentally connect the provinces of Nova Scotia and New Brunswick, the CBC unwittingly gave a stark contrast between its representation of lay and expert opinions on such eventuality. In the story (Media Doc5), it wrote:

"John Atkinson stands atop an aging dyke, ... imagining the storm that could turn Nova Scotia into a virtual island. 'If there were to be one perfect storm ... it would be very bad'"

Although, the report acknowledges the long-standing connection of the resident to the environment, it nonetheless represented the opinion of the community resident as only an environmental concern (or fears), and which should stay that way because it arose from an inadequate understanding of the timeline and geomorphologic processes of environmental degradations. Consequently, an ostensibly superior "expert opinion" had to be brought in to give the reader a technical explanation on how, if, and when the fears of the resident would unfold:

"The risks isn't decades away ... 'The fact is that the right storm occurring at any spring tide at any time of the year would be sufficient to put water over our dikes', 
explains Jeff Ollerhead, who teaches coastal geography at Mount Allison University..."

In this case therefore, the resident's quotes were framed as a witness to the unfolding degradation but the honor of explaining the cause and prospects of the events was given to the university professor.

- **Predicational Strategy and Metonymized Representation of Entities**
  Predicational strategy (Ruth Wodak, 2001) describes how a discourse producer employs predicational qualities to represent positive self-image and/or construct the negative other (Muwafiq et al., 2017). Predicational strategy creates cognitive effects by instigating mental links between the members of the “Other” groups and some undesirable qualities. Essentially, the attributes, characteristics, and values of the otherized group are cast in a negative light. The use of predicates in describing a section of the country appears to be common in the natural disaster reportage in the selected media source. *The Global News* suggested that:

  “Although the Atlantic Provinces are no stranger to the effects of hurricanes and subtropical storms, it’s unusual for a hurricane of this strength to travel to the northern reaches of the Atlantic Ocean” {Media Doc 1}.

Casting the Atlantic maritime parts of Canada as being a problematic area, prone to storm hazards is an instance of predicational strategy when one considers them as being “...no stranger to...” environmental disasters. Predications such as this can instigate widespread affect systems leading to stigmatization and stereotyping. The press has a wide-reaching influence in shaping the minds of the public, thus framing a part of the nation as being hurricane-endemic cast a national stigma on the region and its inhabitants.

Similarly, there is also a rampant discursive practice of using metonyms to characterize disaster actors in different lights. Metonyms are useful tropes to confer a desired meaning and importance to a message and the actor being referred to therein. A trope will take words and use them to denote-connote something apart from their ordinary meaning (Matsuoka and Sorenson, 2021).
Metonymization substitutes an actor or their acts with an associated but often more recognizable entity so that the essence of the message is magnified.

“The likelihood of Tropical Storm Leslie’s center making landfall in Newfoundland this week is high ...the Canadian Hurricane Centre said on Sunday. Chris Forgaty, manager of the Centre in Halifax, said it’s difficult to predict...” {Media Doc 2}

Notice how the reporter equated one regional spokesperson, Mr. Forgaty's opinions as that of the CHC. Surreptitiously, Fogarty's opinion has been substituted for that of the CHC, a national agency with many other regional offices. Only a curious reader who decided to read more can get to understand that Forgarty only speaks for the Halifax office of the CHC, and not the entire CHC. One implication of metonym is that it can quickly become a tool for conferring importance of an actor's opinion by extrapolating their associated credibility.

- **Neoliberal Arguments.**
  Behind some seemingly objective journalistic argumentations, are neoliberal rhetoric habitually used by news reporters to justify their personal ideologies and editorial leanings. Richardson (2007) explained that news reports, like many other aspects of journalism, are opinion statements embedded within (seemingly objective) argumentations. The whole point of media reporting is for the writer to present their arguments as convincing and authoritative, and as such they employ rhetorical strategies aimed at persuading others to adopt their point of view. Commodification, commercialization, individualization and responsibilization of disaster risks are some of the cardinal arguments of neoliberal risk management (Krahmann, 2008). In neoliberal discourses, disaster risks reduction and protection are and should be seen as business, because they should be individual responsibilities. Therefore, the role of the state in either protecting or bailing out individuals and businesses should be minimal. Krahmann (2008) explains that private management of risk is an essential expression of neoliberalism in which the goal of risk protection is to tailor coverage to consumer’s choice, approach risk management as a cost cutting venture and deregulate the relief functions of the government. This discourse underlined The Globe & Mail’s Barrie McKenna’s opinion piece wherein he argued for the unsustainability of the Canadian government’s Disaster Financial Assistance Arrangement (DFAA). The reporter painted a picture
of a world in which natural disasters would only become more frequent and destructive, and as such reliefs and subsidized insurance would no longer be sustainable:

“Ottawa’s Disaster Financial Assistance Arrangement program...has quietly become a money pit...The annual bill going forward will soon hit nearly $1-billion owing to ‘an increasing number of large weather events with greater intensity’...”

{Media doc3; p. B5}

The latent neoliberal discourse in the article is unmasked by arguments that propose government partner and empower the insurance industry to take on larger risk protection roles to avoid laden budget bill, as was then being experienced in the neighboring United States:

“the [insurance] industry wants Ottawa [Government of Canada] to play a much larger role. Some industry insiders are pitching the idea that Ottawa and the provinces could put money into a flood insurance pool, collect premiums and even turn disasters into a profitable business for governments”.

This is a call to the government to stop the “free meal” for disaster victims and begin to act like any other insurance organization. If the superficial economic altruism in this statement is appealing, the proposition that followed in the next sentence was more revealing of the neoliberal push to cut back state’s welfarism and inadvertently enlarge the roles of the industry:

“Others suggest the best way to go is a largely private system, backstopped by federal and provincial reinsurance...”

The article rounded off with a warning of sorts to the Federal and provincial governments on the pitfalls should they decide to go the route of becoming more involved in public insurance:

“Once drawn into the insurance game, Ottawa may feel intense pressure to expand its footprint and take on more risks, particularly as weather events become more frequent and virulent... The last thing Ottawa wants is to replicate the troubled US federal flood insurance program which has a $25-billlion (U.S.) deficit that swells with every big storm”.
While one can excuse this as the opinion of one reporter, it is also curious that being a center-right new medium, *The Globe & Mail* has editorial culture that has frequently voiced support for a more liberalized economy.

- **Action-Actor Representation/Framing.**

Because their professional and editorial practices permit narrative style of writing of journalists, they have uncommon flexibility to provide an unusual behind-the-scenes insights into how events unfold, in various ways other debate participants cannot. This positions the media/press at an advantage, with enormous powers to tell stories in whatever shape or shade, such that they are only limited by factors such as the larger publishing agenda, reporter’s ideological belief, willingness to observe professional ethics, etc. For instance, in *Media Doc4*, the reporters drew a poignant attention to the plight of a community at the mercy of an imminent hurricane:

"As the remnants of the hurricane barreled down on New Brunswick, Gordon Nason was crossing his fingers. The pensioner is one of the few people left...Many people have moved away and condemned houses sit empty, their swing-sets unused and tree dropping fruit on the ground" {pg. A8}

Carefully choosing their words, the reporters presented the main protagonist (actor) in the story as a helpless man, the last holdout in quickly depleting community that was about to experience an unfortunate event. The new story drew the reader’s attention to the human side of a precarious environmental situation which otherwise typically receives focused reporting on the economic and ecological costs of storm impacts. Likewise, we see another example of action-actor representation in the same news story whereby the provincial administrators were represented as appealing to some apparently unrelenting storm surfers:

"Officials across the Maritimes have been pleading with residents to take this [storm] seriously"

The use of the term "pleading" was used by the reporters to frame the various warnings that were being reinforced by the government official in statements such as "Let's all give this storm the respect it deserves" (pg. A8). Of course, that statement could easily have been recontextualized in a number of ways and accordingly represented as "warning", "advising", "ordering", etc. whereas
pleading is just one of them. In this case, “pleading” was presumably used to drive home the frustration of the government spurred by frequent uncooperative public attitude. It could also have been used to represent the surfers as unyielding folks whose instincts (born out of disaster fatigue) cannot be forcibly leashed but can only be appealed to. Whatever choice of term in use in this expression of internal intertextuality, it will be largely premised on the editorial culture and/or agenda of the media outlet. This also demonstrates the power of the media (or those who have exclusive access to it) to frame roles and responsibility for certain actions. Here, the risk-embracing crowd was presented as not observing their roles/duties towards proper risk preparedness whereas the government has done hers.

Keeping in line with this discursive practice in journalism whereby some actors are *agentialized* and some others are *de-agentialized* (Selvaraj and Sandaran, 2019; van Leeuwen, 2008), the media report presented those who were exhibiting disaster fatigue as "a number of people", whereas it went ahead to name a govt official (the Justice Minister) while presenting the govt's side of the story. This shows whose side of the story the media report stressed as being important and worthy of making the news. The facelessness behind "a number of people" shows that their opinion didn't count or carry similar weight to that of the minister.

- **Sensationalism.**
To draw attention to a social, political, and economic topic or a certain aspect of it, reporters sometimes employ hyperbolism and sensationalism to magnify the desired import. Sensationalism is a common social practice of the press industry. Through some carefully chosen combination of words and phrases, media practitioners can achieve sensationalism by using strategic writing styles that draws on value association, extrapolated cause and/or effect, trendy, or buzz words, overqualification, etc. In the CBC story about the possibility of progressive submerging of Nova Scotian border communities (Media Doc5), we see an example of an exaggerated effect of such occurrence reflected in the extrapolation of what severance of connection between New Brunswick (NB) and Nova Scotia (NS) could cause. The land link between NB and NS was represented as and equated with that of NS to the entire Canada –at least judging from the title of the news report, “Nova Scotia is one ‘perfect storm’ away from being cut off from Canada”. Therefore, by
exploiting the nationalistic sentiment of readers on potentially losing an economically vital maritime province, saving that land connection from environmental degradation is made to sound even more urgent.

- **Selective Focus: Shifting Attention To/From Aspects of the story.**

  The media also have a prerogative to select which aspect(s) of the storm event they might want to draw public attention to by carefully constructing their words. This phenomenon particularly demonstrates the influence of the media to direct the attention of the public to specific aspects of a risk event by deciding which stories are heard, whose versions are entertained, and what elements of the stories makes the report. I shall mention a few discursive strategies by which the media carry out this practice. First, by using passive transitivity in constructing narratives, the media can shift attention from the severity of the storm to the severity of the impacts, thereby giving prominence to human and material costs of the event. For instance, Alexander Quon wrote a piece in the *Global News* (*Media doc1*) in recollection of the 2003 Hurricane Juan. The article employed ample instances of passivity to deemphasize the enormity of the hydrometeorological qualities of the storm (e.g., storm speed, precipitation, etc.) but drew attention to the role of urbanization in magnifying the impacts of a post-tropical cyclone. For the author, the intention was not to flatter the qualities the Hurricane Juan, but to highlight the seriousness of hurricane impacts for urban dwellers using the Juan episode as an analogy. For example, the verbs, and adjectives in these sentences:

  - “Trees were uprooted, cars pinned beneath the weight of heavy, mature trees that seemed immovable”
  - “Streets were blocked off, sometimes for days, as trees were uprooted or power lines knocked over”
  - “Boardwalks were torn up by surf and heavy winds while roofs on houses were damaged”

  These were deliberately used in creating a passive role for the storm while making vivid the gravity of an urban storm landfall. By not naming the storm directly in the statements, the reader’s attention was shifted to material victims (cars, trees) of the storm as well the characteristics of the
damage i.e., uprooted, pinned, heavy and immovable. The intention behind this was deliberate as the statement could have also been written in (many) other forms such as e.g.:

"Hurricane Juan uprooted trees, and it also caused matured and heavy trees to fall on cars"

Both would have described the same scenario but in different ways and birthing equally different meaning to the readers. Second, the practice similarly manifests in the penchant of the media to selectively draw attention of the readers to certain aspect(s) of a topical debate which projects the desired interests of one or group of actors. For example, the news media have a reputation of creating and reproducing the “culture of fear” (Altheide and Michalowski, 1999) which lubricates the machinery of the risk insurance industry. Accordingly, Krahmann (2008) suggested that “practices of the media and the risk industry, thus, support each other in creating a spiral of perceived risk escalation”. In this research, there were ample instances of columnists and news reporters who keep pushing pro-insurance industry narratives under the garb of “objective” journalism. In Media Doc7, The Globe and Mail’s Jacquelin Nelson wrote a piece titled, “Canadian insurers brace for a wetter future” where they provided a treatise on emerging risks for homeowners in the light of the worsening climate change. The focus of this article (flood) selectively reinforces the notion that water (and not the windstorm) is the primary danger of the hurricane impacts for home and business property owners. This reportage reemphasizes the argument that while both soft and hard approaches have been successful in curtailing the impact of the wind, the same cannot be said for floods caused by excessive rainfall and storm surges that come with the hurricane fronts:

“The devastation caused by hurricanes in the United States and Caribbean highlights biggest threat to homes: water damage” {pg. B5}

The selective preoccupation with the flood problem in the news media demonstrates a unique way that the media preferentially promotes the arguments of the risk insurance industry. This is because while there are actors who are equally worried about both water and wind elements (e.g., field farmers and fishermen at sea), their voices do not have equal representation with the media, hence the wind debate is attenuated in favor of the flood problem debates –which the risk insurance sector is more worried about. Similarly, Toronto Star’s article (Media Doc18) on the impacts of
Hurricane Dorian choose to amplify only the economic costs of the storm and did not make any attempt at bringing to the reader’s attention the social, human, and ecological costs of the storm.

Third, news reports can strategically draw attention to the plights of a community or group of victims while ignoring others. In this case, demography is usually the variable. While reporting on Hurricane Sandy in 2012, The Globe and Mail’s Aly Thompson focused the attention of the readers to the expected impacts of the super storm on the provinces of Ontario and Quebec rather than the eastern maritime provinces that would naturally bear the brunt much earlier than the promoted provinces. It appeared that the fascination of the Halifax-based reporter was with the possibility of massive rains produced by stalled fronts precipitating into winter conditions over central Ontario and not the impacts of the super storm on the eastern seaboard, an area more perennially inundated with hurricanes.

- **Selective Access: Differential Allocation of Speaking Rights.**

As stated earlier, access to the media is inherently a power resource that is contended for by all parties (Cottle, 2000). Research has shown that mainstream discourse in the media reflects the agenda set by the dominant actor(s) in a discursive domain (Molotch and Lester, 1974). The media is a useful tool in perpetuating this discourse or suppressing the resistance to it. Either way, the press plays its part by giving selected access to the party whose discourse is to be promoted. To project domain knowledge about risks, the media routinely provides access to public communication for government and industry experts though their medium. However, the access given to sociocultural knowledge-producing institutions is a far cry to the former. Even when these alternative opinions are given a voice to, we see a common practice of shoring it up or contrasting it with technical views, thus making it appear as well as demonstrating that scientific opinion trumps all others.

In a bid to inform and sensitize their readers about an impending Hurricane Irma, The Globe and Mail (Media doc15) invited pre-posted questions from the public. The newspaper then invited a duo of government hurricane experts from the Canadian Hurricane Centre. To the exclusion of any
other perspective(s), the invited experts provided answers wholly from scientific-technical perspectives, but this was not surprising since the title of the Q&A was already “The Science behind the storm”, which had already foreclosed the inclusion of “non-scientific” ideas, as alternative perspectives are commonly often referred to.

- **Politics of Risk Responsibility**
  Reflecting the political attitude and ideological disposition of a media outfit owners, the press often characterizes the actions and activities of any governmental agency as a reflection of the larger quality of leadership that the political actors at the helms of affairs personify and promote. When a media organization does not share favorable ideological and political views with the government in power, the media is quick to point out their (perceived or real) mistakes and then attribute those to the character and/or ideological failure of the political leadership. Such politicization of hurricane responsibility is also reflected in the opposite sense when both actors share common sentiments. In a *Globe & Mail* news report (Media Doc11), the reporter made no hiding of their political attribution of the perceived failure of the federal Foreign [Global] Affairs and Transport ministries.

  "Some of those who have returned, and some opposition members, have complained about Ottawa’s response was both slow and efficient” (pg. A4).

The phrase “Ottawa’s response” was a metonymization of Prime Minister Justin Trudeau’s (Liberal government) response to the hurricane evacuation through the performances of the two federal ministries (Global Affairs and Transport Canada). More specifically, in "Ottawa's response” the reporter extrapolated the perceived inefficiency of the Transport Canada and Global Affairs Canada as that of the entire government being “both slow and inefficient". While the two ministries have standard operating protocols regarding overseas citizens evacuation and travel warnings, independent of the office of the Prime Minister, this example demonstrates a common media practice of attributing government functions to the political agenda of its democratic leadership. Political attribution even becomes pronounced when the media has a differing ideological leaning to that of the prevailing government in economic and socio-political terms. One implication of this is that an objective assessment and attribution of blames to individual agencies of the government get caught up in the murky and extraneous political bickering.
• **Editorial Tropes as Ideological Tools.**
Hardly elsewhere is the ideological inclination of a newspaper presented than in the editorial section. Editorial commentaries not only typically reflect the editorial culture of a media organization, but also demonstrates their socio-political and ideological beliefs which largely precipitate what and how social issues are sourced, selected, investigated, written, and framed. In editorials, commentaries are used to push the ideological leaning of the news organization. Therefore, one can essentially judge a medium's ideological position on social and political issues by reading their editorials.

The *Globe and Mail*’s editorial on Sept 14th, 2017, carried the newspaper’s position on the roles of state in disaster evacuation. In this case, the editorial (Media Doc16) was used to push through ideological rhetoric a neoliberal ideology in which the state should have reduced roles in foreign evacuation of citizens. The paper doesn't share the sentiment that public funds should be used for such welfarist venture, and they placed their reasons within a convenient framework of fiscal objectivity such as:

"Before it happened, it dominated the news for weeks"

[therefore, people could have paid for their own evacuation by themselves]

"Public resources to do that are justifiably scant"

[it is justified if the government decided to spend its scant resources not on evacuation of rich vacationers]

Also, notice that (this time) their argument was not for/against the perceived slowness of action on the part of the government nor the appropriateness of a government evacuating its citizens from foreign disaster zones. Rather, the argumentations were about the ideology of using public funds to repatriate those who apparently could self-fund luxurious vacations.

• **Asserting Patriotism and National Identity**
Through its linguistic and news selection choices, the *Toronto Star* appears to be intentionally communicating its desire to assert the Canadian identity in the hurricane risk management domain.
The medium seems to want to demonstrate its difference from the discursive practices of other major media such as the *Global News, Globe and Mail*, etc. A self-described left-leaning medium (Wallace, 2018), the *Toronto Star* described itself through several editorials as believing in and writing to “*project a liberal, united, nationalistic and welfarist Canada, inspired by its longest serving, founding editor, Atkinson*” (Harris, 2017).

We can see this nationalistic outlook of the *Toronto Star* manifesting in the choice of news sources it consults and the linguistic characteristics in the writing styles. First, Toronto Star seems to source most of their tracking information from the Canadian Hurricane Centre (CHC) rather than the US National Hurricane Centre (NHC). We see a penchant for citing the CHC as the source of their post-tropical storm information as against the common Canadian media practice of quoting the NHS. For instance, Philip Croucher’s report (*Media Doc22*) on the 2019 Hurricane Humberto exclusively quoted CHC sources even though the storm never came into the CHC’s Zone of Responsibility (ZR) which would have warranted news media to quote the NHC extensively. If that was a fluke, then consider the same reporter’s story about the 2018 Hurricane Michael (*Media Doc23*). The report on Michael was published on Oct. 9th, 2018, a period when the storm was still in the NHC’s ZR. Ordinarily, news reports would have been quoting the NHC as their primary sources, but the Toronto Star, in an apparent mark of nationalism was quoting from the CHC:

“A powerful hurricane set to hit Florida... Michael has gained new strength over warm tropical waters amid fears it would swiftly intensify into a major hurricane before striking Florida’s northeast Gulf Coast. ... After hitting the Gulf Coast, the Canadian Hurricane Centre has Michael’s track moving up the coast of the southeast United States, before then going back into the Atlantic Ocean.” (*Media Doc23*)

Although the CHC receives updates from the NHC, it does not originally track storms that are outside of its ZR. That is usually left for the NHC (the WMO-appointed lead agency for the North Atlantic). Therefore, it this reporter decided to quote the CHC as the source of their tracking information, it must have been a deliberate attempt to assert the importance of the CHC as capable of playing significant role in disseminating tropical storm information long before it reaches the
middle latitudes or the upper North Atlantic, where the CHC jurisdiction really starts. Second, even the very nomenclatural difference observed by the medium reflects their marked departure from common media discursive practice of referring to all storms as “Hurricanes”. The *Toronto Star* appears to go the length of specifying the exact nature of any given storm. For example, Yvette d’Entremont, habitually refers to hurricanes as “former hurricane” in her reports for the *Toronto Star* (e.g., Media doc25 and doc17). Reflecting Atkinson’s legacy of a “strong Canadian identity”, one not hidden in the shadows of the US, these choices point to three identity themes – at least: one, that Atlantic Canadian storms have their own identities different from others in the Atlantic; two, that Canadian media do not have to stick to the “hurricane” designations given by the American NHC, and; three, Canada hardly experiences tropical cyclones (hurricanes) but extratropical-, post tropical-, and midlatitude storms.


Although property and casualty (P&C) insurance laws vary by province and territories, the following practices still cut across a large percentage of these regions.

- **Economic costs trump human costs.**
  The general practice of the risk industry seems to focus more on the costs attached to storm impacts on businesses, infrastructure, properties, and other physical structures. The culture of risk protection appears to promote the notion that with hurricanes and other meteorological events, physical structures are more vulnerable than human lives. Afterall, people can evacuate, find shelters, or engage in other protective activities but structures can only respond to choices humans make with mitigative designs. The ICLR suggested that:

  “In Canada, natural disasters have not killed many people unlike in some in developing countries... Biological hazards have been the most deadly; in 1918, the Spanish influenza epidemic may have killed as many as 50,000 Canadians, while small pox epidemics in 1862 and 1885 killed at least 20,000 and almost 6,000 people respectively”  {RiskExp Doc2; p.3}
The impression created here is that not only do public health emergencies precipitate higher cost of human lives than natural disasters but also that the public should pay more attention to protection of infrastructural and physical assets. The ICLR being a pro-insurance body, seemed to have placed more emphasis on the economic consequences of natural disasters.

- **Emphasizing the Differential Severity of Natural Hazards and Vulnerability of Consumers**

Weather-related hazards are represented as being more frequent and severe than (say) geophysical hazards. For example, hydrometeorological events (e.g., hurricanes, typhoons, tornadoes, coastal storm surges, heatwaves, cold spells, etc.) were identified as significant precursors to the singular largest environmental problem in modern Canada (i.e., flood) beyond geophysical hazards such as earthquake, landslides, volcanic activities, mudflows, etc. we find examples of such ideas in:

“[F]looding has been the most common type of natural disaster, followed by hurricanes and winter storms...The most expensive event for the insurance industry in Atlantic Canada was Hurricane Juan in 2003. Much of the impact from Hurricane Juan was associated with wind, rain, storm surge, and waves...The Canadian Disaster Database recorded only two geophysical disasters in the Atlantic provinces between 1900 and 2005. Over the same period, more than 100 meteorological and hydrological disasters occurred in Atlantic Canada.” {Risk Doc6; pg.4-6}

These statements foreground the arguments that hydro-meteorological hazards pose more risks than other types of natural hazards. Therefore, the differential rising costs of insurance cover for these hazard types is justified. Of course, there is some validity to the painted graveness of the flood problem in Canada, especially due to its frequency, multiplicity of sources, and since it uniquely causes significant damages in both rural and urbanized locations. However, what better way exists to make profit off the most prominent environmental hazard than problematizing it above others?

“The expected timescale for climate change impacts on the marine environment creates a potential issue for Atlantic Canadian emergency management
organizations. Sea levels will gradually increase over several decades due to climate change, increasing the risk of storm surge (Bender et al., 2010). This climatic shift will coincide with shifts in the populations of the Atlantic Canadian provinces, as populations have become increasingly concentrated in urban centres ... and are increasing in average age ...” (RisExp Doc.5, p.23)

Furthermore, the industry frequently emphasizes the differential vulnerability of risk clients to justify the increasingly differentiation of risk premiums in response to the rising economic, social, and human costs to natural disasters. This much is the implication of the excerpt above. The idea is pushed that while hazards remain the same for all members of a community, the risk that each member faces is different. A common vulnerability discourse is the level of urbanization of a community. The usual argument is that the destruction caused by the storm impact would be more severe in developed spaces than it would in a less populated or less built-up place. Similarly, the encroachment discourse argues that since development is spreading to hitherto uninhabited places, the hazards in those places quickly transform into real risks for those involved. Finally, proximity discourse is used to push the idea that people or structures that are physically closer to areas experiencing certain hazards would be more vulnerable than those who are distant. For example, coastal communities are more vulnerable to storm surge and coastal erosion than those in the hinterland. Differential vulnerability has therefore become an important tool used by risk experts, especially risk insurers to create risk profiles for people and businesses.

- **Culture of Fear: Fear as Marketing tool.**
  It is in the interests of the risk coverage industry to promote atmospheres of uncertainty, unknowns, and unknown unknowns. These conditions precipitate fear that ultimately make individuals, homeowners and businesses want to be insured against injuries and damages. The insurance industry has perfected this “culture of fear” (Krahmann, 2008) by exploiting the inflamed perception of risks through continuous, pervasive, and symbolic communication of risks associated with hazards (Furedi, 2006). The discourses that promote the culture of fear as desired and designed by the risk insurance industry litter the various literature, media, and brochures that they produce. These discourses simultaneously anchor and drive public risk perceptions in a way that ultimately promote the primarily profit-oriented goals of the risk insurance business. A few
examples here shall suffice; first, the risk insurance business in Canada makes no habitual attempt at emphasizing the diverse nature of Atlantic and/or Pacific storms that characterize the two coasts of the nation. In industry literature, all storms originating from the south of the mid latitudes, or tropical waters are classified as tropical cyclones (colloquially referred to as hurricanes). It is atypical to see industry experts make efforts to specify when the extreme event is a *post- or extra-* tropical cyclone, midlatitude storms, hybrid system, or a typical tropical storm (which by the way hardly reaches Canada). Even when an explicit differentiation is made, all storms are framed as having similar magnitude of impacts which is not always the case. While all storms share common impact features, each storm system has peculiar meteorological features that determine the risks it poses to vulnerable populations e.g., more rainfall than strong wind indicates a higher chance of flooding than storm surges.

Ordinarily, the designation given to predominant storms in a particular area has immense economic and policy implications. For instance, it would go a long way in determining their attention given to the different components of disaster management. Tropical depressions (although rare in Canada) are considered far less severe than a tropical cyclone. Similarly, it would reflect in the kind of housing and commercial development allowed in certain places, land uses policies and other attendant socioeconomic decisions such as insurance risk options. The risk industry profits off this nomenclature problem partly due to the widespread public ignorance of the meteorological and hydrological differences between (say) Extratropical and Tropical Cyclones, as well as the preparatory and response disaster demands accorded different storm gradations. Secondly, the insurance sector discursively manufactures risks through aggressive propagation of messages of unknown (i.e., emergent) and *unknown-unknown* risks. These risks are represented as arising from the interplay effects of global warming, increasing population, unprecedented rate of urbanization and development, increasing reliant on technologies for both every day and sensitive tasks, interdependence of seemingly disparate economic sectors, etc.

“As the earth warms, high altitude countries like Canada are expected to experience strongest impacts.... This means that Canadians can expect to be confronted more often with natural hazards...that will test their resilience and challenge their ability to adapt to the new climatic conditions” {RiskExp Dco2; p.17}. 
Krahmann (2008) explains that unknown risks are considered as those unpredictable dangerous outcomes of modernization of the environment. In this case, the contributory factors are known in terms of their probability and impact judging from history, but the outcomes of their interactions produce some unknown risks. Similarly, the place and time of their next occurrence are not known but such emerging risks are inevitable:

“Because of the large amount of greenhouse gases already in the atmosphere, some global warming will occur during this century no matter what we do (emphasis mine)”

On the other hand, unknown-unknown risks are risk perceptions created by industry experts based on some futuristic expectations whose precursors or outcomes are not exactly calculable. Typically, there are no precedents to estimate their probability of occurrence hence, the magnitude of the future dangers is incalculable, and are “outside the individual or collective experience of anybody” (pg.11). Although highly speculatory, such risks are framed as vivid, impending, and devastating. Deliberate public and private inundation of risk clients with discourses that promote emergent and unknown unknown risks prompt public discourse and eventual reification of the problem. A common example that applies to both is the futures of ecological sustainability and agricultural business being discursively tied into the inevitability of climate change. Essentially, the risk insurance industry creates an atmosphere of risks unknowns and then offer to contain these possibilities with innovative protection, thus weaving a convenient market in which they simultaneously set the risk perceptions, their (own) liability under it, and the vulnerability of clients to such risks.

- Framing the Complex Risk Problem
  Furthermore, the culture of selective generation of fear (Denney, 2010) also has found place in the discourses that frame contemporary risks as a product of the complex web of threats emanating from different sources. For instance, the risks posed by hurricane hazard are highlighted as not only from its hydrometeorological features (wind, rain, etc.) but equally due to physical developments, booming tourism to dangerous places, overreliance on early warning and communication technologies, global warning, travel insurance, property valuation, etc.
“As a result of climate change, Atlantic communities will be affected by sea-level rise, changed wave regimes, storm surges, and changed frequency and severity of storms. Inland communities will be more affected by precipitation and temperature changes, as well as by riverine flooding. ...Further, it is expected that areas that were once immune to storm-surge impacts will be affected by storm surge in the future, and low lying areas will be affected by storm surge more frequently. ...These risk factors are combining with increasing development pressures, which exacerbate the potential for higher-cost damages. More-frequent rain-on-snow flooding has already been identified in some areas of Atlantic Canada. More-frequent winter thaw events are expected to affect ice-jam flooding. Storm surges have already resulted in significant property damage in all of the Atlantic provinces over the past few years”

{RiskExp Doc6; pg. 8}

Although it could be hard to see, experts have been able to make a case for how seemingly unconnected factors could nonetheless interact in a way that shape the peculiarity of hurricanes and complicate what the event portend for different people in (say) a coastal Nova Scotia community. The game plan is to present these intertwined factors as increasing the predisposition of at-risk populations to these hazards. Similarly, another strategy to promote this discursive practice is found in the inclination to emphasize the uncertainties associated with climatic and environmental conditions that precipitate these hazards as well as unpredictability of the impacts the risks produce for concerned communities. These experts tend to push the uncertainty narratives in order to impress the idea that unknown and emergent risks can only be adequately anticipated, understood and broken down into simple, digestible nuggets by the experts for the benefit of the common stakeholders. On whether tropical cyclones could become more frequent and severe as the seasons wore on, both academic and insurance experts diverge but are unanimous in projecting the uncertainty of the hurricane seasonality that could only be understood by high level exact science.

“... but the uncertainty in determining the Ninō 3.4 SST phase increases as we head in to fall” {RiskExp Doc7}
• **Assertion of Expert’s Superiority**

Often, risk insurers rhetorically assert the superiority of their technical understanding of the issues at hand. One way they do this is by problematizing topics of interest and then providing answers in a way that suggests that there is a threshold of understanding which only technical expertise can attain. Therefore, such problems can only be unknotted by the exclusivity only technical knowledge can offer.

“Hurricanes represent a critical challenge for Emergency Management Organizations (EMOs) in Atlantic Canada. These storms...translate into unique challenges for emergency managers and their organizations. Effective response to such events requires highly developed institutions that provide the structural basis and support for emergency managers...”. {RiskExp Doc5; p. 1}

With phrases such as "critical challenge" and "unique challenges", and "effective response", what these experts are saying here is that hurricanes are much more complicated and varied beyond the understanding of non-technical actors. They have framed the outlook which reflect the difficulty in understanding the unique and critical demands of hurricane knowledge and that to mount and effective response, alternative knowledge (e.g., Indigenous, folklore, oriental or common historical knowledge) cannot be relied upon. Therefore, the identification, analysis and assessment of hurricane elemental forms and functions, the tracking, and eventual transitions can only be done by those privileged enough to be referred to as experts.

Another method of entrenching this practice is found in the acknowledgment of the exclusivity of scientifically calibrated tools. Insurance risk experts, for instance hardly give much attention to non-technical tools of assessment (e.g., Indigenous weather watching practices, oriental astronomy, etc.), hence they based their policy pricing exclusively on what (western) scientific tools indicate as risk exposure of a policyholder. ICLR (RiskExp Doc2) highlighted a few vulnerabilities assessment tools:

“There are people whose job it is to assess the vulnerability of individuals and communities to natural hazards. They do these assessments using tools that incorporate information about hazards and the different types of vulnerability.
... [another] type of tool involves computer-assisted programs designed to model the effects of hazardous events and estimate their impacts [e.g., NHEMATIS, HAZUS, Community Vulnerability Assessment Tool]” {pg. 11-12}.

The authors in this case did not make mention of any alternative and non-technical assessment tools in their narration. It reflects their belief that only technical tools are applicable to accurately assess and evaluate the risk vulnerability arising from a hazard for an individual or community.

- **Risk as Individual Responsibility.**
  Risk is portrayed as personal characteristics, the dynamic nature of which is premised on the choices of the individual more than that of the peculiar hazards of their community. This practice essentially shifts attention from (probability & magnitude of) the hazards to characteristics of individual vulnerability. This practice is partly sustained by the argument that people make choices about where they would buy or rent houses, the province they live, the values attached to and the interests in protecting private properties, etc. Since hazards don’t just become disasters if there are no anthropogenic dimensions to deepening the vulnerability and progression of its risks, they therefore, they are largely the architect of their exposures.

  “Many people and communities seem willing to go for the immediate economic benefits of building in hazard-prone areas hoping that the flood or earthquake won’t happen for a long time” {RiskExp Doc2, pg.165}

  “Canadian building codes appear to be stringent enough for the different weather extremes that occur in this country.” {RiskExp Doc2, pg.166}

What readily comes off here is that the building codes and the regulatory agencies are not the problem, it is the people who chose to overlook the environmental red flags that should be blamed, and such include individuals and developers. The narratives behind this practice promote the idea that if as such, risk is largely individualized, then responsibility for such should only be expected to be individual. The risk industry portrays risks as personal characteristics and pro-active risk management as the responsibility of everybody. This fit idea fits well into the neoliberal arguments for reduced government responsibility as well as long term business profitability of private risk
coverage. Essentially, private responsibility for risk exposures is a basic expression of neoliberal ideology that typically espouses risk management as a cost cutting venture and call for the deregulation of the relief functions of the government (Joseph, 2013; Krahmann, 2008; O’Malley, 2008).

In other cases, whereby individuals are not directly blamed as causing or abetting risk probability, we still find a common paradox in the cause and responsibility discourse. In the arguments for preparing Canadians for the hazards of global warming, the discourse is framed that although global warming is a collective culpability, individuals would still have to take personal responsibilities for preparing and protecting themselves through choice adjustments.

"Most climate experts believe that human activities are having an impact on global climate. Since the beginning of the industrial revolution, humans have added an enormous burden of greenhouse gases to the atmosphere...And we’re adding more each year, as emissions from fossil fuels continue to rise... The consequence of these changes in hazards is likely to be more frequent natural disasters... As a result, it is important for Canadians to consider how to deal with this issue" (emphasis mine) {RiskExp Doc2; pg. 18-19}.

Despite drawing the picture of a collective causation and suffering of the impacts of climate change, this statement however demonstrates the discursive practice that risk responsibility is personal. The term "Canadians" frames the responsibility for the emergency risks as being individualistic. Curiously, this discursive practice features prominently in another neoliberal concept: mitigation. Policyholders and indeed the general public are encouraged to adopt disaster mitigation measures in individual capacities. Risk mitigation is pervasively constructed to target individuals rather than the collective nor as a task for the public service. Akin to the contemporary rediscovery of mitigation as an integral part of risk management, clients are encouraged to consider proactive risk mitigation as essential aspect of private risk prevention measures.

“However, mitigation offers the greatest “bang for the buck” in terms of reducing the costs of future disasters” {RiskExp Doc2; pg. 183}
The import of narratives as this is that people need to invest more in personal risk mitigation measures because it is in their own interest towards reducing risk coverage liabilities. The individual is also presented as having the agency and capacity to enact mitigations:

“We can modify behaviours and policies that place us at risk, and that increase our vulnerability to disasters.... The degree to which communities allow themselves to be vulnerable to natural hazards defines their level of risk”. {RiskExp Doc2; pg. 219}

While individualizing mitigation responsibilities, risk insurers are subtly pointing out that policyholders would be rewarded or punished for how well they align with this expectation. Essentially, your coverage premium also reflects your (in)ability to adequately enact your own risk mitigation measures.

• **Responsibilization: Rationalizing Risk Based Pricing**

Following the justifications laid in the preceding arguments, the insurance industry is primed to promote discourses that emphasize the effectiveness of the current risk-based pricing strategy being used not just in Canada but also in many western nations. Risk based pricing describes the creation and classification of consumer profiles based on what the insurer thinks of a policyholder’s overall vulnerability to certain risks and is used to estimate the chances that they will file a claim. As stated earlier, vulnerability is defined by many factors. In order words, your premium rate reflects your risk profile based on their (insurers) typically opaque assessment of your exposure. Krahmann (2008) referred to this practice as “risk responsibilization” and explains that it is characterized by insurers determining the client’s risk exposure based on their risk profile.

Since individuals share similar risk characteristics that enable risk insurers to classify them into groups, applying tailored risk coverage to risk classes is a predominant practice in the industry. However, with the increasingly complex nature of risk hazards, consumer profiling is leading to more selective coverage even within the same class. For instance, ICLR (RiskExp Doc6) highlighted that:
“Commercial businesses can purchase insurance for overland flooding as an endorsement to standard commercial policies... This type of coverage is optional, and insurers do not always offer it to all businesses. To identify who may be eligible for coverage, insurers might use historical claims experience, the knowledge and experience of local agents and brokers, and government flood maps; or they may develop their own risk identification resources [emphasis mine]. As with any other type of peril, a significant increase in risk or occurrence of flood damage to business could be met with changes in terms and conditions for this type of coverage”. {pg. 15}

The responsibilization strategy leads to policyholders’ internalization of the *pricing by risk transference* as reflected in their embrace of “premium discounting”. Risk clients are encouraged to adapt risk mitigation into their daily and long-term choices which hopefully would reflect positively on their profiling and may end up saving them some money on premium. A typical example in eastern Canada is ensuring compliance to building codes which stipulates building driveways higher than street level. For example, ICLR stated that:

“The primary role of the insurance industry is to pay claims and to manage risk. For the industry to remain economically viable and sustainable, the prices charged for insurance coverage must reflect the risk of experiencing damages. Thus, homes and businesses that occupy areas of high risk pay more for insurance coverage than those that occupy areas of lower risk. For this reason, there is the potential that climate change impacts may affect prices charged for insurable risks. Risk-based pricing can play a role in climate change adaptation by communicating risk to policyholders through incentivizing risk reducing actions”. [p. 4]

There are at least two implications of the statements above: First, it is obvious that a policyholder could receive a policy different from those within the same risk class based on the industry’s practice of risk responsibilization. The assertion that "...changes in terms and conditions..." reflects the industry's impression that the risk profile of each client is dynamic. The uncertainties and increasing complexities surrounding what risks are insurable or not reflect and validate the
growing practice of tailored consumer risk covers which insurers across the world are adopting. Insurers are quickly abandoning the practice of applying a blanket cover to a geographical area based on generalized reputation. Rather, everyone’s risk exposure is evaluated (albeit opaquely) to determine the calculated liability insurers should take on.

Second, the narrative behind this arrangement justifies the notion that risk insurers have little intention to take part in offsetting any costs associated with risk eventualities, hence it is in the interest of the customers to reduce their own risk exposures to hazards. Even when insurers talk about incentivizing risk adaptions, the underlying logic behind such reward system being that risk is inevitable but based on your own risk profile there are measures that can reduce your vulnerability to these risks, lower your risk premium and reduce the stigma the industry attach to you. Obviously, incentivizing risk-reducing actions is a clever measure by the industry to reduce the extents of their own liabilities. It is not geared towards substantially reducing the premiums placed on those on the risk exposure spectrum but to reduce the frequency and magnitude of claims. By this token, it is a given that risk insurers will continue to transfer to customers the cost of recovering from risks because transferring the financial cost of risks to the consumers is the only “viable” economic model that can sustain the insurance industry. In short, no alternative model would work. This argument is even buoyed by drastic scaling back of disaster relief using taxpayers’ funds among many national governments owing to skyrocketing relief costs.

4.9.1.4 Discursive and Social Practices in Public Risk Governance.

- Sendai Agreement as Guiding Framework.

Before exploring the different practices evident in the governance of the hurricane risks, it is important to mention the importance of the United Nations Disaster Risk Reduction framework (UNDRR) Sendai Framework for Disaster Risk Reduction 2015-2030. The focus is not directly on what the framework is, rather its significance for the emergency management system in Canada (readers can read more about the framework at UNDRR5). Since Canada became signatory to the Sendai Framework in 2015, much of her emergency management framework and strategies have

been fashioned after the spirit and the letter of the *Sendai* framework, especially its *Guiding Principles* and *Priorities*. The “All Hazard” approach to emergency management as indicated in the 2017 Emergency Management Framework for Canada (*The framework*) bears direct concordance with the “multi-hazard” outlook of the *Sendai* framework. The all-hazard outlook espouses an integrated approach to both man-made and naturally occurring hazards:

“The emergency management adopts an all-hazards approach in every jurisdiction in Canada by addressing vulnerabilities exposed by both natural and human-induced hazards and disasters. The all-hazards approach increases efficiency by recognizing and integrating common emergency management elements across all hazard types, and then supplementing these common elements with hazard specific sub-components to fill gaps only as required” (Govt Doc9: p. 20)

The above declaration bears close resemblance to the *Scope and Purpose* of the *Sendai* agreement:

“The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden, and slow-onset disasters, caused by natural or manmade hazards … It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors” (UNISDR, 2015, Appendix A)

While Canada signed on to the *Sendai Agreement* in 2015, the *EM Strategy* was released in 2019 as Canada's domestic implementation of the UN's *Sendai* Framework for Disaster Risk Reduction. Clearly, the inclination towards situating Canada’s EM and DRR priority tasks and goals within the larger need for observing cross-sectoral risk adaptation demonstrates a compliance with the global trends in efforts to tackle climate change. In fact, the *priorities areas of action* as enumerated in the 2017 Emergency Management Strategy for Canada (*Govt Doc9*) was directly adopted from the 2005 – 2015 Hyogo Framework for Action (HFA). The HFA was the precursor to the Sendai Framework for DRR, to which Canada became signatory to when the Liberal Government of PM Hon. Justin Trudeau was inaugurated. The preceding conservative government of PM Stephen Harper had in 2011 withdrawn from another global climate agreement, the Kyoto Protocol which was meant to curb the rising GHG emissions as part of the climate
change control measures. With this background, it is easy for the reader to grasp the systemic thinking behind the EM strategies and practices that are discussed below. Next, a brief insights into the disaster risk discursive practices among the federal, provincial, and territorial governments shall be discussed.

**Mitigation, Not Just Preparedness.**

One strategic difference between the new emergency thinking as contained in more recent publications (e.g., 2017 EM Framework, 2019 EM Strategy) and the priors is the addition and emphasis on *prevention/mitigation* as a vital component of the EM. The new orientation about disaster risk management also stresses disaster prevention & mitigation (P&M) as the central performance index in evaluating the progress towards achieving disaster resiliency. Accordingly, government publications and public communications in recent times have begun to push the discourses that emphasizes the practice of disaster mitigation as an integral aspect of every decision that is to be made in both private, public, or corporate capacities. Presumably, the goal is to transit from just preparing for and managing disasters (when they occur) to preempting them by infusing disaster risk management into the daily consciousness of the public.

“Traditionally, EM has been primarily concerned with preparedness and response activities, but the current risk environment requires a shift in focus toward proactive prevention/mitigation efforts and forward-looking recovery measures.” (Govt Doc9; 3)

“...reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through the mitigation and prevention of exposure to hazards, decreasing vulnerability of individuals and society...” (Govt Doc6; 21)

Again, we can see the alignment of this new thinking with the resiliency (*Building Back Better*) mantra of the *Sendai* Framework. The desired practice of the FPT governments is to create a society whereby disasters provide opportunities for communities to identify, anticipate and overcome their vulnerabilities, temper the burgeoning relief costs from both private and public purses, as well as represent how disaster recovery can be used to strengthen P&M:
“Forward looking recovery measures allow communities not only to recover from recent disaster events, but also to build back better in order to help overcome past vulnerabilities.” (Govt Doc6; 8)

- **Climate Change Perspectivization**
  Unsurprisingly, contemporary communication and assessment of disaster risks are often grounded within the larger and evolving climate change discourse. The hints felt from much of government communications is that there is a close connection between the changing climates and the ferocity and frequency of the storms as experienced in recent times. The climate change debate (including its arguments about global warming) seems to significantly weigh in on every policy, plans and strategy of the government. For instance, the Disaster Risk Reduction (DRR) “resiliency” mantra of the government as well as the “Building Back Better” theme adapted from the SENDAI framework are well nuanced with the notion that the climate situation was about to get worse. As such, risk mitigation, preparedness and building back must be conducted in a way that will anticipate peculiar consequences of what global climate crisis means for each community. At the 8th National Roundtable on Disaster Risk Reduction (Govt Doc16), participants agreed that:

  In recent years, Canada and the global community have seen an increase in the number and frequency of disasters. The trend is expected to continue and to be further amplified by climate change. This means that there is a need to strengthen disaster preparedness for response, take action in anticipation of events, ensure capacities are in place for effective response and recovery at all levels, and incorporate the impact of future climate change into each of these activities. The recovery, rehabilitation and reconstruction phase is a critical opportunity to build back better, including through integrating disaster risk reduction and climate change adaptation into development measures”. (p.4)

This is predictable as the three multinational frameworks (the Sendai Framework, the Paris Climate Agreement, and the Sustainable Development Goals) that Canada subscribes to conceive the issue of disaster managements to be inextricably linked to climate change adaptation. These frameworks consider DRR as the primary component of disaster management. DRR is seen (especially in the Sendai framework) as the short cut strategy to meeting the demands of the other components. Again, in the introductory notes to the third edition of the EM Framework document
(Govt. Doc6), the authors acknowledged the progressive changes in the revisions and their connections to the emergent risks occasioned by the changing climate:

“Reflecting the ever-changing emergency management environment and risk landscape, this revised version underscores the linkages between climate change and emergency management, ...” (p. 3)

**EM Partnership as Patriotic Duty.**

In achieving disaster resilience, partnership is considered an important aspect. The narrative behind EM partnership (a part of the WoS approach) as highlighted in the *Emergency Management Strategy for Canada* (Govt Doc9) and many other documents frames the willingness and responsibility of partners as patriotic duty. Any reluctance or refusal to enter EM partnership roles with FPT or municipal governments (although not criminal) could be termed as the supposed partner(s) failing the country in times of crisis. This view couldn’t be more explicit as is stated in the EM Strategy document:

“For these partnerships to be effective, all EM partners must work collaboratively with their respective governments”. (p.2)

The obligatory modality "must work" in the statement demonstrates that EM partnership is considered by the government (on behalf of the people, nay those in present and clear danger) as a patriotic function, any act contrary to which is to be seen as being an uncooperative actor/agent in the assiduous duty of collective responsibility. The context for this position is also set in the EM Framework document (Govt Doc6) wherein the Partnerships and Coherency of Action principles of EM were articulated. The partnership principle draws from the Whole-of-Society (WoS) concept which frames partners as being “key components of FPT emergency management systems” (p. 10). Similarly, the coherency of action principle frames EM as:

“...require[ing] collaboration, coordination and integration...to ensure the most effective use of emergency management resources and execution of activities. ...to provide for concerted efforts to facilitate timely and effective prevention and mitigation, preparedness, response and recovery measures to deal with disasters.” (p.10)
By setting the goal as a “timely and effective" EM (which is everyone’s desire), the government’s argument is that it is through collaborative and complementary actions that the “most effective" disaster management can be achieved. Therefore, everyone (the partners) needs to cooperate with FPT authorities by being on the same page and cooperating with them. Beyond collaboration nonetheless, it must also be understood that:

“Coherency of action relies on the existence of clear and appropriate roles, responsibilities, authorities and capacities of emergency management partners and is based on widely shared expectations, understanding and support.” (p. 10)

The message above could be interpreted as, “we [the government] need you to also know your place in the scheme of things (‘clear and appropriate roles’), the limits of your power (‘authorities and capacities’) and what ‘responsibilities’ you're permitted (or encouraged) to take on”. The unwritten part of the above can interpreted to mean that partners who do not comply with the above would be considered hinderances (or even enemies) to effective EM in that jurisdiction. Partnership is therefore hinged on the expectation of patriotism.

- **Using Documentation as Performative Communication Strategy.**

Playbooks such as bulletins, track forecasts, guides, protocols, handbooks, SOPs etc. act as documented instructions that specify how disasters are to be prepared for, evaluated, communicated, and responded to. They clearly communicate the government’s thoughts and operating procedures for dealing with disaster risk. The use of playbooks by governments is a performative function to codify discourses into policy strategies capable of mobilizing the public and legitimizing their decisions, while constituting its subjects (the public) and shaping its objects (their risk perception) (Kornberger and Clegg, 2011). There is an inherent power effect in that such documented discourses have officialized some perspectives while silencing others. In the very least, actors whose inputs made it into the bulletins therefore become more visible and influential while those who didn’t (or couldn’t) are systematically marginalized. The very name by which these documents are called highlights their presupposed legitimacy and the expectation that they would form the primary driver of public response owing to their careful composition of incident’s best practices. The underlining assumption here is that any other document for the purpose of
public communication (at least) is to be considered as less authoritative and probably less inferior in quality.

Similarly, playbooks at once produce exclusive assessment, evaluative and communication functions which then become officialized as the bedrock of many other actions from government or third-party actors. For instance, an After-Action review of the PEI EMO in the aftermath of Hurricane Dorian (Govt Doc8) highlights the sensitive roles that hurricane bulletins do play in coordinating partnership among critical actors during an extreme event.

“Partner organizations are not completely aligned in their understanding of the purpose and utility of the daily situation reports. Situation Reports that were distributed by EMO provided agencies with a snapshot of activities that had been completed or were underway; however, some partner organizations had different expectations of what information should be included within the document to assist in the planning of their own activities... Some agencies consider the updates to be a guiding document for the response of all organizations in the planning of future activities, in addition to a summary of completed tasks.” {p. 31}

The first statement in the above excerpt reflects that partner organizations premised their actions on the advisories contained in the situation reports (bulletin) from the provincial EMO. However, what series of bulletins portend for their activities was mostly unclear since there were divergent expectations from a document that was being exclusively sourced. There is implicit recognition by other stakeholders of the primacy of EMO bulletin as the ultimate playbook that has supposedly captured all that there is to the event. The more important the responsibilities of these partner actors in this event management are, the more sensitive the bulletin becomes, and more performative the intended communication contents thereof. Considering it as guiding documents indicates the taken for granted acceptance of the credibility, legitimacy, and completeness of the bulletin. Therefore, EMO bulletins (and other performative documents) appear to be a powerful tool for shaping response and awareness during and after an event.
• **Affirmation of Superiority of Technical Knowledge.**

In what could be seen as aligning with the political agenda of social integration of Indigenous communities, many government publications affirm that both scientific and Indigenous knowledge as essential for achieving priority areas of activity especially ones that borders on improving the general understanding of all possible disaster risks among all parties particular to each locality (i.e., risk-based EM approach). However, a scrutiny of the discursive practice found in these publications reveal a pattern of subtle affirmation of scientific knowledge over other perspectives of social and environmental phenomena, especially the Indigenous knowledge. A few illustrations are below provided:

First, a closer look at the careful wording of the “priority 2” of the EM Strategy (*Govt Doc9*) i.e., “Improve understanding of disaster risks in all sectors of society” shows a pattern in which the government considers scientific knowledge as the mainstream but “Indigenous and local knowledge” as the “other” that needs to be accommodated for the sake of the “them” in the “Us against Others” equation. The use of the phrases and statements such as “*robust scientific risk assessment…are crucial*” and “*…the collection of scientific data in relation to Indigenous communities that takes into account traditional Indigenous and local knowledge…*” (p 14) indicate that even for Indigenous communities, their age-old knowledge about disaster risk identification would need to be integrated (i.e., accommodated) into mainstream science. We see a further example of this phenomenon in another *Priority Objective* whereby it was stated that:

> “FPT governments, within their areas of responsibilities, empower communities and Indigenous Peoples with the ability to integrate traditional knowledge, awareness and education programs into broader EM and DRR” (p. 14)

The desire to “empower…Indigenous Peoples” and integrate their “traditional knowledge” into the larger (and it goes without saying, western and scientific) emergency management and risk reduction strategies demonstrates what the combination of different levels of government think of Indigenous ways of life. Second, in the analysis of how tropical cyclones are generally formed (*Govt Doc10*), there was no mention of any alternative accounts of such creation. Even if such alternative knowledge was discounted, a mention of it would have given a level of importance to
the views of those who hold such alternative views. By sticking solely to scientific view (even though we understand there are different forms of those), the Government of Canada has delegitimized such alternative accounts by excluding them from its most prominent platform, the national website. The Indigenous Peoples in Canada have always maintained their own historical accounts of what a hurricane is and how it originates (ORS Doc1). This subtle assertion of superiority of technical risk assessment is a reflection (and possibly a demonstration) of the larger neocolonial and paternalistic application of external knowledge to Indigenous social problems. Third, we also can see an acknowledgement of the supremacy of technical perspectives in how the government defines disaster risks:

“Risk: The combination of the likelihood and the consequence of a specified hazard being realized; refers to the vulnerability, proximity or exposure to hazards, which affects the likelihood of adverse impact” (Govt Doc6; 23).

Technical view of risks asserts that risks resulting from a hazard are bounded within the twin rationality factors of probability and magnitude of the impacts. The underlying rationale behind this perspective is that risks must be measurable, and evidence based. It doesn’t deal with whimsical fears or subjective evaluation of what people might perceive to be their vulnerability to these hazards. Although, there is the argument that risk can also be socially constructed, arising out of the negotiated understanding, it would appear that the technical perception of risks aligns with the Canadian government’s risk governmentality approach. In reality, we know that indeed risk exists but is also largely determined by people’s perception of it. If people think they are vulnerable to nuclear leaks from a nearby plant, their actions and risk-informed behaviors would respond accordingly. Although there is evidence to show that nuclear accidents are few and far in between, such low probability does not erase the heightened awareness of the magnitude and consequences of such occurrence. Thus, government’s attachment to technical rationality of risk would most likely not take into consideration the socially constructed risks that inform the behaviors and expectations of people in emergency situations. Similarly, this technical definition of risk is too rigid to consider the increasing complexities and dynamics of emerging risks that are produced from the combination of changing climates and increasing urbanization which can present people, property, and their environment with significantly unprecedented hazards. The
origin of such technical perspective is rooted in the privileged constitution of the “scientific experts” that select the issues and debates that make it to the decision table and policy outlook.

- **Standardization and Uniformity**
  Another related and equally common discursive practice within government is the use of “standardization”. Standards connote objectivity, incontrovertibility, exclusivity, and uniformity of knowledge. Therefore, one way of setting the ground rules for what we may all live by (and may not go beyond) is through the power of standardization. The drive for uniformity of strategies, tools and evaluation across various arms and organs (as seen in AHRA, for instance) is also a discursive practice aimed at ensuring conformance with mainstream EM norms. Central to the notion of a coordinated and standardized EM mantra is the need for uniformity of employed tools, methods, and guidelines. Governments promote uniformity to eliminate and pre-empt any resistance or divergence to their preferred strategy. By extolling the virtues and imperatives for uniformity, the narrative is framed that any deviation is inimical to achieving the whole-of-government/society utopic efficiency. For instance, the All-Hazard Risk Assessment (*Govt Doc4*) is a document that exemplify the quest for uniformity and standards in the sense that it provides discourses in how FG agencies set the context, recognize, analyze, evaluate, and treat various risks in their respective mandates:

  “The purpose of the federal AHRA process is to assess and view risks in a standardized fashion using a common set of principles and steps”. (All Hazards Risk Assessment, p. 4)”

- **“Complex Problem” Framing and Technicalization in Public Communication.**
  Framing the hurricane topic as complex problem, requiring advanced expertise, and having a barrier beyond common knowledge is a frequent narrative employed by the government to preserve its interpretative exclusivity of socioenvironmental topics. In this context, I use *complexity* to describe the plurality and the unpredictability of the many current (and possibly emergent) factors that shape and promote a profound understanding and interpretation of the topic. For instance, by habitually describing the concepts around climate change and how it relates to the hazardscape as “complex and dynamic” (*Govt Doc6; 18*) and *evolving* (*Govt. Doc4; 61*), the
impression it creates is one of “exclusive knowledge” by the government through cooperation with the experts, lessons from which should neither be contradicted nor challenged.

Another common practice in government’s public communication is an extensive use of jargon to convey messages about risks to the public and the media. Several hurricane factsheets (the concept behind which is to communicate facts to the public in lay terms) contain numerous technical terms that non-experts may find incomprehensible. For instance, phrases such as "frontal system", symmetrical rain bands", etc. and mathematical terms (e.g., 25-50 millilitres of surge) are not easily relatable to the lay public. It is not the case that there are no common (but equally suitable) terms to describe the processes, but while we cannot envisage the motivations behind the use of these terms, we can however with some level of certainty predict the outcomes of this phenomenon: first, the use of technical terms would impress it upon the readers that the writers (in this case, the government) are highly knowledgeable about this topic, and as such should be respected for their opinions and not questioned. Second, such highly technical terms would create a language barrier between the writers and the readers, mostly the public.

- **Legitimization Through Rhetorical Transitivity.**
  Exploiting transitivity in representations of risk issues is a common practice often used as argument validation strategies in government communication and it is formidable means to legitimize their position on issues. Transitivity in this sense refers to the relationship between the participants and the roles they play in the process being reported (Richardson, 2007). By removing the actors from a supposedly debated issues of knowledge, (thereby rendering the statements a merely passive rhetoric), the statements are represented as a process describing the government disputing some (ostensibly faulty) opinions while providing a superior argument(s). This way, while not directly engaging anyone in a debate, the government’s position takes on a semblance of superior logic and truth. In a typical example (*Govt Doc12*), the picture painted that while storm surges are caused by high winds and low atmospheric pressure, the high wind indeed is primarily responsible for the surge rather than the widely held belief that it is the low atmospheric pressure. While the argument started with the statement like:
"It (emphasis mine) is sometimes assumed that this effect is the main factor in storm surges associated with hurricanes" (Section on Storm Surge).

The pronoun “it” was used to passively represent the party whose position needs to be supplanted by a more informed argument – the government’s. The statement that followed:

"In fact, it is the wind ahead of the hurricane that is key in causing large surges at the coastline; 75% (Percent) or more of the surge is the result of the wind, not the low pressure".

…prepared the ground for the introduction of what seemingly should be regarded as more “scientific” and logical. The phrase “in fact” frames the subsequent statement as being the fact (i.e., the truth) of the matter in an “argument” in what was never a debate in the first place – or at least, with no one in particular. A related concern is that this type of rhetorical exploitation can be used as a perfect cover for risk assessment arising from what I referred to as inscrutable exclusivity, which describes a situation in which no alternative point of view exists mostly due to technological, economic, or political barriers.

4.9.2 Power Dynamics Among Discourse Contenders
In this second part, the dynamics of power relations among the different risk discourse parties would be discussed along the three dimensions of risk discourses described in the theoretical framework, i.e., communication, assessment, and trust. As mentioned earlier, these are aspects of risk discourse in which the dynamism of power contentions is significantly demonstrated.

4.9.2.1 Power Dynamics in Hurricane Risk Communications.

i. The Media-Insurance Industry Alliance: Selective Risk Amplification.
As suggested earlier, access to the media is a significant symbol of social power and the same is true for risk communication whereby power differentials manifest evocatively. Well-resourced actors such as the insurance industry have the power to use the media as tools for propagating its messages which ultimately define public risk perceptions. This objective is enhanced by the media’s discursive practice of selectively granting audience to specific sections of risk parties to the exclusion of others. Additionally, the press routinely gives primacy to narratives constructed
by technical risk experts over alternative perspectives. Thus, expert’s non-decisional and ideological influences are reproduced in the discourses found in media communications of risks.

In similar fashion, the media’s discursive practice of selective focus on shades of issues to report at different times and to different audiences reflects a profoundly efficient capacity to propagate deliberate and predetermined risk ideologies. Coincidentally, this capability works just perfectly fine for those with the access and resources to use the media for their own purpose. As expected, the usual actor that most exploits this phenomenon is the risk insurance industry – with the primary aim of constructing elements of risk perceptions in a favorable and profit-oriented discourse. Selective amplification of different aspects of risks is also reflected in the ideological power that characterizes discursive practices in the risk insurance industry. As part of measures to discursively create risk, the industry can choose to project salient topics about risks in its communications. For instance, by choosing to create more awareness about economic costs (rather than human costs) as well as emphasizing the severity of some elements of disasters above others, the industry can initiate and promote the desired shades of risk perceptions among the public. This is a typical example where the ideological power of the industry fits well into that of the media, and it typically results into consolidated risk market framework in which fear – or at least some heightened risk awareness – is the primary driver of risk amplification.

Similarly, the framing, predicational, and metonymizing discursive strategies often employed in the media’s reference of human and place subjects fits well into the risk discourse-manufacturing business of risk insurers. For instance, framing the emergent environmental risks as products of complex and interacting factors by risk insurers is synonymous and (frequently matched) with sensational representation of disaster risks in news headlines. Sensationalism fosters an assumed sense of urgency to a matter, and when the most prominent voices in the media are those who stand to gain from the behavioral response to such urgency, it becomes easy to see the mutual benefits that collaborating actors stand to gain. In this way, the ideological power of the media works towards enhancing the domination tactics of risk insurers (e.g., inscrutable, and self-serving risk rationalizations). At the same time, the media’s agency to selectively tells the different sides to a story gives air to the alternative narratives that are embedded in resistant communication,
especially from non-governmental stakeholders. Although in the digital media space, the deregulation of news gatekeeping has certainly reduced the monopoly of constructing risk perceptions according to established media’s proclivities. However, rather than erase this problem, decentralization has only proliferated it because the cacophony of voices shaping risk perceptions are essentially still jostling for attention. Therefore, the media still retains its place as an instrument of selective propagator of influence and perception.

**ii. Resistance: Communication Power for Social Justice.**

NGOs and other humanitarian agencies routinely exploit their widespread ideological goodwill to create critical social awareness of socioecological inequalities and environmental injustices that minority social groups experience. As such, they tend to amplify messages of self-criticality and environmental reflexivity among major stakeholders. This often translates to the yearning of NGOs to give more prominence to local knowledge in disaster risk mitigation thus, motivates them to amplify aspects of risk messages that seeks to dignify Indigenous or alternative expertise. This bias is even more pronounced when such recognition is seen as a viable tool for achieving social and environmental justice for the marginalized. As would be expected, these non-governmental bodies do not wield significant nondecision making and ideological powers therefore, the power in their communication is relatively less effectual. However, in recent times, because non-governmental players are heavily leveraging the trendy practice of inclusion and diversity to press home the need for diversification of knowledge, the (resistance) power in their communicative capacities has found a new grace. In other words, NGOs now use their risk communication power to justify the need for rectifying age long socioecological and environmental injustices. This phenomenon has given some prominence to an otherwise alternative and marginalized narratives.
Figure 4.4 Pattern of power amplification in risk communications among major actors

NOTE: AGS: Power of agency & structure; ID: Ideological power; ND: NonDecision-making Power; Res: (power of) Resistance; ToD: Tactics of Domination. (+) = Amplification; (-) = Attenuation
Figure 4.5 Pattern of power amplification in risk assessment and evaluation

**NOTE:** AGS: Power of agency & structure; ID: Ideological power; ND: NonDecision-making Power; Res: (power of) Resistance; ToD: Tactics of Domination. (+) = Amplification; (-) = Attenuation
Media, Insurance Industry, and the Government: Responsibilizing Risk Mitigation
There is a common acceptance amongst the trio of media, government, and risk insurers that responsibilities for mitigating risks are individualistic i.e., risk responsibilization. With individuals being framed as having the agency and capacity to act in the interest of self-protection, this neoliberal discourse reflects much in their communicative approaches. The abilities to wield the powers of ideology and the agency to shape risk discourses within a neoliberal economic structure, these three groups of actors significantly have the clout and resources to entrench this discourse into public consciousness and actions.

The insurance industry’s power of agency demonstrates itself most significantly in the industry’s self-regulating capacity to include or exclude consumers from risk protection. We see this play out in the discourses of urbanization, proximity and encroachment that seeks to define differential liabilities of property and business owners. Similarly, framing risk mitigation as individual responsibilities empowers insurers to promote a business model in which consumers are punished or rewarded for their actions and/or risk qualities. This agency is enhanced by domination tactics of the Government of Canada that has adopted a neoliberal framework for the economy as well as introduced mitigation as core component of EM strategies. Therefore, risk clients are seen as having a choice not just in participating in the risk protection policies but also on what insurers to pitch their tents with. As usual, the media’s influence of ideology and agency is complicit in this as it is the primary instrument of preferentially giving credence to those who propagate justify such domination tactics. Consequently, the mitigation discourse thus becomes the legitimized, seemingly unquestionable, and cost-effective approach to emergency management in Canada. Little wonder that the message of individual mitigation has become really amplified in the last few years among key actors in the Canadian EM system. The saliency of the mitigation aspect could be responsible for its acclamation beyond other components of the EM strategy (i.e., preparedness, response, recovery). It could also be attributed to why there is so much literature and regulations about mitigation than (say) recovery.

The above position is related to the FPT’s amplification of societal resilience message and as espoused in both the EM Framework and the EM Strategy. The concept of resilience and its
political version, “building back better” while adapted from the subscribed SENDAI framework, both envision a resilient Canada in which mitigation and preparedness (rather than response and recovery) are the core messages. The whole idea of building back better describes measures that involve a repositioning of properties and businesses being able to withstand subsequent disaster episodes through risk mitigation measures. In addition to adhering to building and other regulatory codes, and taking personal responsibilities for risk mitigation, insurance coverage is also considered another potent resilience measure. Since it seems to work in their interests, insurers have no qualms embracing such mitigation-based disaster management framework. Therefore, the interests of both government and insurers happen to align in pushing the mitigation agenda through various discourses. The pitfall in this arrangement, however, is that such prescriptive principles fail to accommodate the complexities in the demographics it is prescribing for. For instance, it fails to address how already impoverished communities at the short end of collateral damage from urban encroachment or the global climate crisis can afford increasingly exorbitant premiums. Similarly, some of these modern-day mitigation prescriptions are at odds with age long practices among Indigenous Peoples and as such, what insurance premium do you place on such mitigative (in)actions? Thus, discourses that push the mitigation agenda implicitly suppress any attempt to unpack the complex realities of enacting personal mitigating capacities for different sections of the populations.

Another instance of ideological alignment between FPT and insurer’s communicative foci lies in the adaptation of the fear symbolism inherent in the global climate crisis. While the insurance industry chooses to invoke the rationalism of continuous danger, the governments go the route of entrenching the consciousness of worsening hazard frequency and severity. In both narratives, the underlining message is that things are about to get worse, and that self-protection is the way of the future. There is, however, a counter narrative that often goes unnoticed. Not all coastal inhabitants agree that there is only gloom and doom aspects to the climate change crisis. For instance, the Nova Scotia Environment Minister Ian Rankin commented on the one-sided (emphasis mine) approach being given to the climate change debate at the 2017 8th National Roundtable of Canada’s Platform for DRR (Govt. Doc16) held in Halifax, NS. Rankin, who later became the leader and
Premier-designate of the NS Liberal party in Feb. 2021 noted that there are positives to the warming climate”

“For example, a warmer climate may mean more growing days for agriculture and a longer tourism season. Adapting to climate change means adapting to every facet of it” {pg. 18}

For those who see some positives to the global warming crisis regardless of the increased frequency of associated hazards, hurricane risk issues are attenuated in favor of the hopes the prospects hold for them. However, because they do not wield significant nondecisional powers in hurricane decision making, their counter perspectives to the more prominent problematized climate change discourse are attenuated.

**iv. Risk Inclusivity: The Resistance Discourse.**
The government has been able to combine both agency power and domination tactics through the legislated designation of all and any non-states actors in EM partnership through various federal, provincial, and territorial Acts, policies, and bylaws. This agency is typically represented in the Partnerships and Coherency of Action principles of the EM Strategy. Unfortunately, this is one area that resistance strategies do not have much bite in countering such agency, partly because laws are enforceable on all its subjects. Nonetheless, a significant contributor to the resistant discourse is exemplified in the counterarguments to the notion that the recognition of Indigenous and other cultural risk perspectives is a practical demonstration of (the multiculturalism mantra) of “equality, diversity, & inclusion” (EDI), meant to rectify the historical socioecological marginalization of minority communities in Canada. The counter discourse (mainly championed by Indigenous institutions) posits that most EDI efforts in disaster risk issues are mere political gimmicks (i.e., whitewashing instead of genuine reforms), mostly lacking in grits and are only convenient sociopolitical measures that governments and corporations observe to boost their profiles, especially when it suits their purpose. The subsisting decades-long boiling water advisory for many Indigenous populations in northern parts of the nation is a case in point. While governments and corporations attempt to project a critical motive in recognizing alternative risk perspectives, hence amplify messages that seeks to represent such positions, the resistant
discourses prove that such efforts are only half-attempted measures to present a seemingly altruistic practice.

4.9.2.2 Power Dynamics in Hurricane Risk Assessment and Evaluation.

i. Technical Expertise: Agentializing Assessment Exclusivity.
From an ideological power perspective, the quite significant influence of the media in shaping public risk perception is heavily premised on the subtle assertion of the supremacy of science and technical expertise above other knowledge perspectives. The preferential attention given to technical and technocratic views on disaster risk evaluation legitimizes the propagation of such views above others and thus serves as framework of understanding for all to abide by. Similarly, the media’s role as the interpreter and broker of seemingly difficult topics for the lay audience is a veritable instrument for those who could control the media to further their own discourses through favorable interpretation. This reflects a confluence of non-decisional, agency and ideological powers held by the media and actors operating by technical science (e.g., governments and insurers).

There is also a consensus among the media, government, insurers and even some sections of non-state actors that scientific expertise and tools are the only qualified instrument of knowledge creation and interpretation. This accord is responsible for the legitimization of different structures that permit agencies to act in certain capacities for different actors. For instance, insurers are adapting artificial intelligence to determine eligibility for client coverage based on risk profiles (e.g., postal codes) whereas a consumer has no recourse to challenging possible exclusion that might ensue through such opaque algorithmic decision-making process. Likewise, many government legislations are based on expert’s consultations that are devoid of meaningful contribution of alternative assessment strategies. These assumed positions amplify discourses that empower actors to act in certain unquestioned ways while stifling dissenting opinions or branding them as rabblerousing.
ii. Standards and Documentation: Tools of Exclusivity.
A significant nondecision making power that significantly gives an edge to the government’s risk evaluation can be found in the performative functions of playbooks created and implemented by the state, which simultaneously form the framework for many other actors. These playbooks predetermine the legitimacy of risk assessments and evaluation perspectives from various organs of government as well as the players whose inputs are codified into these playbooks. Therefore, risk assessment discourses propagated in these conduct and context shaping documentations are amplified beyond those from other actors. This type of influence is usually sustained by tactics of domination that moderate acceptable conducts in assessing and evaluating risks i.e., standardization. Standards designate what is generally (or so it seems) a minimum level of acceptable view of assessment and as such, is a powerfully useful tool in the hands of those who desire to set and control agenda. In this case, the government can limit the context in which disaster risks are considered and evaluated. Through this, some perspectives stand pre-eliminated from the contention of discourses since they are considered “not up to standard”. It goes without saying that standards are naturally codified in playbooks of the actors espousing them.

On the other hand, while the perspectives publicized through the media is a constellation of diverse sources, and thus can be questioned, resisted, or discarded, the insurance industry also codifies its own nondecision making risk assessment power into various professional literature (e.g., brochures, outlook, forecasts), algorithms, contracts, and regulations. Risk assessment and evaluation perspectives preferred in these documents become governing for clients and consumers. For instance, if the insurer’s assessment stipulates that an area is prone to flooding and ocean surge, it doesn’t matter what the client or any other agent believes to be true, risk premium would be based on both present and foreseeable risk exposures. This is an important nondecisional influence to wield in a strategically important sector of the economy. Thus, to a considerable extent, risk assessment perspectives of the risk industry become a major driver of public risk perception and untold knock-on effects because insurance is an essential service for property owners who incidentally constitute a large percentage of the public. Against this collusion, resistant alternatives don’t stand much chance. Thus, dominators develop tactics such as standardization, control, sanctions, etc. to ensure conformity with their established structure.
Another common point of convergence between insurers and the government is in the complicated assessment of contemporary problems. While the insurers push the angle that disaster risks need to be evaluated from a perspective of complex interacting factors, the government similarly pushes the narrative of climate change as an underlining “complex and dynamic” factor in the worsening severity and frequency of disasters and that resilience to the anticipated effects should be approached through a multifactorial DRR strategy. The elements of similarity in their narratives tend to amplify communications and assessments that overcomplicate the risk issues people face while ignoring the discussions about the socioeconomic precursors of vulnerabilities to different hazards.

Resistant narratives however abound in the risk assessment discourse, particularly from non-governmental stakeholders who mostly occupy the receiving end of the effects of power differentials. For instance, while the government’s domination tactic involves setting standards in risk evaluation through technoscientific parameters, Indigenous Nations in Canada continue to hold steadfast in their belief and practice of using biophysical agents as weather predictors. In fact, they do not only spread the awareness through literature but also have begun to codify them into school curricula to them to teach Indigenous school children in different communities and reserves (e.g., ORS Doc. 4; 10). This counternarrative continually resists the notion that cultural perspectives to weather risks prediction are archaic or inaccurate, and that there is no need to accommodate and standardize such practices into modern science. Thus, Indigenous communities and groups have started encouraging the recognition of age long cultural practices of risk recognition and prediction through wide-reaching modern communication channels to upstage the dominant narratives that have presented their risk assessment practices as primitive.
Figure 4.6 Schematics describing how power amplification creates and entrench social trust.

Creating Social Trust Through Power Amplification

NOTE: AGS: Power of agency & structure; ID: Ideological power; ND: NonDecision-making Power; Res: (power of) Resistance; ToD: Tactics of Domination. (+) = Amplification; (-) = Attenuation
4.9.2.3 Technical Risk Expertise as Driver of Social Trust.

In informing their risk understanding and perception, people place their trust in certain players who they see as having legitimacy of understanding of risk issues. Hence, information emanating from such actors are hardly scrutinized critically (i.e., routing through the peripheral cognition (Cacioppo and Petty, 1984)). The level of scrutiny applied to given information has an attendant pattern of amplification and/or attenuation of risk elements. Peripheral cognition utilizes external clues such as source credibility, expert acknowledgement, message symbolism, etc. (Adekola, 2017) to make trust judgements without much criticality. These tendencies produce different amplification for different sets of people at different times or places. Armed with this knowledge, vested interests enact and perpetuate discursive practices that seek to strengthen their trust standing within the target population to shape risk perceptions in their favor. Thus, trust elements are reproduceable and reinforceable by the continual observation of the practices that created them in the first place.

Power differential clearly was reflected in the trust and credibility that accrued to the identity and conducts of certain actors within the risk discourse space by the virtue of their political or economic position, reputation, antecedents, or simply by the sheer control of risk issues they possess. Unlike the powers in communication and assessment of risk issues where power contention is a deliberate projection of vested interest, the power wielded in the dimension of trust and credibility is atypically a (highly volatile) derivative of contentions in both. It is an element that is easily shaped by the dialectical relationship between the discourse contention and the PESTEL\(^6\) realities of the community. Although in this study, we see the some politically relevant factors such as channel effect (Berezan et al., 2016), inclusiveness, transparency, and openness (Adekola, 2019), the issue of expertise seems to be the most significant shaper of trust and credibility among the risk actors in the Canadian disaster domain.

For all the divergence in the focus of their risk communication, there is nonetheless a discursive consensus among risk industry, government, and some sections of the non-governmental

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\(^6\) Political, Economic, Social, Technological, Environmental & Legal (PESTEL)
stakeholders on the importance of techno-scientific knowledge. This widespread legitimization of supremacy of technical expertise in their discursive strategies sways public risk perceptions towards that shaped by technical expertise. Hollis (2014) referred to this phenomenon as the discourse of legitimacy of scientific ontology, one in which science equals rationality. In communication and assessment of risks, risk perspectives of technoscientific experts have been privileged by same troika who forms the prominent players in the field beyond any other alternative or resisting discourses from racial or economic minority groups. In addition, people usually believe that experts possess admirably exceeding knowledge of ideas and explanation for things, more so when the “thing” is a quickly evolving risk that has been framed to be complex and multifaceted.

The media’s communication practice of exalting technical perspectives to risk issues are demonstrated in the discursive practices such as uneven access to media resources, selective coverage, action-actor representation, implicit representation of supremacy of technical knowledge, etc. In the pre-phase and aftermath of disasters, technical expertise is given almost an exclusive legitimacy to explain the risk issues to the public, unlike the backbench attention or even total neglect of alternative views. Similarly, given a new or evolving quickly risk issue, the media’s attention is focused on consulting expert’s opinion, and such is framed as having (at least) an inkling of what is happening or what is to come. Hardly are alternative perspectives consulted for explaining emergent disaster phenomena. This gives technoscientific risk perspectives an entrenched legitimacy that had over time been transmitted into acceptable social norms. A similar scenario plays out in the insurance industry, whereby assessments of risk hazards according to technical knowledge is the standard for profiling risk vulnerabilities of consumers. Insurers engages in discursive and social practices that reflect and presupposes the legitimacy of technical views through assertion of technical superiority in their communication and assessments, through framing risk issues as evolving and complex (hence demanding profound technical expertise), as well as in the multiplicity of risk factors that can only be understood by an insight generated through a constellation of different shades of expertise. Willy-nilly, the risk society is forced to reckon with the importance of scientific views in informing the risk issues as well as their places in them.
Through different domination tactics and nondecisional methods, governmental agents also privilege technical assessments of risk issues while playing lip service to the acknowledgment of the importance of cultural perspectives to environmental risks. For instance, when alternative risk perspectives are observed, the aim is to probably accommodate and standardize them rather than applying them *sicut est*. In several publications that serve to inform public understanding and shape conducts, superiority of technical knowledge is presupposed and then implemented in various standardization measures and guidelines. The entrenched acknowledgment of technical views in their daily lives as well as the proven significance of technical expertise over the years have impacted the psychic of Canadians to accept and trust any information of risk hazards that contains source, channel, and symbolic elements of technoscientific backing as genuine, mainstream, and even infallible. Since expertise has become synonymous with credibility and rationality in the mind of an average Canadian, it then becomes a tool to be used in the hands of powerful players to crystallize trusts and credibility, thus lubricating a self-sustaining wheel. We must also bear in mind the significance of social media in enhancing the critical awareness that has helped given rise to a hitherto silenced alternative expertise or view of risk elements (more on this in the next chapter). Although, there is the associated risk of proliferated conspiracy claims or baseless theories, the good news is that the monopolized gatekeeping roles previously solely occupied by media organizations has been largely redistributed and the growth of suppressed voices has encouraged criticality in risk and emergency thinking in not just cultural risk perspectives but even within the scientific domain itself. Nowadays, it is common to see independent scientists on YouTube or Facebook giving accounts of their own theories and explanations of risk events.

The most significant part of the trust dimension is that the major actors stake their acquired power of trust on the borrowed credibility of experts. However, differences abound in what risk factors these actors intend to use this expertise-informed credibility to achieve and as such the trust differential produces outcomes in a few often-unpredictable ways. For instance, the government envisions that a continued trust in its assessment and control of risk issues among the populace would lead to social goodwill and civic cooperation. While the goal might not be to produce a risk lethargic public, the objective certainly is to at least encourage the public to amplify salient risk issues in self-protective ways and to ensure further compliance with EM Principles. On their part,
insurers use credibility to promote the acceptance of neoliberal and capitalist economic framework underpinning their business. With strategies fashioned out to promote goals of profit-making and business expansion, a high level of trust in the insurance business reduces friction and/or holding out among the members of the insurable public. A smooth business relationship with risk clients would ultimately encourage the amplification of risk reduction measures (i.e., mitigation) and equally attenuate campaigns that seek to enlarge the footprints of state welfare in risk management.

Finally, the media runs its business on the jet fuel of ideology. Since credibility is a core ingredient in propagating ideology, building trust among a set of loyal readers is typically important for the business of the press and the media in general. That the relationship between the media and the public is dialectical is a testament that credibility is important in the business of public communication i.e., the media shape its public and the public shape the media. We have seen instances whereby a media company oscillates between left, center, or right ideologies in response to swinging time and demographics. Since ideologies can largely inform what aspects of risk issues people hold to shape their own truths in risk perceptions, the media continues to seek the power of trust from among its readers.

4.10 Summary and Conclusion
In this chapter, we have been introduced to the various social actors that play significant parts in shaping the power dynamics within the hurricane disaster risk management in Canada as well as their differing roles within the disaster landscape. Similarly, we exposed the discursive and social practices through which different classes of these actors create and sustain risk discourses that produce unequal disaster risk outcomes for different sections and groups within the country. Finally, the different patterns of power dynamics in the communication, assessment, and trust dimensions (of risk management) were modelled to demonstrate the various pathways through which these powers negotiate each other to inform the overall dynamics of risk management power.
The study recognized four classes of major social actors (i.e., government, risk insurers, media, and non-governmental bodies) as having significant roles to play in the hurricane risk management in Canada. The central role that the media plays in creating power dynamics however deserves a special mention. The Canadian media has an enormous influence in legitimizing and establishing a risk discourse. Access to the media happens to be the main advantage that any actor must acquire to create a dominant narrative around any given disaster risk. Although technical expertise is found to be integral for establishing the legitimacy of a risk discourse, the media is still needed to push the narrative and ultimately normalize such risk discourse. The basis of such media’s centrality is its ability to conveniently frame and select discourses to a wider audience (than any other actor) in pervasive ways. Carefully selected, recollected, and framed media discourses eventually become dominant risk ideologies that we come to accept as unquestionable. It is also noteworthy to point out that the media is an important tool for shifting focus towards non-tangible but extremely important aspects of risk impacts (family stability, social support, trauma recovery in the aftermath, etc.) hence, the media is an important partner in any effort to create critical awareness about risk equitability among actors who produce risk discourses.

On the other hand, judging by how the risk insurance industry set the pace for the public understanding of disaster risks and vulnerabilities, its ability to manufacture and reify risks into commodities especially in a neoliberal economy is also a major catalyst for the power dynamics around disaster risks. Insurance companies have the discretion to decide who qualifies for risk protection, what consumer profile fit into and how they’re billed, hence, such practice of self-regulation in the insurance industry negatively impacts the capacity of communities to position themselves for disaster resilience. The significance of such practice for the attainment of risk resilience is a bright opportunity for future studies.

One suggestion that is demonstrated in the holistic view of the different dimensions of power that the FPT governments wield is that for a country that practices neoliberal risk management, the government wields a disproportionate influence and responsibility in the risk management scheme of things. Like many other countries with capitalist democracies, Canada has adopted the risk resilience mantra. However, implicit within this term is the adoption of risk mitigation and
responsibilization risk discourse. Thus, by incorporating resilience into the national risk behavior, FPT governments create some power dynamics in which the responsibility to act is foisted on the people but the power to act is taken away from them. For example, while the people are expected to observe risk resilience and mitigation measures, the decision-making power to determine their risk protection is vested in the risk industry and the details of how to protect themselves is prescribed by the government. As Dominey-Howes (2021) puts it:

“At the heart of this problem is lack of power and access to resources to increase resilience. An ideology that calls on each of us to be personally responsible for our own resilience and disaster preparedness — when power, wealth and income are distributed so unequally — has obvious shortcomings.” (5th paragraph)

Essentially, individual risk clients have no influence on their own resilience characterization. Furthermore, while the municipal and county administrators are designated as the first responders to disasters, they are the most ill-equipped to mobilize resources to mitigate and respond to unfolding disasters. This study thus calls for more operational and strategic powers for local risk administrators.

This study suggests that access to media, technical expertise, and social trust are the most important elements in creating power dynamics among these social actors and the public. Risk discourses are much more acceptable to the public if there is trust between them and the power actor. However, trust is built on the perceived credibility and superiority of knowledge that the agent has demonstrated over time. Beyond this however, it is evident that social actors who are most able to comparatively control the media, agentialize and standardize risk assessment practices set the pace for the power dynamics that ultimately shape the risk landscape. This type of power dynamics is especially based on the non-decisional and ideological powers as well as the tactics of domination to influence public understanding of risks and people’s vulnerability to them. Since public risks are constantly evolving (partly consequences of anthropogenic interactions with natural hazards), people’s ability to understand these risks and their places in them become more vulnerable to those
who can take control of these instruments of power—especially, by framing the risks as complex problems. However, marginalized groups are beginning to find their voices to push back on dominant risk discourses. Two factors are primarily responsible for these changing dynamics; first the decentralization of communication channels, mostly aided by the introduction of social media networks. These networking sites continually erode the gatekeeping roles of the traditional media as well as proliferate the rise of independent expertise, devoid of institutional control or censorship. Second, the growing social awakening that culminated in the widespread adoption of equity, diversity, and inclusion (EDI) in social, economic, and political environments has slowly but certainly reached the domain of disaster risk management. Like other sectors, there is now a critical call for recognition of multiple perspectives to social issues. Thus, risk management models are increasingly incorporating erstwhile non-mainstream ideas into risk discourses.

4.11 Suggestions For Future Studies
There is only so much more power typology that we can fit into a single thesis. There are different dimensions of social power that have been developed for public risk management or similar subjects. In this study, I have chosen to align with one of many power typologies. This is an avenue for future studies to explore the implications of risk discourses under the observation of one or more of many other power typologies. While we expect similar or totally different outcomes in such endeavors, one thing is certain; that the social amplification pattern of disaster risks in this study forms an important part of an ongoing conversation and could as well be an important bedrock for a closer scrutiny of the intricacies of the shifting grounds of the social power amplification in disaster risks. Furthermore, it would be misleading to conclude that the power of resistance is the only influence that non-state and minority actors wield in this contention landscape. The constellation of different actors grouped together under this class is as complex as the evolving influences that the different actors within the class wield. Examining the complicated qualities of these quite diverse groups would be a veritable avenue for future research.
Chapter 5

Examining Social Impacts of Risk Power Amplification

5.1 Introduction
This thesis draws its framework from the Power-Amplified Risk Discourse (PARD) framework, a revision of the Social Amplification of Risk Framework (Kasperson et al., 1988; Pidgeon et al., 2003b). SARF suggests that risk amplification is a two-staged mechanism comprised of informational and response mechanisms. The previous study thus investigated the informational mechanism of risk amplification through the examination of roles of discourses in creating power amplification. It did so by examining the various risk discourses at play in the disaster and emergency management system of Canada and the major actors who exercise and embody different dimensions of power were identified and described. Through the analyses of the various discursive and social practices employed by major actors involved in the disaster risk management, the study was able to identify and explain the different power dynamics that are responsible for precipitating risk inequalities and thereby creating differential disaster vulnerabilities. SARF also suggests that during the response mechanism, risk amplification produces varying levels of risk behaviors and responses, both which lead to further amplification, and ultimately, some rippling effects in the society. These rippling effects escalate to produce real social impacts through space and time. Thus, the objectives of this second study are to:

i.) advance our knowledge of the response mechanism stage by identifying social impacts resulting from amplification of risk discourses and,
ii.) make vivid how these impacts are the products of the power dynamics in the Canadian disaster landscape identified in Chapter 4.

The focus on the social impacts of risk amplification is what sets this study apart from previous works that have examined risk amplification in issues of public concern through the SARF model. This study exploits the utility of social media as a popular repository of social conversations about sundry issues including risk discourses (Quan-Haase and Sloan, 2022). In the next section, the reader shall be introduced to the concept of social impacts, particularly in the context of disaster risk amplification.
5.2 Social Impacts of Risk Amplification
Both intensification and attenuation have consequences in the order of the ripple effects that could result through secondary risk responses. In this thesis, my focus is on studying the social media responses to disaster events and through that, evaluate the social impacts that emanate from the amplified or attenuated risks. While some of the various dimensions of social impacts that could emanate from rippled actions have been listed the original framework, I am more interested in identifying the amplified/attenuated impacts discernible from the communication exchanges on social media platforms (e.g., Facebook).

In this study, social impacts are conceptualized as the consequences of the ripple effects produced by the secondary behavioral responses to amplified risks discourses. Social impacts manifest as the social, economic, and political consequences of the power dynamics characterizing the amplification of risk discourses. The sole aim of this study is to extend the significance of the SARF model into explaining real world impacts of social risk amplification through evaluating the social impacts of the power dynamics inherent in the disaster risk management in Canada. Most importantly, this study investigates the social responses to the power amplification within conducts and (in)actions of major risk actors as well as the knock-on effects (ripples) thereof. In line with this objective, the following research question is formulated:

**RQ3**: What dimensions of social impacts can be associated with the power differentials behind the amplification of risk discourses?

Social conversations around public risks can permit unusual insights into how risk discourse and responses shape each other, thus helping us understand how social impacts to risk amplification develop. Likewise, the topics and sentiments of social debates around risks can reveal the consequences of the power amplifications among major actors and their implication for the public. Finally, social conversations also permit us to connect how micro variables (specific impacts) interact with each other (and other seemingly unconnected) issues to develop larger social impacts beyond the initial domain of the risk itself. For instance, the Fukushima nuclear plant meltdown resulting from the 2011 Tōhoku tsunami and earthquake renewed the public controversy over the safety of nuclear plants among American environmental and anti-nuclear activists. Yeo et al. (2014) reported that the post-Fukushima incident evoked varying levels of nuclear risks
perceptions among Americans when compared to the period before the meltdown due to extensive media coverage and social media engagements. As disasters are becoming more transnational, so are social conversations of risks becoming borderless, thus permitting social inquiries to scrutinize how responses to disasters varying impacts on both local and distant scales.

The dimensions of social impacts could manifest through virtual, physical, technological, or administrative means. For instance, the amplification of disaster risk discourse can impose environmental, economic, and political costs, cause technological apathy, whip up anti-science rhetoric, or result in tighter regulatory controls. Categories of impacts cut across short-, mid-, and long-term ranges, many, whose effects cannot be accurately predicted due to the dynamism of human activities, political and economic conditions. Finally, Kasperson (2017) identified some social impacts of amplified risk signals to include:

- losses in local business sales, lower residential property values, and lower levels of economic activity
- political and social pressure (e.g., political demands, changes in the political climate and culture)
- changes in the nature of the risk (e.g., feedback mechanisms that heighten or lower the risk)
- changes in training, education, or required qualifications for operations and emergency response personnel
- social disorder (e.g., protests, riots, sabotage, terrorism)
- changes in risk monitoring and regulation
- higher liability and insurance costs
- repercussions on other technologies (e.g., lower levels of public acceptance) and on social institutions (e.g., erosion of public trust).

5.3 Literature Review

5.3.1 Using Social Media for Evaluating the Social Impacts of Risk Amplification
Since the goal of this study is to offer insights into the association between the discourses of risk parties and the ensuing social impacts that are consequential for risk vulnerabilities, platforms that
permit the documentation of social interactions among various shades of interests are certainly useful for examining the social impacts of risk amplifications. In recent past, newspapers and other forms of printed documents served this purpose, but the temporal and cost advantages of social media introduced a new set of advantages suitable for this mission. Although other research methods (such as survey, interviews, etc.) could be useful in this regard, social media strategically offers a documented and ready-made trace of social engagements (F. Liu and Xu, 2018; Simon et al., 2015) that embody these social impacts. Liu and Xu (2018) used Facebook Pages to demonstrate “how the social consequences and social roles emerge out of the actions of the public and the disaster management professionals, and how the social consequences and social roles further shape the future actions of both types of stakeholders in disasters.” (p. 707). Likewise, Ripberger’s et al. (2014) extensive study of the connection between public social media attention and disaster advisories concludes that “social media data can be used to advance our understanding of the relationship between risk communication, attention, and public reactions to severe weather” (p. 520). Thus, social media presents a significant social laboratory for investigating the risk-informed behaviors and high-order social impacts of risk discourse amplification and other social phenomena associated with risk discourses. Accordingly, social media was adopted for assessing the response mechanism stage of social risk amplification in keeping in line with the (natural setting) dictates of case study design.

Bruns and Burgess (2015; 2011) highlight the paths through which social interests in topical issues can transform from mere interactive exchanges on social networks into a social movement for physical change. On numerous issues, (e.g., #BlackLivesMatter, #LondonRiots, #Arabsprings, etc.), we have seen how Twitter hashtags have raised social awareness and transformed such into “ad hoc” and/or “calculated” publics (Bruns and Burgess, 2015), which ultimately has in some cases produced real-world social actions (e.g., protests, boycotts, etc.), decolonization, de-stigmatization, antidiscrimination laws, systemic changes. In the domain of disasters, social media have proven invaluable to calling attention to the plights of affected populations (Anderson et al., 2016; Maron, 2013) as well as shedding lights on the roles of important actors (Ripberger et al., 2014) responsible for different aspects of disaster risk management such as mitigation, evacuation, communication or response and recovery.
5.3.2 The Utility of Social Media in Risk Discourse
Social media is a digital space mostly useful for decentralized and interpersonal communication among the public as well as fertile grounds for sowing and nurturing public discourse on critical issues, including disasters and other public emergencies. Beyond being used for interpersonal communication among the public, emergency managers routinely use social media as an effective tool in communicating risks and disaster advisories before and during crisis (Sutton et al., 2012). Mainstream media also use social media as backchannel of communicating news to the public (Harrington et al., 2013; Sutton et al., 2008). Various scholarly works have shown that social media discourse can stimulate a community of users with similar interests and ideas. Such communities of discourse are typically built around topical issues (often represented by hashtags) and they have been found to be “extremely effective and significant” in responding to events or garnering attention (Bruns and Burgess, 2011). These capabilities simultaneously permit social media to act as viable extension (if not alternative) to traditional media’s role for amplifying risk discourses among various power actors, hence, it is a veritable source of data for gleaning insights into ripple effects and social impacts of such amplifications.

5.3.3 Capturing Social Impacts on Facebook
Social media make massive quantities of user-generated data that not only reflect their online self-expression but also their views of social happenings (Quan-Haase and Sloan, 2022). In the early stages of social media research, there were controversies on whether the thoughts and views expressed on social media validly expose people’s positions on real world issues or if the digital traces so created can be equated with the proceeds of established elicitation methods (such as interviews, observations, surveys, etc.) (boyd and Crawford, 2012; C. M. Parker et al., 2011). However, this controversy is gradually being put to rest as researchers are coming to a consensus that since social media expressions do not exists in isolation of people’s daily lives, the ideas and thoughts of an ever-increasing always-on world cannot be dismissed. Correspondingly, Sloan and Quan-Haase (2017) suggests that “interactions and engagement on social media are often directly linked, or even result from, events taking place outside of it” (p. 3). However, social media researchers agree that our perspective of digital traces must diverge from how we traditionally view social scientific data. Social media data, Zheng and Yu (2016) suggests, bear marked difference from other kinds of data mainly due to the characteristics of the technologies that berth
them, as well as the opportunities and limitations of technological affordance of different sites. Affordance (Bucher and Helmond, 2018) include mode of content generation (posting, sharing, importing), content types (texts, hyperlinks, media, etc.), rules of engagement amongst users (followership, friend list), networked relationship pattern (mutual friendship, groups/pages, subreddit), how users engage one another (share, comments, reply, likes). These have social implications of user interactions, privacy, and conducts, etc.

Arguably, the biggest concern about working with social media data in the social sciences is its shared similarities with Big Data (Engel et al., 2022; 2). This overlap, especially the 6V qualities (value, variety, volume, velocity, veracity & variability), has attracted equal measures of excitement and skepticism that social researchers typically reserve for Big Data. For example, social scientists are often skeptical about working with Big Data as they consider it notoriously lacking in the contextualization of how data is produced (or consumed) as well as its (un)fitness for proffering understanding into social phenomena (Bosse, 2021; 205). On the other hand, the sheer volume and availability of naturally occurring research data is a big plus for social media data in research. This dualism has methodological consequences concerning its suitability for traditional and emergent social inquiry methods (Zeller, 2017). For instance, without contextualization of the data, a potential pitfall is the misconception of social media platforms as “toolkit” (Quan-Haase and Young, 2010; Smock et al., 2011), a situation describing how researchers could easily ignore the fact that social media platforms are parts of a large repertoire of social web expressions that users control or that each platform serves multiple purposes of users’ expression. Researchers are thus reminded that modern methods of social media research must start approaching these platforms with the understanding of how the unique affordances of different platforms stream into each other to generate a complete picture of social media user engagement and resulting creation of research traces.

Accordingly, this study took the position that while Facebook is most probably not the only platform through which individuals and groups express their social consciousness to risk issues, it nonetheless reckons that Facebook is an important part of such expressions and that findings from such single focus studied must be taken in consideration with other possibly divergent outcomes
afforded by other platforms. Essentially, in this research I am aware that Facebook’s expression of social reactions to risk perception is not the entire story but an important part of the larger story. Finally, while the argument over the representativeness of social media data is beyond the scope of this chapter, one can hardly overemphasize that any social media dataset should not be viewed as a sample of the entire social web population (boyd and Crawford, 2012). The quality of the data (i.e., the 6Vs) obtained from social media platforms are governed by algorithmic processes, one that is beyond the control of the researcher. Hence, any analytical process given to such data must contend with such nonparametric assumptions inherent in the data.

Consequently, the non-representativeness of social media data warrants a deeper inspection of the methodological choices made in social media research. Anyway, Hollingshead et al. (2021) points out that statistical generalization is not the goal of a qualitative researcher anyway, but to use a set of available data to provide some profound understanding of a social phenomenon and the contexts under which it operates. This much echoes my argument made in the first part of this thesis whereby I stated that the aim is to infer analytical (and not statistical) generalizability of risk discourses.

5.3.4 **Specifying the Social Media Context: Facebook**

The sources of social media data for use in this research was the popular Facebook, a global social network service from *Meta Platforms, Inc.* ([https://about.facebook.com/meta/](https://about.facebook.com/meta/)). Facebook is a global social networking app that was started in 2004 and since then it has grown into a virtual community where over 2.6 billion people and other corporate interests interact and communicate among themselves (Clemens, 2020). Facebook remains the most popular social media platform in Canada as a recent survey reveals that 83% of online Canadian adults reported having a Facebook account, with 77% of the adult population being daily users (Social Media Lab, 2020). It allows users to share photos, posts, and engage in discussions on user generated issues. Beyond individual and corporate accounts, Facebook's functionalities also include "Groups" and "Pages" which serves as further avenue for users (and even virtual strangers) with similar social interests to interact via posts, comments, likes and shares. Facebook Group is a digital forum whereby users can communicate and share opinions about a common cause relating to events, organization, or
political agenda, etc. in a variety of formats (e.g., photos, text) (Facebook, 2010). Groups enable users to form a community of discourse to promote, share and discuss relevant topics. Groups could either be "Open" (to public participation) or "Closed", permitting participation only by admitted users. Content is user generated, usually around the issues for which the group was created, but censorship rights lie with the creator(s) or administrators of the group. Contents are communicated through self-disclosures (i.e., original posts) and shared stimulating topics while engagement is sustained through an individual contribution (e.g., comments and reactions) (Franz et al., 2019). Overall, both Pages and Groups are significant tools for ensuring that users stay connected on Facebook and as such have become important media substrate for promoting social amplification of risks through robust and decentralized discussions. With this line of thought, this study proceeded into answering the research question through the research methods discussed in the next section.

5.4 Research Methods
This section will present the description of the methods used in this study as well as provide some rationalization for the methodological framework characterizing the research design. I will briefly contextualize the method that this study adopted. This will be accompanied by brief sectional discussions on trends in the research design landscape which hopefully would help the reader to understand the rationales for methodological choices made in this study. This would be followed up with the enumeration of the research steps used in the data collection and analyses.

5.4.1 Methods for Researching Social Media
Zeller (2017) stresses that social media could either be considered as the object or the tool of research (p. 388). In the former, social media users and usage are the primary foci of the inquiry but in the latter, social media becomes an instrument to analyze online consciousness and engagement with social issues through the collection of behavioral and communicative patterns. The variety, velocity, veracity, values, and quantity of data generated on social media present both challenges and opportunities for social science research. Social media presents an ample and readily available throve of useful data for social research (Salmons, 2017) but the quality also presents challenges, chiefly bordering on the research methodological choices that would account
for contextualization, semantic connections, sampling, technological affordance, online-specific behaviors, analysis, and interpretation of nontraditional data, etc. (Procter et al., 2015; Sloan and Quan-Haase, 2017). Another point of methodological concern about social media research is whether researchers are simply looking for patterns in Big Data or even if social media studies require any theoretical treatment (Kitchin, 2017).

In thinking that social media research is being unnecessarily bogged down by theoretical constraints or that such research paradigm is better off without any theoretical groundings. There is a strong tendency for researchers to view social media merely as following patterns in the data rather than approaching such data through theoretical perspectives. Kitchin (2017) is however quick to remind us that such empiricist epistemology overlooks the fact that social media data and its interpretation are not isolated from the realities of human and societal proclivities, both which are typical candidates for theoretical evaluation. Modern and effective social media research, Nau et al. (2022) point out, require a critical and introspective research strategy that borrows insights and equally addresses the concerns of interdisciplinary methodology, ethics, and scale. However, Murthy (2017) cautions against solely relying on deductive (i.e., theory-driven) methods of analyzing social media data because doing so does not only misconstrue the peculiarity of the data but also limits the potential insights that the interpretation might offer (p. 563). Thus, many scholars (e.g., Kitchin, 2017, and Murthy, 2017) agree that social media research would benefit from a mixed methods strategy that combines “abductive, inductive and deductive approaches to advance the understanding of a phenomenon” (32). Such “data-driven science” approach, according to Kitchin would generate insights from data rather than from theory:

“it seeks to incorporate a mode of induction into the research design, though explanation through induction is not the intended end-point (as with empiricist approaches). Instead, it forms a new mode of hypothesis generation before a deductive approach is employed. Nor does the process of induction arise from nowhere, but is situated and contextualized within a highly evolved theoretical domain.” (p. 32)
One utility of such an approach is that an existing framework (not mere pattern matching) drives the processes of hypothesis building and knowledge discovery thereby situating data interpretation within context. Without contextualization, data interpretation would naturally give insufficient and misleading insights (Zeller, 2017). To demonstrate this novel mixed-methods approach to social media research, Zeller started with statistical text analyses (e.g., frequency analysis, keyword listing, etc.) of Facebook texts, followed by using Computer-Assisted Qualitative Data Analysis Software (CAQDAS)\(^7\) tools for manual open coding, Keyword In Context (KWIC)\(^8\) analysis, image, and discourse analyses. Similarly, Murthy (2017) advocated for methods that employ initial computational techniques to produce intermediate analysis of data, followed by manual coding. Accordingly, the present study employed a similar methodological path in analyzing the social media data as explained in subsequent sections. With this understanding of the peculiarities of social media data, I shall provide concrete details of the data collection strategies in the next section.

### 5.4.2 Data Collection

As suggested by Hollingshead et al. (2021), convenience and/or purposeful sampling are the most appropriate methods to use in non-probabilistic settings as this. A purposeful sampling was adopted in this study as Facebook groups that have desirable criteria (as highlighted in subsequent subsections) were selected as the units of analysis. Data collection from social media sites typically follow strict terms of use rules as well as requiring specialized knowledge and tools to access them. Social media sites traditionally specify the use of appropriate Application Programming Interface (API) to gather the data therein in large quantities. Facebook has an applicable API license that would be exploited in this study.

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\(^7\) CAQDAS is a term that describes a range of computer software used in qualitative research with tasks such as data transcription, textual analysis, coding and text interpretation, recursive abstraction, etc. See [https://study.sagepub.com/node/31740/student-resources/chapter-1](https://study.sagepub.com/node/31740/student-resources/chapter-1)

\(^8\) KWIC is an analysis method that looks at a word and its every utterance in a text to find out its meaning and usage.
5.4.2.1 Facebook Data Collection.
Following the Cambridge Analytica controversy (The Guardian, 2018), accessing largescale Facebook data has become more sanitized, if not largely forbidden. However, Facebook has provided a platform called CrowdTangle© (www.crowdtangle.com) for academic and other research-based use of their data. With CrowdTangle, a researcher applies for controlled access and upon being granted permission, can launch probes into the activities of Facebook groups and pages and contents as well as the metadata of such services. Although the data from CrowdTangle can be downloaded, their shelf life is typically timebound as the downloaded files are programmed to be usable only for a few weeks. With a developer’s access from Facebook, CrowdTangle was used to collect Group posts that provide relevant insight into the social impacts of risk discourse.

5.4.2.2 Facebook Data Selection Criteria.
Group selection criteria were based primarily on the aboutness of individual groups i.e., such groups must be focused on disasters within the Canadian EM system and must be contributory while being open to the public. Essentially, the groups must reflect public reactions and debates on contemporary issues in the disaster and emergency landscape within the country. Therefore, the following inclusion criteria were adopted in the selection of Facebook Groups:

i. Facebook Group must be Public and Open

ii. Group must be focused on Canadian cities/towns, events, or people.

iii. They must be community oriented, and not organization-based or administered.

iv. Group’s About section must indicate that group is about community support for disaster events.

v. Preferably focused on addressing disaster risks (some general groups may be permissible if they contain significant community help contents on disasters. We can find evidence of this in the contents of “featured”, “topics”, “rooms” tabs of the groups).

vi. They must have contributory contents, i.e., all member of the group (or public) can post on it.

vii. Another precaution to be considered is to ensure that posts must be communicated in English language only (as Canada is English and French bilingual) because of the

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9 https://www.facebook.com/community/using-key-groups-tools/understanding-your-privacy-settings/
researcher’s lack French proficiency as well as the need to feed our data into an English-specific Natural Language Processing (NLP) algorithm. Hence, non-English speaking or bilingual Groups would be ignored.

5.4.3 Limitations of the Data Collection Strategy
While efforts have been made to be as exhaustive as possible in identifying and listing Facebook groups that meet all the considerations above, it is not taken for granted that all possible groups were included in the study. It is a possibility that some groups might have slipped through the cracks due to nomenclature or visibility settings on the Facebook platform. Similarly, it was observed that many Private groups had higher numbers of members than their Open/Public counterparts. Obviously, people felt more comfortable airing their opinions in an atmosphere that offers more privacy. Therefore, the data generated for this study from Facebook was not considered a representative sample of the Facebook conversations but a good reflection of what social discourse is given under the circumstances.

5.5 Data Analysis
5.5.1 Conceptual Focus of Analysis
During analyses, I was looking out for certain markers of social and civic engagement which would serve as pointers to the essence and direction of discourses around risk events. Such markers include buzzwords (trendy terms like global warming, Indigenization, multiculturalism, AI, automation, etc.), hashtags and sentiments. Sentiment gives us insight into the shades of emotions that people attached to ongoing social debates, and it could be described by response classes of anger, disgust, fear, happiness, sadness, and surprise (Schulz et al., 2013). On the other hand, hashtags primarily serve the purpose of anchoring topical issues in social conversations on social media. Hashtags are key terms (prefixed with the # sign) that typically represent objects of social discourses and can also be used by social media users to trail and keep track of public conversations associated with the topics. Hashtags have also been used by activists and the global public to summarily draw attention to topical issues e.g., #BBOG, #MeToo, #ArabSpring, etc. Social researchers can also identify and collate social media data connected with a topic of discourse using hashtags. Another utility of hashtags is that they are largely unique to each event, topic or
causes, hence, they can be used to classify conversations and engagements that are related to desired discourses on social media.

5.5.2 Units of Analysis
While hashtags have found utility on social media generally for creating \textit{ad hoc} publics, users can also create Facebook Groups to bring together communities of interest around a topic or event. Groups serve the purposes of information board, social support, and community solidarity amongst users. The networked relationships between social media users associated with disaster risks discourse are of paramount interest in this study. The focus of analysis of Facebook data would be on original posts of group members. Facebook posts could either be original or propagated i.e., “shared”. Unlike original posts, using shared posts permits a multiplicity of contents and as such are considered duplicitous and redundant whereas originally created posts are assumed to represent genuine thoughts and activities of Facebook users. Such posts could include links, textual status, captions for photos and videos, etc.

5.5.3 Topic Analysis
Facebook posts provide ample corpus of texts that cannot be realistically analyzed by human coders in a reasonable time frame. Machine Learning (ML) techniques are useful in this regard as they can aid in providing insights through the analyses into text corpus. ML techniques such as topic modelling can be applied typically to large portions of texts to detect underlying patterns of topics in and among document collections and it affords a quick analysis of large data corpus that ordinarily would take a large team of human coders a long time (Heiberger and Galvez, 2022). Topic modelling works by representing a large collection of texts with topical dimensions statistically derived from some inherent probabilistic connections among the words and documents contained in the corpus. Thus, topic analysis (an implementation of topic modeling) was employed in this study to derive a number of Facebook sub-corpuses that characterize similar topical issues representing the topics of social impacts of risk amplifications. The goal of the topic analysis was to discover insightful themes (i.e., topics) of risk debates that highlight the most important subjects of public concern.
i. Latent Dirichlet Allocation.

Latent Dirichlet Allocation (LDA) is an established topic analysis model in machine learning which has been used in variety of studies (Angus, 2017; Hagen, 2018; Jelodar et al., 2019; Maier et al., 2018; Porter, 2018; Song et al., 2009; Varona and Suárez, 2022; Zeller, 2017). These studies investigated topical issues in transcripts of public conversations. LDA (an unsupervised, nonparametric, and generative technique) extracts latent themes from the data (i.e., Facebook corpus). It works on the assumption that within a corpus, documents are similar if they have similar contents hence, the words across these documents can be associated to discover a few latent topics. Essentially, the idea is that each document can be represented by a distribution of topics within it, and each topic, by a distribution of words (Blei et al., 2003; Heiberger and Galvez, 2022). Building on this, the model then classifies word associations into meaningful themes based on how relevant they’re to each other within each document and across the collection. The goals in this case are to:

i. form a number $k$ of coherent topics through word associations across the documents, and

ii. map each document in the collection that adequately describes them. While each topic in LDA is a Dirichlet distribution of many terms in the vocabulary of the corpus, the number, $k$ of topics identified however, is predefined by the user. For deeper insights into LDA, readers should see (Blei et al., 2003).

Topic analysis requires initially preprocessing some largely and characteristically unstructured Facebook corpus into wieldy sub-corpuses for LDA modelling. Typically, each sub-corpus should generate one or more topics. Heiberger and Galvez (2022) and Schofield et al. (2017) point out that text preprocessing is important for generating well differentiated sub-corpuses to varying extents. Preprocessing steps include tokenizing, lemmatizing, eliminating white space and punctuations, removing English language stopwords (e.g., the, a, you, he, which, etc.) as well as cleansing out extraneous data such as https://, emojis, symbols and non-alphanumeric characters. To improve word association, n-grams of frequently associated words (phrases e.g., “Black Lives Matter”) need to be created as part of text preprocessing, using library specific inbuilt n-grams methods. Heiberger and Galvez (2022) suggests that creating n-grams significantly improves the optimal number of topics that would be generated from the corpus, with trigrams showing more
utility than bigrams. The next step was to apply Natural Language Processing (NLP)\textsuperscript{10} software libraries to the cleansed data for vectorization, dictionary building and model creation and optimization and ultimately, deriving topics.

**ii. Analytical Tools for LDA Processing.**

The Python\textsuperscript{11} LDA model, as built into the Scikit-Learn\textsuperscript{12} natural language library, employs the principles of vectorization. The process of vectorizing natural languages (e.g., English, French) into matrices of numbers is a textual analytical method that incorporates common technique such as Bag-of-Words (BoW) and Term Frequency-Inverse Document Frequency (TF-IDF).

**Bag-of-Words (BoW)**

BoW works by assigning a fixed integer to each word, \( w \) in a document, \( d \) (in this case, a Facebook post). BoW employs a dictionary of all words in the corpus and then, for each document, it creates an entry of vectors for the occurrence of each word therein:

\[
d_w = X[d, t_w]
\]

where:

\( X \) = vector of document, \( d \) for a word, \( w \).

\( t \) = count of word, \( w \) in document, \( d \).

Treating each document as a vector of features of the corpus is highly useful for detecting the cosine similarity of the documents. However, not all words in the documents bear equal significance in describing the topical contents contained in them. English stopwords and other ubiquitous terms have high frequency but bear low significance (i.e., weights) for describing the essence of each document. Hence, we can improve BoW vectors by adjusting significance of the word counts based on their frequency in the corpus using the TF-IDF method.

\textsuperscript{10} NLP is at the intersection of computer science and linguistics that that explores how computers can be used to understand and manipulate natural language text or speech. (Chowdhury, 2003).

\textsuperscript{11} Python is a common high-level, general-purpose programming language. https://www.python.org/

\textsuperscript{12} Scikit-Learn is a library of python-based software programs that various classification, regression, and clustering algorithms. https://scikit-learn.org/stable/index.html
**Term Frequency – Inverse Document Frequency (TF-IDF).**

TF-IDF is useful for simultaneously scaling up the importance of the term frequency of important words that describe the aboutness of each topic while suppressing those of stopwords and other less informative terms. TF-IDF is a combination of two subtasks, term frequency and inverse document frequency. Term frequency, TF describes the importance of the word, $w$ within a given document, $d$ i.e.:

$$TF_{(w,d)} = \frac{\text{Count of } w \text{ in } d}{\text{Count of all terms in } d}$$

Inverse Document Frequency (IDF) however, describes the importance of a word in the entire corpus, and it diminishes the weight frequently occurring (and less informative) words but increases the weight of words that occur rarely. Essentially, it shows which words are most significant across all documents.

$$IDF_w = \log \frac{1 + N}{1 + df_w} + 1$$

Where:

- $N$ = total number of docs
- $df_w$ = the occurrence of document (with word $w$) in the corpus

Finally, TD-IDF give a relative weightage of all the terms in the corpus, and such can be useful for LDA topic modelling of natural languages. TF-IDF is given as:

$$TF - IDF_w = TF_{(w,d)} * IDF_w$$

LDA requires a predetermined number of sub-corpuses, $K$ to be generated by the model. Thus, an iterative process is typically run where different values of $K_n$ (usually $5 < n < 40$) would be analyzed to see which $K$ gives the greatest number of informative and useful topics without sacrificing details. Too few sub-corpuses (say 6) lead to a lot of important themes falling through the cracks (over-aggregated (Quinn et al., 2010)) whereas too many sub-corpuses (say 42) cause redundancy and cumbersome analysis. Additionally, several iterations of the model can be run to
derive the one that gives the highest coherence score and/or lowest perplexity. For each sub-
corpus, the LDA model generates a $n$ set of paired outputs, one part, a combination of ranked key
terms $R_k$, a combination of which represents each potential topic, and two, affinity (probability)
scores, $\theta$ that estimate each term’s probability of a topic representing those documents.

$$k_n = n(R_k, \theta)$$

However, we need a validation of the results obtained from the modeling and this is where the
model’s performance evaluation comes in.

iii. LDA Model Evaluation.
Since LDA is an unsupervised NLP technique i.e., no pre-labelled topics to learn from (Jordan and
Mitchell, 2015), it is important to evaluate the performance of the model and thereby substantiate
the validity of its results. LDA model is commonly evaluated for its Perplexity and Coherence
($c_v$). LDA algorithm conventionally splits a document into two subsets: one used for training
models, the other used for testing and evaluating their perplexity on unseen data (Ramage and
Rosen, 2010). Perplexity describes how well a model copes with clustering unfamiliar data into
meaningful topics and it is measured as the normalized log-likelihood of the held-out test subset
(Blei et al., 2003). The lower the perplexity score, the better is the model’s robustness to
“surprises”. Typically, perplexity suffers as the number of expected topics increases but the score
begins to plateau at high numbers, hence perplexity graph is also a good way of determining
number of expected topics. On the other hand, the coherence score reflects the level of semantic
similarity between highly weighted words and the topics they inform. Topic coherence is a way to
judge the quality of sub-corpuses via a single quantitative, scalar value ($0 < c_v < 1$). The closer to
1 the score is, the optimal the performance is. Varona and Suárez (2022) used coherence score as
a measure of determining the optimal topic count in their study. Additionally, a manual comparison
of the weights (or exclusivity) against the frequency of generated key terms can be computed to
evaluate their significance. If a key term appears in multiple sub-corpuses and the count
(frequency) of such a term exceeds the weight (importance) in more than one sub-corpus, then it
is judged that such term doesn’t contribute meaningfully to those sub-corpuses. That key term
would be added to the dictionary of ubiquitous terms and the model is run again till all generated
key terms show high level fidelity. By comparing the weight/frequency ratio, the reliability of the generated sub-corpuses can be easily evaluated.

Having identified and validated the keywords that inform some potential topics in the sub-corpuses, the next step would be to conduct a thematic analysis of these segregated documents along the line of the topics, actors and social events that characterize them. Using mixed method design that combines NLP techniques with qualitative approaches was observed to be common in literature (Angus, 2017; Heiberger and Galvez, 2022; Zeller, 2017) whereby semantically related but computationally generated key terms (i.e., seeds or meta-codes) were used to autocode a corpus in order to generate topics and themes of social discourse. However, in this study, LDA would be used to create associated sub-corpora (for each topic-informing set of key terms) which would then be thematically coded to develop categories of social impacts.

iv. Developing Topics Through Thematic Analysis.
Being a relatively recent but fast-growing field, social computing suffers from considerable deficiency of tested and established theories and methods (Heiberger and Galvez, 2022). As such, many researchers have and are still implementing innovative techniques when it comes to applying ML models to natural languages. Unsurprisingly, formulating the potential topics informed by interpretation of the generated keywords has been performed in a variety of ways in different works. However, keyword interpretation and topic formulation certainly require profound familiarity with the context of the documents on the part of the interpreter. Hence, Sievert and Shirley (2014) suggested that topic interpretation should rely on judging the frequency and relevance (weight/exclusivity) of the different terms to each topic. Hagen (2018) also suggested that human judgement is “effective for judging the interpretability of topic modeling outputs” especially when such are “supposed to be used for human interpretation”. In this regard, a growing approach involves using human expert annotation to map ranked keywords to document contents and ultimately identify the topics (Chen et al., 2013; Zhang et al., 2021). Consequently, the present study went the route of identifying topics through the critical thematic analyses of the sub-corpuses rather than using the common method of relying on keyword interpretations.
v. Thematic Analysis.

Thematic analysis (TA) is a “method for identifying, analyzing, and interpreting patterns of meaning (‘themes’) within qualitative data” (Clarke and Braun, 2017). It is the process for identifying patterns of topics within qualitative data (Maguire and Delahunt, 2017). The main advantage of TA is its flexibility to be used as a method rather than as a methodology, thus permitting it to be used with a variety of research paradigms, theoretical and epistemological frameworks (Braun and Clarke, 2006; Maguire and Delahunt, 2017). Another notable flexibility is that it can be used with multiple types of research questions, sample size, data collection techniques and interpretative approaches (Clarke and Braun, 2017). TA is used to generate insights into a body of data through the generation of codes and patterns which ultimately results in the formulation of topics (insightful themes). Codes are thus the atomic blocks of analysis that crystallize interesting and relevant insights from the data into connectable but scattered meaningful patterns around the research question(s) in the data. The researcher can then organize patterns into useful themes and topics having figured out the logical and contextual connections amongst the codes and their patterns. Finally, such themes will “provide a framework for organizing and reporting the researcher’s analytic observations” (Clarke and Braun, 2017). The process is not only iterative, but it is also beyond merely summarizing the data ((Maguire and Delahunt, 2017). Braun and Clarke (2006) suggests that it essentially involves identifying, interpreting, and making good sense of key features of the data. A good TA must be empowered by a good combination of criticality, reflexivity, and familiarity with the context of the data and its generation.

Applying a critical dimension to thematic analysis is justified given inherent power structures that exist in risk communication, assessment, and trust. Given that the origin of this work was based on the investigation of the power dynamics among disaster risk stakeholders, it is important that I give a critical perspective to the scrutiny of the social impacts of risk amplification that this thematic analysis aims to unravel. Although, there are a few tools (e.g., Mozdeh, DiscoverText, Communalytic, NCapture/NVivo) that could be used to create topics based on the corpus and keyword generation, the problem highlighted by Fuchs (2017) remains their Achilles heel i.e., lack of criticality. Therefore, introducing elements of human criticality and reflexivity is crucial for this nature of analysis. The next subsection introduces the thematic analysis as used in this study. While
TA can be conducted either as an inductive (bottom-up) or deductive (top-down) method, in this study, the inductive approach seems to suit the analysis of the social media data better. This assumption is justified by the facts that i.) I had no predefined categories or themes of social impacts, and ii.) I was interested in critically examined the role of power dynamics that informed the social impacts i.e., connecting identifiable social impacts to power dynamics in the risk debates. Clarke and Braun (2017) suggest that TA can be applied within “a ‘critical’ framework, to interrogate patterns within personal or social meaning around a topic, and to ask questions about the implications of these” (289). Applying a critical perspective to the analysis enables me to comprehend not just the explicit but also the latent (underlying) meanings in the data.

Table 5.1: Summary of the research methodology used in this study

<table>
<thead>
<tr>
<th>Variable</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>To elucidate the social impacts that are informed by the power amplifications inherent in risk management as observed in the previous topic.</td>
</tr>
<tr>
<td>RQ3</td>
<td>“What dimensions of social impacts can be associated with risk discourse amplifications occasioned by the power differentials among risk actors?”</td>
</tr>
<tr>
<td>Data Sources</td>
<td>Facebook Groups</td>
</tr>
<tr>
<td>Conceptual Variables of Analysis</td>
<td>Hashtags, Buzzwords, Sentiments, etc.</td>
</tr>
<tr>
<td>Analytical Method</td>
<td>i. Topical Analysis (LDA)</td>
</tr>
<tr>
<td></td>
<td>ii. Thematic Analysis</td>
</tr>
<tr>
<td>Units of Analysis</td>
<td>Facebook Group posts, social media accounts of major actors</td>
</tr>
</tbody>
</table>

Finally, Braun and Clarke (2006) highlighted the six generic but iterative steps involved in the thematic analysis as follows:
1. Familiarizing yourself with the data,
2. Generating initial data codes,
3. Searching for themes,
4. Reviewing themes,
5. Defining and naming themes, and;
6. Producing the report.

To conduct the TA, I used the commercially licensed copy of the computer software, MAXQDA (https://www.maxqda.com) to analyze, memo and construct viable topics from both Facebook data. The methodological choices made in this study are summarized in Table 5.1 above.

Figure 5.1: Facebook Groups used in the study
5.6 Analytical Processes

Exactly 100,000 Facebook posts were downloaded on Feb 14\textsuperscript{th}, 2022, 10:47am EST from 19 Facebook Groups. CrowdTangle would only permit 5 years span of data, hence the Facebook data ranged from 2017/02/15 to 2022/02/15. These Groups (Figure 5.1) were as geographically diverse as the nature and quantities of their contents. The average number of posts in these groups was about 5,000 while the most active group produced over 33,000 posts. The most active groups seem to be located in British Columbia.

5.6.1 LDA topic modelling

To determine the optimal number of sub-corpuses topics to consider, I ran different tests models and then juxtaposed their typically negatively correlating coherence and perplexity scores. The coherence chart (Figure 5.2) reflects a diminishing performance as the number of sub-corpuses increases whereas the perplexity (Figure 5.3) seems to improve as the sub-corpuses increase. Considering that both conflicting evaluators are useful for this topic determination, the logical thing to do was to find a compromise between both scores (Tresnasari et al., 2020). In Figure 5.4, the crosstabulation of both evaluators indicated a good spot (red circle) for making such decisions. The rationale was that the coordinate (0.47, -8) on the chart whereby the correlation between both factors plateaus is a good indicator of a compromise between them. In this case, it indicates that a safe assumption for \( n \) would be between 7 and 9 sub-corpuses. A final decision was made to pick the mean (\( n_{\text{opt}} = 8 \)) of the range as the optimal number.

\textit{Figure 5.2 Coherence Performance of LDA model} \hspace{1cm} \textit{Figure 5.3 Perplexity performance of the LDA model}
The optimized LDA analysis using the n\textsubscript{opt} thus produced the desired well-differentiated 8 sub-
corpuses. The word count in the Facebook posts across all the sub-corpuses was characterized by
long tail pattern (Figure 5.5) in which few posts have unfair share of contents beyond the majority
(Sadri et al., 2017). The average number of words in these posts is 14 while the maximum is above
190. The topic model was hyperparameter-tuned as \texttt{num_topics = 8, random_state =100,}
\texttt{update_every =1, chunksize = 5000, passes = 100, alpha = 'symmetric', iterations = 100, and}
\texttt{per_word_topics = True}.

Figure 5.4 Crosstabulation of perplexity and coherence scores

![Figure 5.4 Crosstabulation of perplexity and coherence scores]

Figure 5.5 Word count distribution across Facebook posts in all topics

![Figure 5.5 Word count distribution across Facebook posts in all topics]
Evaluation for the optimized model returned a Perplexity score: -7.325 and a Coherence Score: 0.488. The scores reveal a fair-to-moderate performance by the model. The most significant terms informing the topics produced by the model are represented by the weighted key terms in Box 5.1. Similarly, Box 5.2 represents the spatial differentiation of the topical sub-corpuses generated by the model. The well-spaced circles generally indicate a good dispersal of the sub-corpuses i.e., a well demarcated associations among Facebook posts forming the potential topics.

Box 5.1 Topical key terms

NOTE: Word size indicates relative weight of term in the topic
5.6.2 *Thematic Analysis*

As mentioned earlier, thematic analysis of Facebook posts (as with any other social media data) constantly demands some guiding reflections on the strong significance of technological affordance for context of social media use. The analysis therefore followed the following rationales:

1. What the online public is discussing
2. The sociocultural, political, and economic context and ramifications for the discourse
3. What the access and use of the technology means for self-expression and social engagement for the users i.e., how does the online public characterize or conceive the opportunities or hinderances of using social networks to communicate
4. The technological affordance that permits such engagement and discourse
In accordance, the analysis sought to identify and analyze only the data that are relevant for gaining insight into social impacts of risk discourses. Expectedly not all the data captured was useful for achieving this purpose. Among the eight sub-corporuses, only 1, 2, and 3 provided strong evidence for discernible social impacts as such, the discussion will be limited to these sub-corporuses. Facebook posts in the fourth sub-corpus largely involved peer-to-peer weather, road, and disaster advisories. These contributions by Facebook users demonstrated community support and social solidarity, reflecting a Facebook-as-social-service mindset that social media users during emergencies as identified in a previous category. Similarly, in the fifth sub-corpus, contents were about crowdsourcing traffic and weather information as well as meeting needs and actions that could be seen as community solidarity. In the sixth sub-corpus, the conversations were largely about the following: i.) weather commentary & alerts, ii.) environmental appreciation (texts, links & media) and iii.) disaster risk warning & updates. This pattern also continued in sub-corpus 7 whereby a large portion of the conversation was about posts about missing animals (e.g., Figure 5.6), community solidarity, business promotion, asking for recommendations, offering and/or soliciting for furniture and household items, etc. There also were so many conversations about how people can use images and videos to share their experiences of environmental situations and
disaster risks. Many groups welcomed and encouraged members to use images and other media to report the state of things within their local communities.

*Figure 5.7 Using Facebook post to express appreciation for the beauty of the weather*

In sub-corpus 8, the conversations were mostly about environmental appreciation among the community members (Figure 5.7). Despite the various unfortunate episodes of emergencies, people still have reasons to appreciate the beauty of their environments and they used social media to share their witnessing of such experiences. Although there is no strong association, it appears that people are using environmental and weather updates and appreciation to counter the risk-stigma narrative that insurance companies attached to certain areas. Posts that buoy the appreciation of residents for their environment and local weather tends to indirectly counteract any negative association and/or connotation that outsiders, governments, or the risk insurance companies might have attached to such places. Beyond this pattern, there was also a noticeable practice of using Facebook to promote the business of nightlife and social entertainment, advertising social activities or entertainment, and canvassing for pubs, bars, nightclubs, parties, live music, concerts, cabarets, theatre, cinemas, and shows. In the next section, the social impacts topics identified in the first three sub-corpuses will be discussed in detail, followed by the study conclusions. In the sub-corpuses 4 - 8, the group posts did not reflect debates or discourses that
bear any connection to the power dynamics of communication, evaluation, or social trust aspects of risk management, hence these sub-corpuses will not be discussed further in this research.

5.7 Findings and Discussions: Identified Social Impacts

Topic 1: Virtual Townhalls as Alternative Information Hubs

The findings from the thematic analysis of the first sub-corpus demonstrated the sundry use of Facebook Groups to meet various information and material needs of the users off and on emergency periods. These Groups were frequently used to provide weather and environment updates, share information about utility and road conditions (Post # 1883) in emergencies, as well as disaster warnings and watches (Post #10343). Equally frequent was the use of Group discussion walls to share both disaster relevant and non-related issues. Most importantly, there is a highly discernable pattern of people using the Groups for disaster witnessing (Post #3479) and commentaries (Figure 5.8). Witnessing in this case refers to people’s narration of their experiences during extreme weather events. It essentially describes how people share their disaster experiences, give environmental updates, or simply solicit information about disaster impacts, roads, and weather conditions.

Post #10343: “Tuesday September 10, 2019. Well! well!. This makes it 23 confirmed tornados this year. Roughly 2:15pm a confirmed tornado approximately 8 km south of Carbon was spotted. Weather Summaries Alberta AWCN15 CWWG Weather summary for Alberta issued by Environment Canada at 3:44 p.m. MDT Tuesday 10 September 2019. Discussion. An area of showers has been affecting portions of southern Alberta over the past couple of days and on Tuesday, September 10 produced the 23rd tornado of 2019 in the province. ... If you or anyone you know has photos, videos or any other information regarding this event, please email ABstorm@canada.ca or call 1-800-239-0484. Please note that this summary may contain preliminary or unofficial information and does not constitute a complete or final report.”
Post #1883: “[**REQUEST FOR DAMAGE REPORTS**] Looking for possible damage reports near the Huron-Bruce border between Lochalsh, Holyrood, and Lucknow, including Clover Valley. A strong tornado-warned storm passed through this area on June 26th, 2021 and I'm looking for any possible damage reports in this region. Damage could range from tree damage at the end of a field, property damage, or damaged/destroyed crops.”

Post #3479: “Went for a walk along what's left of Goderich Beach yesterday (Oct 21,19) so devastating.”

Post #1866: “Tornado confirmed from June 26th, touching down north of Goderich and extending into Bruce County. Anyone have any damage reports or seen any damage from this area?”

Post #26342: “I saw this debated yesterday. Here's a definitive answer. We should all probably just clear our side walks anyway. Be a good neighbor.”

In similar terms, people use weather commentaries to share their viewpoints on weather issues, disaster risks as well as the perceived performance of disaster responders especially in the aspects of mitigation, response, and recovery. In some cases, the commentaries were about propagating official communications (weather alerts, advisories, watches, or warnings) from governments and other institutions. However, these propagations were usually not mere off-handed content sharing (a kind of *retweeting without comments*). Very frequently, these propagated posts bore inputs of the sharers through annotations and formatting; actions that demonstrate their intents to communicate risk messages to peers on Facebook. Thus, the essence of the Facebook commentaries is to express people’s perspectives on risks and their management as well as infuse their own thoughts and comments into objects of social discourse.

This pattern of online behaviors reflects a social practice of exploiting the social interpretive strength of social media and the thick data thereof (Latzko-Toth et al., 2017) to meet the emerging
practice of online peer-to-peer risk information. It is a view of social media as a virtual “community space” whereby people have come to understand and expect significant community solidarity over their collective troubles or triumphs. Paton and Irons (2016) related this phenomenon to the construct of Sense of Community (SoC), an aspect of social capital and adaptation in the Community Resilience Theory (Norris et al., 2008). SoC develops from the possibility that collective experiences of grief and trauma from a disaster(s) often create social and emotional connections amongst disaster survivors. Similarly, extreme events create urgent, dynamic, and continuous needs for helpful information which (in many cases), the top-down communication strategies of most disaster official responses fail to provide at such times.

Figure 5.8 Weather commentary

These two conditions basically give rise to a form of solidarity and shared provocation (Dalton et al. 2007 as cited in Paton and Irons 2016) among those with similar needs, fears, and values. Since people are more likely to view information from those with similar concerns, needs, and experiences as trusted and empowering (Liu et al., 2013), disaster sense-making and action-taking are thus largely informed by discussions and gleaned knowledge from among those with such shared worries and expectations. Activities on the Groups fulfill those conditions that would
naturally precipitate the creation of sense of community because they create a social setting in which structured engagement amongst users permitted membership, influence, integration, and shared emotional connections (Paton and Irons, 2016). Therefore, these users are evidently demonstrating a community of shared values using Groups as a virtual village square of information and social adaptation.

Post #23439: “Thank you to the kind person that dug out our driveway with a bobcat earlier today. Also, thank you Mel Pennell and your crew for clearing a path for us.”

Post #23446: “Found this key by the entrance to the Rotary trail by Wardle st. Identify the key ring and it’s yours. Message me.”

Post #31244: “Woke up to my Jeep catalytic converter being cut this morning. People living in Silver creek area beware someone is going around and cutting catalytic converters out.”

In the context of the discussions around the power amplification behind disaster risk discourses, activities that constitute these ideation of Facebook virtual townhall have significance for characterizing the undercurrents of social risk amplification. The various indicators of social capital and adaptation (e.g., virtual townhalls, community solidarity, emotional connections, risk crowdsourcing, etc.) that Facebook Groups foster bear direct attribution to the social power dynamics created by the risk amplification discourses i.e., power amplification. A few reasons would suffice to characterize this connection here; first, these indicators were born out of the public’s frustration with constant communication failures from official responders who seem unable to grasp and meet the frequently evolving information sophistication of the public. Second, resentment from years of being fed curated and even censored disaster information by the establishment has continued to drive people to perceive independent sources of disaster narratives.

Post #72682: “# The Corona Virus is soon going to be out of control. In Vancouver at least 100 people have been exposed from the Iran/Montreal/Vancouver traveler. The news has not reported this.”
Post #70650: “I really detest these lying whores in Victoria” (Victoria is the capital city of British Columbia, the seat of provincial power).

This mistrust is even more pronounced in this post-truth era where public cynicism for official discourses is at an all-time high. Therefore, the formation of virtual community hubs (for example), is a sign of direct social resistance to the selective coverage and allocation of speaking rights (by the media) as well as other oppressive discursive practices (by governments and corporations) that characterizes the power dynamics of selective risk amplification as identified in the previous study in this thesis.

Post #68423: “# Remember when PBS ran the real news, and about Vietnam, daily in the evenings? If you did not you are brainwashed stupid.”

Post #70722: “# CBC BC didn't report this. It's 299 + 3 deaths (emphasis original) for yesterday (Tuesday)”

Third, there was also evidence to suggest that the changing information practice was spurred by the low entry barrier that social media introduced for participating in public discourse (Zhuravskaya et al., 2020). Before social media, the traditional (print and electronic) media were the source of information and social discourse exchange and contributing to mainstream media discourse required considerable capital and material investment. Since marginalized risk parties would naturally desire avenues to express their own risk discourses, social media has offered a relatively inexpensive and less technical alternative that permits ordinary people’s voices to be heard at least within their immediate geographic and virtual communities. Social media combines both interpersonal and mass communication capabilities that are useful for promoting non-mainstream or individual discourses on disaster risks and environmental concerns. Sharing pictures, videos, links, and original contents on social media seems to have replaced the erstwhile information behavior that characterized pre-social media times. Here, people can hear others and be heard without mediation, filtration, or curation of journalistic and ideological rules. This phenomenon has pushed people to turn to social media to communicate about extreme weather and its effects. For instance, comments such as below exemplify the feelings of justified use of
Facebook to correct official narratives (Gilgoff and Lee, 2013; Kim and Hastak, 2018) that otherwise would have been near impossible before Facebook berthed.

Post #89162: “Some audio redacted due to copyright. If they saved so many homes, we'll never know how many lives we're saved. BC needs this technology ASAP yet its a BC Company. The irony is getting old. We need these guys like yesterday. Done right NVG capability is a money saver not a prohibitive expense as some would have you believe.”

These three reasons directly tie the changes in disaster-related information and social adaptation to the dynamics of power amplification that characterize risk discourses in disaster management. Not unexpectedly, the growing recognition of social media as an alternative site that permits the development of a sense of community is only natural and the practices that such recognition produces would only become more prominent going forward. Accordingly, the power dynamics in the communication and trust aspects of risk management is also expected to evolve in unprecedented ways.

**Topic 2: Resistance Power in Risk Communication and Evaluation Practices**

In this sub-corpus, we see a tendency for the public to challenge established practices in communication and interpretation protocols of risk management through the adoption of innovative and discursively resistant social information practices. These innovative risk practices essentially have the motivation to provide alternatives to the channels and contents of risk messaging, hence, the inherent dynamics demonstrate the desire of disaster survivors to take control of the narratives that ultimately informs risk communication and perception building. As mentioned earlier, one of the consequences of the feeling of being dominated or misrepresented by more powerful actors in the communicative and interpretive arenas of risk is that people find alternative measures for sourcing independent knowledge as well as ways of getting their views out to others in the public sphere. Thus, communicating through alternative platforms (those beyond the control of editorial constraints or censorship) easily becomes the natural alternative.
Comment #90577a: “We have enough social media that I'm sure we can find out information.”

Post #95484: “We aren't here to beat dead horses, we are not here to blame, we are not here to police members or sort out disputes. We are here to provide information. The best way we do that is by offering a thorough list of links in the pinned post that can provide you with exactly the information you are looking for without wading through a lot of chatter. ....”

Accordingly, risk-concerned citizens use social media to spread awareness about personal and public emergencies because they consider social media as an instrument of resistance (Comment #90577a) to the dominant narratives that institutional actors (media, government, and corporations) espouse about risk hazards and attendant vulnerabilities. For example, users routinely used Facebook to offer alternative risk explanations especially for emerging risks that others know little about:

Post #4314: “This has the potential to be a catastrophic flood and people should have been preparing already well into the winter. It has also come to my attention many people don't know and that authorities are not yet telling the general public and members of Skeetchestn. This information should have been at the table months ago. ...This post is not to panic or spread fear, as some may or might say it will. Rightfully, this post is about transparency and my hopes that those who this information reaches has time to prepare. ...We need to be our own judge in these matters and that is something that will also help ease our anxiety about these situations. Follow your governments, local authorities, but most importantly work together with your neighbors and advocate for a plan and preparedness. ...The question for those in the valley will be, just how bad is it going to get? I know that my family will be preparing for the absolute worst and hoping for the best. These things can be unpredictable for everyone. My warning to those who live in other
areas where the fires hit above your home or your natural water systems, I would caution you to get together with your neighbors and leaders now and start planning.”

Post #4359: “I am not sure if anyone has made this point here yet but I and others strongly suspect that the massive collapse of Hwy 1 at Jackass Mountain was caused or at least facilitated by BC Wildfire allowing the Mowhokum fire to burn for a month last summer just on the other side of that mountain *edited to correct spelling of fire name“

Second, largely due to proliferated perspectives on social media, disaster risk expertise has become somewhat decentralized, and the authority of once revered institutions are being progressively called into question as hitherto marginal voices keep gaining wider appeal. Facebook has given more visibility and strength to marginal voices (including those that were once considered marginalized or even fringe views) on risks to compete for audience with mainstream ones. Crowd wisdom, thus, has become an integral part of risk and disaster sensemaking as increasing number of people are gaining awareness and insights through crowdsourced information on social media.

Figure 5.9 Facebook post offering alternative risk assessment

![Facebook post offering alternative risk assessment](image-url)
Therefore, the existence of alternative channels to define risk and push non-mainstream discourses has not only eroded the trust for dominant accounts of risks but also built trust in such alternatives. For instance, the purported firefighting expertise captured in a Facebook post (Figure 5.9) above demonstrates at once how social media drives independent risk assessment and interpretations and the types of resistance activities that serve the information consumption yearning of the public. (The long Facebook post has been reproduced below albeit with a significant redaction to only reflect the author’s assertion of subject authority).

**Post #4544:** “Wildfire in BC - areas for improvement: I am a professional forester and I have been working with fire for over 36 years. I manage a Forest Company that includes Community forests, Woodlots and other forest tenures. ...I am a bit of fire nerd and I have some suggestions for areas of improvement. There are some short term solutions like restructuring the Ministries (which is currently underway), and there is some long term solutions like Managing our urban interfaces for fire between the forests and the communities. Then of course there is Firesmarting our homes. ... When I started professional forestry in 1993 we would conduct broadcast burns or aka prescribed fires in the spring and fall when it was safe to do so. ... I say this because we stopped putting fire on the ground then. Fire became an enemy instead of a tool of forest ecosystem management. Government and Industry were at odds with fire hazards, and we thought that if a wildfire happened then we would just put it out. We were so naive. The issue is complex because many of the forests in the interior are in natural fire dominated forested ecosystems. These natural forests need fire and so do the plants that grow there. They evolved with fires and if we do not let fires happen in the safe time of the year then they will have allot of fuel to burn during heat waves and droughts which are the unsafe time of the year. And that burns down houses, communities and causes the sky's to become orange or black and creates poor air quality in the urban areas. ... I have been around long enough to see several different management philosophies. Top down, bottom up, Fire holidays, District teams, regional teams. They all have their pros and cons. But the thing going on now is the fire behavior is changing... I have managed type 3 and type 2 contract crews for the past 10 years. We currently have 7 crews on the fires and have two heavy equipment task forces. All total we have about 60 people engaged in the fires this year. My experience
with the Fire Center's is that there is allot of good people there. Aside from the top down policies the biggest problem that I see is that they are only kept busy for half the year. ...Going forward I believe there are several different solutions that should occur. One solution in part is adapting to natural laws and ecosystem processes. The First Nations are more in tune with nature than Urban BC. The Indigenous Peoples in BC believe that fire is medicine for the land, but we have been treating it like it is evil. We must change the way we think about our fire and our forests before it is too late. Prescribed fire should become common and used as a tool....”

Crowdsourcing risk knowledge via social media is not exactly a novel strategy for disaster and risk sensemaking. However, contemporary innovations found in this study include individuals and groups taking on dedicated duty of providing and coordinating non-profit digital platforms to harness the strengths and opportunities of an interconnected, always-on information society. As against regular risk information crowdsourcing scenarios, whereas people randomly offer or solicit for information, there is a deliberate effort in this case to collect curate and provide help information about disasters, weather, roads, and emergencies which permits the public to quickly make sense of risks and their exposure. For instance, the platform www.weatherwatch.space (Figure 5.10) manages a very active presence on Facebook through which it fosters peer-to-peer communication among the public. It is clear from literature that powerful actors use discursive practices to shape public risk consciousness and perceptions, and that the dominant risk perceptions are products of power dynamics while the selective access to the media (an important player) is a privileged tool for the resourced and powerful. Fundamentally, this growing reliance on peer-to-peer communication protocols and collective risk sensemaking as viable alternatives to the assessment and communication roles of traditional disaster risk agencies (e.g., CHC, 511 in Ontario, media, etc.) simultaneously demonstrate the need for independent, nonrestricted and establishment-free information and the growing resistance that such practices portend for general risk protocols that powerful actors have always dominated.
There are numerous factors that motivate these emergent risk practices, and these include frequency of updates, ease of access, generational shift in media use, digital nativity of the majority of users, etc. Among these factors, the elephant in the room is the growing social distrust for institutional discourses. A possible catalyst for such distrust is the perceived (mis)handling of previous disaster episodes by emergency managers and possible elitist interpretation of risks by technical experts. In many Facebook posts, there were numerous nuances that point to the government’s incompetence and cover up or collusion with commercial interests. For instance, there were allegations of cover up by certain Facebook users that the BC government was shielding a railway company from possible culpability in the Lytton town fire of 2021 (Post #4464). Similarly, a user’s status (Post #12788) shows an example of how eroding confidence in government’s risk management transparency encourages distrust and ultimately changes in information behavior among the public. Although, these allegations were not proven with any reasonable evidence, it has not in any way stopped the spread among some online commentators.

**Post #4464:** “I know I have said this repeatedly but until I get the impression that a serious Judicial Inquiry is underway I will continue to say it. In 1975 I was a member of the BCFS Initial Attack Crew in Lytton. We fought an extremely aggressive
afternoon fire that came up the rail corridor from the south. We were two six-man crews plus a hand full of Ranger staff and had strong air support. We stopped that fire just shy of Kumsheen Secondary's playing field and came very close to losing the Village at that time. We backburned three times in the narrow corridor between the river and the Hwy that at points were only 200 m wide and includes the rail line. Our third backburn supported by Air Tankers prevailed that day, but only with the narrowest of margins. Even back in 1975, there was a huge controversy over the railway's culpability. Railways used to be liable for all fires that started within their corridor. This time the idea that the TSB addressed the possibility of the fire coming off of a spark from a steel train wheel against the steel track has been non-existent. Nor was the fact that a train on fire had passed minutes before, had eyewitnesses along with video footage and a documented air and ground suppression attack to put it out just before reaching Boston Bar. This is far from over and the TSB must be called to account for how they obscured or ignored so many important details."

Post #12788: “In an audio update posted to the BC Wildfire Service website Saturday, the fire’s incident commander said aircraft and heavy equipment were working on the fire’s flank in the Paxton Valley Road area, north of Monte Lake. It’s an area where Global News cameras witnessed at least 15 fire-ravaged properties. Russ Bouvier and a crew of four other locals who have been finding and extinguishing flareups in the valley bristled when asked about the wildfire service’s response. “Do you see them? You’re here. They’re not here, they haven’t been here all day,” he said Saturday. “We’ve been dealing with this non-stop. We lost another structure this morning just because there’s no one here. There’s what, five of us? … I have not talked to one B.C. fire guy in what, three days?“

Allegations of cover-up and underreporting by the media could also be attributed as responsible for creating mistrust in the risk management system. There were multiple claims of media blackouts of critical government failures (for example) in combatting raging wildfires by some
Facebook users (e.g., Post #90557, Comments #90557b & #90557c). Claims of cover ups like this whip up sentiments against media and distrust for official narratives as well as cast doubts on the government’s ability to respond adequately to emergencies. Similarly, discontentment and conspiracy theories surrounding how various FPT governments have handled emergencies within their jurisdictions will continue to create and spur distrust among the public regarding the sincerity and reliability of government efforts and by extension, the communication thereof. Under this atmosphere, public disillusionment grows, and the citizens will naturally warm up to innovative and independent channels as a symbol of growing resistance. Therefore, technological solutions such as weatherwatch reflects the eroding public trust and thinning reliance on emergency communications from the traditional first responders.

**Post #90557**: “I am wondering why there is no mention or updates on Global News in regards to the other fires in B.C. other than White Rock Fire. I do realize the White Rock Fire is major and is taking structures but I can see the Flat Lake Fire that has been burning for over 5 weeks in the Cariboo and we are receiving no update through the news.”

**Comment #90557b**: “They only updates they give us is if it effects big towns. I love how now they call the white rock lake fire now 10 k from Vernon yet all these small communities will get hit first and they don’t mention them either. Its sooo frustrating both of these fires have been going for over a month and the white rock lake fire started at Salmon lake not by Vernon but the media just follows the sheep around and does what they are told. Community Facebook pages have been how we are been getting the majority of our information on this fire as we are a small community and seem to have been forgotten as well on the news! I pray for all of us and pray they get these beasts out! Such a disgrace our government is and the news isn’t any better.”
Comment #90557c: “They want to keep people in the dark in regards to the severity of the fires and their lack of ability to fight the fires and the gross incompetency of the BCWS”

Topic 3: Social Media as the New Battleground of Risk Ideologies

It has been copiously mentioned in this thesis that the field of risk management is discursively contentious and the theme of this category bears agreement with that perspective. Ordinarily, discussions about disaster risks on Facebook Groups are characteristically diverse, reflecting sundry needs and motives such as using social media for community support and solidarity among disaster survivors. Social media has, however, become the new battleground for the contest of ideologies about risk governance. An ideology is basically a system of meaning that helps define and explain the world and (that) makes value judgments about that world (Croteau and Hoynes, 2018; 287). The broader debates about disaster risks as well as public opinions on emergency management policies seem to have found a more fertile ground in virtual communities. These debates could be sensitive and emotionally charged especially when it concerns strong but conflicting viewpoints on risk policies and disaster handling. These contentions largely stem from ideological triggers that users bring to the fore when engaging each other on debates about social, environmental, health or disaster topics. Triggers are what I consider statements expressing a user’s view on a sensitive or trending subject. Triggers typically generate (for and against) divisive and spirited arguments among the flurry of responses (in this case reactions, comments, and shares) that follow. A few examples are presented below:

a. Outsourcing Snow Plowing: The statement in (Figure 5.11) is an example of debate trigger. Particularly, this post concerned the author’s belief that British Columbia (BC) government has adopted a lackadaisical attitude towards emergency social services (i.e., snow plowing). The author was implicitly criticizing the outsourcing of road plowing to contractors as well as the supposedly poor oversight on the part of the government. Expectedly, this generated diverse responses in the comments about winter social services, merits of plowing contracting, and the larger ideological logic (or lack thereof) behind neoliberal policies.
b. Discrepancy between Fire vs. Flood Reliefs: This trigger (Post #4398) created a conversation about the perceived double standards from the BC government and the Red Cross of Canada while providing financial relief for fire and flood victims. The author believed that flood victims got a better bargain than the fire victims (which he belonged to). As expected, the reactions that followed were assorted but each expressed their (dis)agreement with the original position.

Post #4398: “This just blows my mind, already these responses this year have been a world apart. Not saying people should get less, I am simply pointing out that my family had received $1200 from Red Cross for 50+ days evacuated because of the Sparks Lake Fire. In order to be eligible they had to be evacuated for at least 10 days. Now, government is streamlining a process to get $2000 immediately for those affected by the floods through Red Cross, no waiting period either. Now there was also a state of emergency declared in a matter of
days, and when the fires happened it took WEEKS. These are all notes that cannot be ignored moving forward. Two different British Columbia's. Two different responses.”

c. Other social risk triggers include statements that queried the continual retention of allegedly obsolete firefighting policies and mass evacuation protocols of the BC Wildfire Services (BCWS), the firefighting organ of the BC government. The author criticized the crippling effect of policies and rules surrounding the functions and structure of the BCWS. This post generated some intense discussions touching on the issues raised by the authors as well as other related views on bureaucracy and governance of risk within the province.

*Figure 5.12 strong arguments for and against firefighting volunteerism.*
Lastly, there were debates over whether individuals should be allowed to stay behind and secure their properties from destruction during fire. For example, a news headline that was shared (Post #2574) generated strong reactions in the comments (Figure 5.12). While some believe that non-trained firefighters would simply stand in the way of real fire fighter, thus exposing themselves and others to danger, there are those who think that such individual effort is warranted since the government has proven incapable of adequately protecting people’s property from raging wildfires which often spread faster than capacity.

**Post #2574:** ‘Let the firefighters do their job’ says B.C. official after evacuees stay behind, putting lives at risk | CBC News”

At other times, triggers are conspiracy theories that attempt to give insights into the *hows* and *whys* of an event and its outcome. Conspiratorial triggers present the author as having privileged insights into events that affect the public or the inner workings of risk management and decision-making chambers. Such so-called expositions naturally attract strong reactions from believers and skeptics as well. It was not surprising to see a huge volume of conspiratorial and divisive topics being contested on Facebook since evidence from literature (Foley and Wagner, 2020; Stecula and Pickup, 2021) suggests that frequent use of social media for news foraging raises the likelihood of believing conspiracy theories. The remarkable thing about conspiratorial triggers is that each side attempts to draw converts to their corners. For instance, there were some debates about the actual cause of the Lytton town 2021 fire. While there is a popular narrative that the Lytton fire was caused by sparks coming from the rolling wheels of a cargo train, one Facebook an author (Post #44465) implied a collusion between the government and the railway company to cover up real culpability in the cause of the fire.

**Post #4465:** “Did I miss something? I do not see any reference in the report to this railcar fire on a train that passed Lytton southbound just minutes before the fire. How can they make this statement and consider the matter suitably investigated? The following is taken from the report... “Conclusion A fire is reportable to the TSB as a transportation occurrence if it is known that the operation of railway rolling stock causes or sustains a fire. There has been no report of such an occurrence made to
the TSB by either railway that operates through the area." This clip seems to make details that were glossed over in the report demand more explanation than TSB has given.”

In another instance, there were multiple claims of sabotage by the BC government in fighting multiple episodes of wild and urban fires in the province. A common theme was that there was a deliberate effort to hoard firefighting resources available to fire crews. In Post #4535, the author suggested that the perceived government's fire risk management shortcomings were halfhearted and deliberate, a part of a larger sinister motive.

Post #4535: “Here you have it, new news article just what I've been saying all along... Those in here that recently discussed it with me and think they know what they are talking about, will learn a thing or two. So many people with negative comments know nothing about this. This aircraft has a great firefighting history. It was an effective key tool in many of its fires in the past. I have turned off commenting because there is no arguing the facts or proven history.”

In this case, the author shared a link to a news website story that questioned why a well-known firefighting plane was not commissioned for use in a wildfire disaster. Although, some justifications for the non-commission were provided in the news story:

‘The short answer, according to the B.C. Wildfire Service, is the Martin Mars “is a retired aircraft that hasn’t been used in B.C. since 2015,” said spokeswoman Jean Strong.’ (https://castanetkamloops.net, 2nd paragraph)

The author still felt that the decision was a deliberate sabotage by the government. These debates were sometimes so fierce that Group moderators and administrators needed to step in to call debaters to order (Post #35764). Thus, judging from how these administrators and moderators constantly had to remind users to observe decorum, etiquette, and obedience to rules, it appears
that Facebook Groups have become the new battle ground for strongly conflicting ideological debates.

**Post #35764:** “I would like to remind everyone, no matter what your opinion on the fate of the Station House, we are a COMMUNITY (emphasis original) that is facing far more urgent concerns. Our survival, strength and spirit to fight the ongoing pandemic must take precedence and our ability to remain a “one for all, all for one” entity is paramount. To allow these petty arguments and hard feelings over a ‘thing’ to divide us is beyond wrong. They will not go away when the crisis is past, so stop the fighting, name-calling and whatever before it leaves scars we cannot repair. Take your energy and help your neighbor, offer your time where it is needed and remember we are HOPE, which is a mighty fine thing indeed.”

At the heart of these ideological contests is the quest for better representation of self with respect to risks and resilience by the at-risk population and disaster survivors, especially in the aftermath. Within the context of disaster risks, Few et al. (2021) used representation as a concept to describe the articulation of “sets of ideas, and their portrayal of events and people, needs and actions” (p. 8). Representation conveys disaster actor’s interest and priorities as well as shape the understanding of risks, disaster events, the impacts, recovery needs, and the people experiencing them. Representation can be either internal (self-representation) or external (how others see them). Both representations hardly converge nor stand on equal footings. Like all intervention into social issues, disaster risk management is a function of the dominant (often external) representation of the risks, vulnerability, and survivorship produced and conveyed by institutions with significant power, media access, and resources (Bornstein et al., 2013). The risk governance principles that have been normalized and legitimized (via laws, guidelines, and standards) largely inform how response and recovery activities are coordinated. Often, government’s disaster responses rely on external representation of the risks and the survivors, hence, they frequently employ technocratic, infrastructure-centric, and managerial fixes, while ignoring self-representation of the communities of disaster especially their trauma, non-material losses, and social complexities (Few et al., 2021).
Roger Few and colleagues, however, point out that communities of disaster do not passively accept external representations, but are actively involved in countering them while also constructing self-portrayals through both mainstream and new media. The media, being an important tool for normalizing and legitimizing ideas and ideologies, has been a veritable site for constructing, deconstructing, and reconstructing (self-)representations. Therefore, social media being within the reach of an average member of a disaster-affected population provides a powerful tool to challenge unfavorable ideologies that dominate representations for and on their behalf. The fact that some disaster topics have become emotional triggers for Facebook users underscores the pent-up desires to change the narratives of their representation. Curiously, disaster communities are not monoliths, hence, the preexisting stratifications amongst them naturally complicate what self-representations entails. Consequently, the quest for self-representation only produces more ideological contestations as observed on Facebook.

5.8 Conclusion
In this study, I have been able to connect social impacts of risk discourses as discussed on Facebook to power amplification in risk management within Canada. Table 5.2 presents a summary of the relationships between these impacts and the amplified power that creates and sustains them. This connection marks a significant advancement to our understanding of the utility of the SARF model as well as sheds light on the undercurrents of the contentions among various shades of power that are at play in the Canadian risk management discourse. The adoption of social media as a virtual townhall appears to be in direct response to power amplification characterized by the selective amplification of risks by the media and insurance industry. The media, being an important ally of powerful actors, is complicit in giving privileged access to a few players, thereby promoting one discourse above others. Similarly, the distrust between the producers and consumers of risk messages is fueling the growth and patronage for alternative medium of interpersonal and social communication.

On the other hand, longstanding risk communication and evaluation practices are being challenged progressively by innovative information practices. Hitherto, risk evaluation was the exclusive
preserve of *expertism*, and the acceptable standards of evaluation were enforced through standardization and documentation. These power dynamics served to amplify the importance and influence of technical experts, thus promoting discourses of risk actors that can hire or claim “expertise”. In recent times, the decentralization of information gatekeeping roles (no thanks to the social web) has provided unprecedented changes to how risk discourses are produced and consumed. Technological affordance of social media permits visibility for marginalized and culturally important risk perspectives. It has also permitted the collective sensemaking of pertinent risk and vulnerabilities in ways that increasingly eliminate the influence of institutional experts. Finally, ideological contests over risk governance have unsurprisingly shifted to social media, albeit with exceptional vibrancy. One of the most challenged ideological narratives concerns the representation of risks and disaster-affected communities as well as the merits of transferring risk mitigation responsibility to individuals—a hallmark of the neoliberal approach to risk management.

A common thread that cuts across the three social impacts identified in this study is the social phenomenon that the public are increasingly playing sophisticated roles in the communication and evaluation of disaster and environmental risks. Not only that, they are also (unprecedentedly) seeing themselves as important players in the risk management scheme of things. With smarter and cheaper mobile technologies, wider internet connectivity, better information literacy, and the population of digital natives forming critical mass, this phenomenon would only become more prominent as time passes by. With such progressive prominence comes more complications in the power dynamics of risk management.

First, it is expected that the powers and influence of establishments (i.e., governments, corporations, and the media) would become more diluted (at worst) or simply evolve to retain any semblance of clout in risk management (at best). Second, crowdsourcing, and other measures of peer-to-peer information sourcing would form the bedrock of collective sense making of disaster risks and the larger environmental hazards. Replacing the practice of receiving risk explanations and forming perceptions based on institutional discourses, the future of risk and vulnerability sensemaking would involve the transition to a negotiated understanding that is derived from multi-
channeled, multi-sourced and aggregated risk information behaviors. Third, it is inevitable that there would be increased proliferation of (mainstream and marginal) risk authorities who will wield significant powers to shape risk perceptions amongst different segments of the public. Finally, along with proliferated risk authorities, there certainly would be more diverse social impacts of power dynamics among risk players. As new risks, unknown risks, and authoritative sources emerge in the risk arena, social implications of these power negotiations would evolve and transform the management of risks by all concerned parties. These negotiations would expectedly fall along geo-political, socioeconomical, commercial and even religious faults, as more previously marginalized marginal actors (and their views) receive stronger attention.

I’m not oblivious of the strong connection between the social impacts that have been identified in this study and the data source used (i.e., Facebook groups). In fact, what this signifies is that emergent social impacts of power amplification in disaster risk management would continue to evolve along with the dynamic trends in engagement platforms that permits contest of social discourses about risks i.e., from journals & newspapers to radio/TV, internet, social web, and whatever technology it is to come. Additionally, it is not unusual for Facebook data to have a significant portion of noise as much as signal. Although Facebook Groups are typically created for social engagement around specific topics, their inputs are wild since they are essentially a contributory community. Hence, a large portion of the data that is not directly relevant to the objectives of the analysis and interpretation is fairly expected. Unlike other data collection tools (e.g., interview or survey), whereby participant’s responses are (most often than not) direct reactions to specific questions, Facebook data largely do not naturally present data that directly speak to the researcher’s points of inquiries. Hence, qualitative research using this type of data is essentially searching for gems amongst stones. This could account for why I could only come up with three topics of social impacts from among the initial eight topics that were classified.

One of the guiding principles used in the thematic analysis in this study was the understanding of what Facebook use means for an average Canadian citizen and resident. Facebook posting represents the freedom of speech, self-expression, and personal liberty that liberal democracies guarantee. Thus, the use of Facebook in disaster (and other) contexts demonstrates the user’s
original expression and intentional efforts in contributing to the social discourse of disaster risks. Since Canada is largely a long-standing liberal democracy, social media contributions are typically done under the atmosphere of free speech and the belief that every citizen have the right and responsibility to use whatever communication channel to not only voice their concerns but also criticize institutions whenever the occasion demands. This perspective is important in critically analyzing the inherent motivations for Facebook use within the disaster context. This underlining disposition is in line with the methodological position made earlier in this chapter that the context of use of social media platforms is a critical tool for interpreting data obtained thereof.

Another principle that constantly guided the analysis and interpretation of the data in this study was the application of the contextual importance of technological affordance in participating in social discourse. It was extremely important for a researcher to constantly remind himself that Facebook post should be viewed as a product of the users' thought as well as their understanding of the purpose/aboutness of the Facebook Groups. Groups largely permit uncensored articulation of thoughts to whatever extent the “community rules” allow while participating in public discourses. The freedom to express oneself without much political or social hinderances, the notion that they can be heard, the literacy to use a powerful tool for such purposes encourages them to use the site to genuinely engage in topical issues. We can expect that users bear this mindset when they express themselves on the platform as well as while engaging other users. Similarly, since Groups are created for specific purpose and causes, users who join such groups do so with the intention of engaging in conversations around such topics, the social causes such topics may represent as well as in the hope that they would engage directly with others who share similar concerns (although not necessarily sharing the same views). With these understanding principles borne in mind, my data analysis took on the data as a reflection of both the thoughts of the users (on the topics) as well as their awareness of the technological affordance that Facebook Groups offer for expressing these thoughts. Essentially, the interpretation of Facebook posts did not take those words on the face value alone, but also investigated the context of what it means for someone using a powerful communication tool to reach out to others. Thus, context of use is an integral part of data interpretation.
5.9 Limitations of the study

Because there were significant noises (i.e., irrelevant Facebook posts) in the data, it is possible that word association employed by the topic modelling was influenced by these Facebook posts that were not social-impact relevant. Nonetheless, since we are not relying exclusively on the key-term outputs generated from the modeling (having also conducted thematic analysis), this limitation does not in any significant way distort the findings. In other words, while it is possible that the topic modelling would have performed differently under a more succinct corpus, the shortcoming was compensated for by the manual interpretation conducted by human analysis (Liu and Xu, 2018). Additionally, this study is limited to the investigation of social impacts from the point of view of the Facebook population and it is reasonable to expect that different data sources might have revealed different nature of social impacts for a few reasons: first, Facebook’s demographics would be different from other social media platforms. Second, its technological affordance would uniquely enhance or constrain the social interactions available to its users and by extensions, the nature of social conversation around risk debates. Third, it is hard to verify if these groups adequately represent all sections of the Canadian population. Similarly, using multiple social media (e.g., Twitter, WhatsApp groups, LinkedIn, etc.) would have permitted the triangulation of the findings obtained using only Facebook, hence, the depth of insights gained from this study is limited. However, since our aim is not statistical generalizability, these shortfalls do not invalidate the findings although deeper insights (through multiple data collection methods) would have been desirable. Also worthy of note is the observation that digital traces are typically fleeting as they usually reflect the states of mind of the public in the heat of the moment (Zheng et al., 2020). A better reflection of people’s mindset is most aptly collected by other methods such as interviews or surveys. This is a suggested method for future studies.

5.10 Ethical Considerations

Western University subscribes to the Tri-Council Policy Statement (TCPS2) on research ethics involving humans. Interagency Advisory Panel on Research Ethics’ (2018) TCPS2 (Article 2.2) however exempts studies that do not directly make use of human participants from requiring Research Ethics Board (REB) review in so far, they use data that are:
a. publicly available through a mechanism set out by legislation or regulation and that is protected by law; or

b. in the public domain and the individuals to whom the information refers have no reasonable expectation of privacy. (For example, identifiable information may be disseminated in the public domain through print or electronic publications…) (p. 15)

The two studies in this thesis fulfilled the requirements of both exemptions as stipulated above. The first study employed data that are publicly available and accessible while the second study used a public data source (Facebook) and data from individuals who were sharing their thoughts in a space where there cannot be reasonable expectation of privacy i.e., Open and Public Facebook Groups.

In this second study, nonetheless, researching socio-technological issues involving social networks data comes with debatable ethical concerns that significantly shape the reach of the research designs and results. Fuchs (2017) argues that all critical studies have some ethico-political dimensions to them, thus, methodological decisions like these must be approached with continuous reflexivity. Franzke et al. (2020) equally points out that ethical decisions are ongoing processes that must demonstrate process- and context-oriented approach at different stages of research. Hence, a researcher must be aware of and constantly respond to the biases involved in the selection of sources, construction of knowledge, and the interpretive inferences given to elements of their inquiries and findings. In drawing up the methodological decisions for the second study, my ethical considerations focused on the interrelated topics elucidated below.

5.10.1 Privacy and Consent

Facebook data from Open Groups are available and accessible to the public and as such, there was no intention of employing any strict privacy protection measures since users can no longer reasonably expect any privacy for their data (Badmus, 2020). However, an effort was still made to mask user identities while reproducing excerpts and similar measures were taken to de-identify traceable personal data for each user. The expectation of consent of Facebook users is presupposed by their assumed understanding that using Open Facebook Groups comes with security settings
that are explicit enough for users to be aware that their thoughts can be openly accessed by the public, including researchers. Although, users didn’t create data with explicit intentions that they would be participating in research, it could be argued however, that since Facebook’s Terms of Service expressly informed them their data would be used by third party, obtaining user consent would not be an issue.

5.10.2 Confidentiality/Anonymity
User’s identity management is closely knitted with other issues of privacy and consent. Ethical responsibility in research demands that user’s identity is protected from unauthorized access. However, the peculiar nature of Facebook Groups may reveal usernames and demographical details such as location, gender, etc. which could sometimes form an integral and indispensable part of the posts, without which the true essence of the message is lost. This is a grey area that requires discretion and deep reflection on the part of the researcher and guidelines are still being developed for these issues (Zimmer and Proferes, 2014). I therefore went into the research with the mindset that Facebook users cannot expect strict anonymity while posting in Open Groups. Moreover, users typically post on Facebook to contribute to social conversations actively and deliberatively and can thus be reasonably assumed to have voluntarily waived their rights to anonymity. Masking user identities (as noted above) was a partial measure to protect user’s confidentiality in this study.

5.10.3 Storage/Archiving
Data handling, storage, and security received adequate attention during the collection and analysis steps. Data was not shared with anyone else as it contradicts CrowdTangle/Facebook’s collection agreement and share policy. Equally, the storage was encrypted after the study to limit access only to authorized users.
**Table 5.2 Summary of the relationship between social impacts and power amplification in risk management discourse**

<table>
<thead>
<tr>
<th>Social impact</th>
<th>Discursive practices of power amplification</th>
<th>Power dynamics social impacts respond to</th>
<th>Power Dimension</th>
</tr>
</thead>
</table>
| Virtual Townhalls as Alternative Information Hubs | • Lowering entry barrier to mainstream discourse participation  
• Resistance to curated, censored media contents  
• Resistance to selective access to media  
• Rampant distrust in the post-truth media era | • Selective Risk Amplification | • Communication  
• Trust  
• Credibility |
| Resistance Power in Risk Communication and Evaluation Practices | • Enhanced visibility for hitherto marginalized risk perspectives  
• Unprecedented access to diverse & decentralized information that helps to formulate better risk perceptions  
• Maximizing the advantages of collective disaster sensemaking and evaluation of risks  
• Growing distrust for government and media discourses and risk *expertism* | • Risk Inclusivity Resistance Discourse  
• Exclusivity of Risk Technical expertise  
• Standards and Documentation of risk assessment | • Communication  
• Assessment  
• Trust |
| Social Media as the New Battleground of Risk Ideologies | • Social debate triggers  
• Conspiracy theories  
• Conflicting ideologies on risk management principles  
• Quest for better self-representation in discourses | • Responsibilizing Risk Mitigation | • Communication  
• Trust |
Chapter 6

Summary and Conclusion

6.1 Introduction

This thesis started with the idea that as in every field of social risk, contest of discourses is inherent in disaster risk management and that such contestation produces some power dynamics that precipitate inequitable disaster outcomes for different sections of the population. It was argued that risk discourse is one of the tools that people can use to improve their disaster outcomes and equally alleviate their risk vulnerabilities because discourse differentials are characteristically inherent in the risk debates underlining the management, policy, and decision-making processes around a risk (Adekola, 2019). Thus, the central focus of this thesis is on the roles of discourses in creating power asymmetry within the disaster risk field. This thesis went a step further to posit that the dialectical relationship between discourses and power indicates that behind every discourse is the power and influence –political, scientific, economic, etc. –of the actor pushing the discourse. Essentially, when a risk discourse is being amplified, it is the power behind it that is being amplified. The capacities of the powers behind the amplification ultimately define what the dominant risk discourse turns out to be. Therefore, dominant discourses reflect the powers and influence of the dominant actor(s) in that field (Hardy and Maguire, 2016; Molotch and Lester, 1974).

This consideration therefore motivated the questions on the roles played by social discourses in creating the power dynamics that shape disaster risk management and social perceptions – and indirectly, the social realities of risks – in Canada. In concise terms the study examined four distinct dimensions of powers: nondecision-making power, ideological power, tactics of domination and resistance, and agency and structure. While these dimensions of power exhibit distinct characteristics, they often overlap and could blur into each other due to the constantly evolving nature of disaster risks and the increasing sophistication of human interactions with the environment.
6.2 Summary of Findings from the Thesis

The thesis is composed of two distinct, but interrelated studies fashioned along the two stages of amplification mechanism of the original SARF i.e., informational and response mechanisms. Accordingly, the first study aimed to address the informational mechanism of discourse amplification by identifying the identities and influential roles of major actors in the hurricane risk discourse as well as the pattern of power dynamics created by their discursive contentions. These twin insights permit us to have a good appreciation of how power amplification via risk discourses reproduces uneven disaster outcomes for the population. The following subsections highlights important insights from the two studies that sought to provide answers to research questions of the thesis.

6.2.1 Discourse, Power Dynamics, and Risk Amplification in Hurricane Risk

The first study examined the identities and influential roles of major actors in the disaster risk system of Canada and equally examined the discursive strategies the employed through various practices to dominate the risk landscape. By applying critical analyses, the study matched their discursive strategies with the dimensions of powers they wield. This enabled us to come up with insights that connected the roles of discourses (in shaping risk management processes and decision making) to the different patterns of power dynamics that precipitate differential vulnerabilities that characterize disaster outcomes. Consequently, the study’s research questions are answered as follow:

RQ1: Who are the risk actors that significantly wield relevant dimensions of power in the Canadian disaster risk context?

Four classes of actors were adopted in this study. The following actors were found to be playing influential roles in shaping the risk discourse as well as wielding significant powers in the hurricane risk management.

1. Federal and Provincial Discourse Actors
   a. Senior Officials Responsible for Emergency Management, SOREM
   b. Regional Emergency Management Organizations (EMO)
   c. The National Hurricane Centre, NHC
d. The Canadian Hurricane Centre, CHC
e. Environment and Climate Change Canada, ECCC
f. Public Safety Canada

2. News Media

3. Risk Experts (i.e., insurance industry)

4. Non-Governmental Bodies
   a. Cultural and advocacy groups
   b. Humanitarian and developmental agencies

These four actors bear huge influences on shaping risk perceptions for the public through diverse means. For instance, the federal and regional governments have the strategic and operational responsibility to determine issues such as risk plans and policies, developing risk communication strategies, advancing, and enforcing risk assessment standards, etc. They also have the capacity to influence the allocation of resources and the scale of attention accorded to disaster mobilization in times of crisis. Arguably, the most influential roles of the media are premised on its capacity to serve as the intermediary and broker of knowledge between the public and subject experts. Similarly, its ability to (un)select and frame discourses according to its desires positions the media as a significant shaper of public discourse and risk perception. In addition, by being the platform for contest of discourses among various parties, the media serves a unique function of advancing dominance of risk discourses for the privileged. The risk insurance industry on its part has the discretionary influence to empower risk consumers for resilience against disasters by determining their risk exposure and eligibility for coverage. They also typically create discourses around known and unknown risks in ways that significantly inform the risk landscape while setting the pace and direction for urbanization and development. Finally, Non-Governmental bodies also contribute to the risk discourse primarily through public advocacy and policy development inputs. They work to remove obstacles to disaster equitability by contributing to risk policies that would address the underlying political and socioeconomic issues that precipitate or worsen risk or disaster vulnerabilities. They also project alternative views of risk management and giving voice to marginalized communities and minorities.
RQ 2: How do the power differentials within the risk management system inform the social amplification of disaster risks?

Findings from the first study were able to establish the different discursive and social practices employed by the above-mentioned actors to project their idea of hurricane risks. Both discursive and social practices demonstrate the amplification of the powers of these actors. The interplay of these practices produces discernable patterns of power dynamics prevalent within the three different dimensions of power in the hurricane risk management system. These patterns include:

**Risk Communication:**
- i. The Media-Insurance Industry Alliance: Selective Risk Amplification
- iv. Risk Inclusivity: The Resistance Discourse

**Risk Assessment:**
- i. Technical Expertise: Agentializing Assessment Exclusivity.
- ii. Standards and Documentation: Tools of Exclusivity
- iii. The Government-Insurers Angle: Risk Assessment as Complex Matter

**Social Trust:**
- i. Technical Risk Expertise as Driver of Social Trust

More often than not, these patterns reflect the congruence of the various discursive and social practices of different actors rather than confliction between them. For instance, the media communicative practice of selective risk amplification matches the aspirations of the risk insurance industry to selectively draw attention to risks. Similarly, the media, insurance industry, and the government have compatible values when it comes to pushing neoliberal ideology that makes risk mitigation a personal responsibility of consumers. Again, a major confluence of discourse between the government and the insurance corporations is the sustenance of the standardization strategy which serves as a tool of exclusivity. This ensures a perpetual hold on the parameters of risk definition and evaluation. These few examples exemplify the significance of the power dynamics
that continues to set the pace for risk awareness for all other actors. As has been equally established in previous studies, technical expertise remains a primary driver of engendering social trust between major actors and their audiences. Trust is what nurtures credibility which confers legitimacy on an actor’s discourse. Therefore, as long as trust subsists, it will sustain some power dynamics that ultimately shape risk amplification within the disaster landscape. Exploiting these power dynamics, powerful actors discursively construct risk realities for the society to maintain a hegemonic hold on risk-decision making, financial gains, authority, and resources allocations. These advantages (in)directly reproduce differential risk vulnerabilities and inequitable disaster outcomes for different segments of the population.

6.2.2 Examining Social Impacts of Risk Power Amplification
The second study went further to identify some social impacts that are attributable to the power dynamics found in the preceding study. It sought to explain the response mechanism of the amplification process by demonstrating the connections between specific power dynamics and resultant social consequences that might arise thereof. It highlighted these social impacts by examining topical discourse among the online public to evaluate shifts in social values and behaviors informed by contemporary risk discourses and attendant power amplification.

RQ 3: What dimensions of social impacts can be associated with risk discourse amplifications occasioned by the power differentials among risk actors?
Analyses of data from Facebook groups in the second study revealed some ongoing shifts in the risk behaviors of the public which can be directly tied to the discursive actions and the power dynamics operating in the risk and emergency management system in Canada. The study identified three social impacts attributable to the power dynamics inherent in the risk management system as follows:

i. Virtual Townhalls as Alternative Information Hubs
ii. Resistance in Risk Communication and Evaluation Practices
iii. Social Media as the New Battleground of Risk Ideologies
Findings from the study of Facebook exemplify the disaster risk discussions on social media, and it can be concluded that social media have become the virtual community space whereby people meet to fulfill each other’s various information needs off and on emergency periods. These needs include weather and disaster updates, advisories, solidarities, shared experiences, witnessing, etc. Findings suggests that the formation of virtual community information hubs is a sign of direct social resistance to the selective coverage and unequal allocation of speaking rights (by the media) as well as other oppressive discursive practices (by governments and corporations) that characterizes the power dynamics in risk communication highlighted above. The second social consequence of the risk power dynamics covers the growing challenge to the risk communication and evaluation practices hitherto prevalent in the public risk management. This demonstrates the desire of disaster-affected societies to take control of the risk building narratives. For instance, social media is considered by many as a viable alternative to traditional media for building risk awareness and alternative perception of vulnerabilities. Similarly, the proliferation of non-mainstream expertise means that the public can now evaluate the risks they face independent of official assessment. These practices reflect a growing social distrust for institutional discourses that dominant actors project in risk communication and assessment which are identified in the power dynamics topics above e.g., agentializing assessment exclusivity, selective risk amplification.

Finally, the third social impact demonstrates that social media is the new frontier in the contest of risk ideologies. The broader debates about disaster risks as well as public opinions on emergency management options seem to have found a more fertile ground in virtual platforms –including conspiracy theories. Essentially, the contest is about representation of risk parties with respect to risks and resilience (i.e., mitigation and recovery). The media is an important tool for normalizing and legitimizing risk ideologies and representations but that which is typically beyond the control of ordinary Canadians. Therefore, social media (being an affordable alternative for a disaster-affected population) provides a powerful tool to challenge unfavorable ideologies that dominate representations for and on their behalf.
6.3 Concluding Thoughts
Juxtaposing the findings from both studies, it can be concluded that three key factors (access to media, technical expertise, and social trust) are the most essential power elements that actors must possess to successfully define a widely acceptable risk understanding. Preferential access to media resources is particularly needed to turn that carefully curated risk view into the dominant risk reality that all will live by. While this pattern of tripartite power dynamics predates the advent of the internet and the social web, the decentralization of risk information and evaluation gatekeeping roles (hitherto held by the media and institutional experts respectively) has not significantly changed it. Rather, social media has only opened a new frontier for the discursive contentions that characterize the power dynamics. Thus, social media has become the new media resource that permits proliferation of different shades of risk assessment while also permitting powerful actors to connect with their audience on a more personal level to ultimately build trust and credibility.

6.4 Contributions of This Thesis
6.4.1 Theoretical Contribution: Power-Amplified Risk Discourse Framework
The adapted framework used in this thesis, the Power-Amplified Risk Discourse (PARD) framework, is a novel addition to the growing list of modifications to the original SARF model. It has been tested in this thesis and found to provide theoretical basis for understanding the complex roles of different dimensions of social power in the amplification of risk discourses as well as the significance of power relations and discourses for shaping disaster outcomes and risk vulnerabilities. While the scope of its utility remains to be tested, the framework would be useful for future studies that seek to examine the complex issue of power relations in ensuring an equitable management of public risks. As conceptualized in this framework, risks carry a dual property as being real and constructed. While there are environmental hazards that when combined with human factors result into identifiable costs to life, properties, or the environment, the danger that they pose to human population is equally constructed since perception is the primary driver of risk aversion or lethargy.

As mentioned in previous chapters, a major criticism of original SARF lies in its inability of the framework to account for the role of inherent power dynamics in the amplification process.
Wardman (2008) specifically mentioned SARF’s failure to adequately account for the significance of “context and power in determining the availability of opportunities of different actors to influence substantive risk outcomes” (p. 1629). While Comrie (2015) attributed this limitation to the framework’s narrow definition of the qualities of social actors, others (e.g., Petts et al., 2001; Rayner, 1988) pointed out that the framework failed to account for how key actors use the media in risk communication, thus limiting its capability to shed light on the roles of power behind risk amplifications. Consequently, SARF in its original form was not useful for social inquiries that required the scrutiny of the power relations among social actors. The Policy Evaluation Risk Communication (PERC) framework is a major improvement to the SARF model that effectively integrates elements of power into the framework (Adekola, 2017). PERC establishes that power, expertise, communication, and trust/credibility are the factors that primarily influence the evaluation of risks and uncertainties for policy making under contending multiple discourses. It also suggests that social amplification of risk is what drives the evolution of risk debates whereas public health risk policy arguments are typically enmeshed in the interplay of power and expertise (Adekola et al., 2019). However, if we desire to proceed beyond risk policy making, PERC offers little prescription on how variables we can use to measure the significance of power for high order social risk consequences. Whereas PERC’s strength is in providing theoretical tools for examining the significance of risk amplification for policy making, it is not sufficient to provide holistic constructs that can critically examine how different dimensions of power amplification within risk discourses shape differential risk vulnerabilities and disaster outcomes. Moreover, PERC did not go beyond the informational mechanism stage of the process to explain how public response can reflect the social impacts of these amplifications.

The PARD framework however, drills down into the dimensions of power (communication, assessment, and trust) in which amplification plays out among different classes of actors. This deeper scrutiny of power is required if we need to properly establish how power amplification within discourses produce social consequences for disaster risks. Merely referring to power on a generic or surface level would not reveal the connections among discourses, power dynamics and social impacts of risk amplification. Again, while PERC was limited to the informational stage of amplification process, but PARD extended the utility of SARF to bridging this gap by unravelling
the social consequences of power-induced amplification. Finally, this thesis has further extended the utility of the original amplification framework by examining its applicability to disaster discourses. Another important contribution made by this thesis concerns the application of the SARF framework to studying patterns of power amplification as against its initial design that was limited to risk communication. Similarly, this thesis also drills deeper into the PERC framework by examining the various dimensions of power through which risk discourses can inform power dynamics.

One recurrent theme throughout the thesis is the acknowledgement of the evolving nature of risks, the actors and their relational powers and the consequential social impacts. This phenomenon adds a layer of complexity to the application of theoretical frameworks for studying risk discourses and power relations. However, PARD has shown its robustness for accommodating these shifting grounds. Thus, we now have a framework that can be applied directly for examining the power amplification inherent disaster risks discourses.

6.4.2 Recommendations for Practice


This study suggests a more inclusive approach to risk policy and decision making by the federal and provincial governments. While there are observable attempts by governments at different levels to promote decision making processes that reflect the growing diversity of the Canadian population, there persists some of these processes that retain a narrower view of risk agenda setting. For instance, the AHRA risk cycle is one of the important risk policy-setting processes of the Government of Canada. Inherent in this process is the exclusivity given to technical perspectives of risk. Under the “Setting the Context” step in the AHRA, the AHRA guidelines specifies that:

*During the winter quarter, experts from federal institutions are convened to conduct Risk Analysis based on the risk event scenarios developed during the fall quarter. This activity is the main objective of risk scoring workshops, which will be planned*
by PS. Initial results from the risk scoring workshops will support institutions in assessing their level of readiness against priority risks [p. 10]

The exclusivity of expert input into this risk agenda-setting process should be reviewed to permit more diversity of opinions. One way of doing this is by inviting memorandum from the public and other EM partners at every stage of the cycle. Similarly, the AHRA model is heavily premised on learning from known events that have been built into historical data. There is need to add to this scenario-based model a capacity-based model in which the resource capacity of all parties would be considered in risk agenda setting. Finally, care should be taken to ensure that risk agenda setting, communication and assessment practices should reflect the cultural and social values of all those concerned in a particular risk.

2. Discursive Empowerment for Effective Disaster Resilience.

Achieving disaster resilience is a top priority for all national governments that have subscribed to the Sendai 2015-2030 framework which was first discussed on page 146. However, a truly effectual resilience would be elusive if the citizens are not empowered to actively participate in making decisions about defining and proffering solutions to their own risk vulnerabilities. Having a strong discursive input into risk assessment and evaluation processes is an important ingredient in ensuring a well-informed and cooperative citizenry. A sense of discursive belonging amongst all concerned is the only true way for all parties (especially the public) to take ownership of the resilience mantra. The government needs to realize that a discursively vibrant populace is a strength and not a threat to theory legitimacy. To achieve this, the EM Strategy (2019) needs to be revised to accommodate a multichannel and multidimensional engagement strategy with all stakeholders, one that can meet them in their comfort zones and effectively capture their local concerns. The social media is one important tool in this quest and the independent views of risks expressed on these sites should be considered as another veritable source of knowledge translations for risk managers rather than some unwanted distractions. Its platforms are increasingly becoming part of our daily lives and people are using them to share and narrate their risk experiences with the outside world. Engaging hitherto marginalized groups through social media would be a smart and cost-effective
measure to gain the uncommon insights and equally and give discursive significance to the risk concerns of all citizens at an atomic level.

3. **Restoring Trust within the Public.**

Findings suggest that both corporations and the government appear to be suffering from a significant trust and credibility crisis amongst a good number of members of the public, judging from the unfiltered and uncensored expressions on social media. Commentaries that reflect dwindling reliance on official communications and explanations on public risks (even in previously settled issues) are becoming more rampant on social media. Since the social media represent the independent views of the risk populations, such opinions should not be casually dismissed as mere conspiracy theories or twisted ideologies, especially by the media. To rebuild trust, both players should entrench a deeper level of transparency and openness into their business conducts and practices. Firmer regulatory oversight is demanded of the government into risk insurance practices. While this study does not call for a return to a full welfarist risk governance, stronger regulation is however recommended for the current risk commodification system towards achieving transparency. One sure method of establishing such openness is to increase the level of access to information on risk evaluations, one that is available to all and sundry at the click of a digital button. Unhelpful narratives grow quickly in an opaque system whereby people grope in the dark for directions on risk management issues. Similarly, government and corporations should pay attention to social media as a viable channel of reaching disillusioned members of the public. These actors should take hold of the narrative with genuine and sincere risk discourses that must be seen and proven to serve altruistic purposes. In this sphere, humanitarian and developmental agencies should be given more leeway to serve as the drivers of risk debates and act as bridge builders especially between those on the mainstream and the fringes.

6.5 **Limitation and Future Research**

The theoretical utility of this framework needs to be tested and established with various risk contexts (risk classes, countries, risk actors, etc.). This quest shall be the objectives of my future studies. Also, this thesis adopted one out of many power typologies available in literature. It is
thus reasonable to assume that adopting a different power typology would probably produce similar or different findings and interpretation for disaster risk amplification. It is therefore suggested that future research test the validity of the PARD framework with different conceptualization of risk power. Similarly, the classification of social actors in this thesis is a subjective construct, one that is largely tied to the risk context. Subsequent studies should explore the amplification landscape using different classification rules.

Another major limitation of the research method borders on the limited access to documentary data. The restrictions occasioned by the Covid-19 pandemic constrained data sourcing to digital documents only. There is no doubt that valuable evidence would have been obtained from other sources that were locked up in public and academic libraries, public archives, information centers, physical offices, etc. which were non-operational at that time. Similarly, Facebook was the only data source used in the second study whereas using multiple social networking sites would have produced richer insights into the social impacts of risk discourse amplification. It is highly recommended that subsequent research on this subject cross-validate their evidence using vast amount of data from multiple platforms. Another significant limitation encountered with working with Facebook data was that enormous potentially useful data are locked up beyond reach in Private Groups and Pages. It is a possibility that a substantial amount of crucial data could have been found in these private sections since people are naturally more expressive in digital spaces that they consider private and confidential. I intend to extend this study to these excluded sections in future studies.

Being a sole-authorship project, this study cannot be entirely free from the pitfalls of a single-coder bias and oversights (Johnson et al., 2020). While an extensive amount of time and cognitive energy was invested in ensuring constant reflexivity, open-mindedness, and self-awareness during the analysis, the interpretation of the data might not be totally above the analyst’s social and political biases and preconceptions. Hence, it is highly recommended that future research employs multiple coders to achieve high level of coders’ consensus on analysis and interpretations. Also worthy of note is the observation that digital traces are typically fleeting as they usually reflect the states of mind of the public in the heat of the moment. Likewise, probing the thoughts of the writers
and executioners of policy statements can provide invaluable lessons way beyond what can be gleaned from the policy documents – again, the pandemic foreclosed possibility of physical meetings since most people were working remotely. Hence, a better reflection of people’s mindset would be ideally elicited via other methods such as interviews, focus group discussions or surveys. This is a strongly suggested methodology for future studies to elicit more personal views that can hopefully give better insights into the nature of social impacts that characterizes discursive contentions within power amplifications.
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### Appendices

**Appendix I. Annotated list of consulted data and sources**

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<th>Doc. Code</th>
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<td>Second Wind: The Deadly and Destructive Inland Phase of East Coast Hurricanes</td>
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**Media**
<p>| Media doc1 | A look back at Hurricane Juan 14 years after it tore through Atlantic Canada | Global News | Alexander Quon | Global News | Article | Sept. 2017 |
| Media doc3 | Ottawa, Irma and the perils of government flood insurance | Globe &amp; Mail | Barrie McKenna | The Globe &amp; Mail | Opinion Article | Sept 2017 |
| Media doc4 | Remnants of Irene barrel down on Eastern Canada | Globe &amp; Mail | Oliver Moore, Josh O'Kane | The Globe &amp; Mail | News Report | Aug 2011 |
| Media doc5 | Nova Scotia is one 'perfect storm' away from being cut off from | CBC | Michael Tutton | The Canadian Press | News Report | Mar 2019 |
| Media doc6 | Canadian insurers brace for a future saturated with flood damage claims | Globe &amp; Mail | Jacqueline Nelson | The Globe &amp; Mail | Article/Column | Sep 2019 |</p>
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**Non-Governmental Bodies**

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*Note: Environment and Climate Change Canada: ECCC*
Appendix II: Curriculum Vitae

Martins Olu-Omotayo
(Formerly: Oluwole Badmus)

Education:

*Ph.D. Library & Information Science, 2018 – 2022*

University of Western Ontario. Canada

*M. Inf. Sc. Information Science, 2011*

University of Ibadan, Nigeria.

Technical Skills:

- Programing Languages: R, Python
- Cloud Computing IDEs: Azure, Git, Goorm, etc.
- Data & Network Analysis and Visualization: Tableau, Excel, Jupyter, Sway, Gephi, Pandas, CAQDAS, SPSS, etc.
- Data Science & Machine Learning: SciKitLearn, Keras, Tensorflow, Pandas, etc.
- Data Collection, Storage and Management: SQL, SPSS, Salesforce, social media APIs, etc.
- Processing Automation: GitHub, Bamboo, DataDog, Trello, Jira, Asana, etc.

Work Experience:

- **LiveOps Specialist**
  March 2022 – Present
  **RaceRoster North America**
  - Diagnosing and investigating bugs issues and software vulnerabilities in real-time.
  - Acting as a point of contact for multiple business processes including product management, software development, customer success and QA units.
  - Validating software pull requests through effect testing, deploying, and reporting.
  - Using basic Structure Query Language (SQL) queries to manage process and user data from backend.
  - Meaningfully participate in diversity and inclusion initiatives across the ASICS Running Apps Teams.

- **Data & QA Analyst (Contract)**
  May 2019 – Feb. 2022
Malashe Ltd., Kent UK.

- Translated knowledge from complex dataset into non-technical and easily digestible business intelligence.
- Effectively used data simulations and analysis and machine learning strategies to optimize the efficiency of data generation, storage and retrieval which ultimately improved the information access for core operations staff.
- Preparing reports, presentations, and visualizations for various departments, committees, and other stakeholders.
- Used SQL to query, extract, analyze and profile data.
- Responsible for ensuring best practices in processing and transmitting data, often involving analyzing and testing data for completeness, integrity, formatting, and conformity with guidelines.
- Collaborated with database developers to perform data quality assurance and process documentation for data streams flowing into and out of the organization.
- Performed analyses and convergence of data from disparate sources to develop comprehensive trends and visualized reporting dashboards.

➢ Research & Teaching Assistant (MLIS Program)

Faculty of Information and Media Studies, Western University, London Canada

- Responsible for overseeing collating research data collation from wide-ranging sources.
- Participated in collaborative research data analysis using both quantitative & qualitative methods.
- Actively participated in conceiving, designing, and implementing research topics that translated into far reaching policy changes.
- Served as instructor, advisor, and tutor to graduate students in the MLIS programs for eleven semesters running.
- Assisted in reviewing course syllabi and materials for the MLIS program

➢ Program Officer for Community Mobilization
January 2014 – March 2018

National Orientation Agency, Lagos, Nigeria

- Conducted periodic community outreach and awareness programs on civil issues.
- Mobilized member of civil societies and trade unions to participate in community events.
- Led and participated in motorized campaigns and sensitization to countryside and rural communities.
- Championed zonal crusades on peaceful elections at different times.
- Participated in community feedback working groups set up by the agency.
Database Assistant (Contract)
Lagos State Government, Lagos.

- Consistently maintained an updated database of employees’ records of service, emoluments, and post service benefits.
- Managed the operationally efficiency of installations and hardware by completing preventive maintenance requirements; following manufacturer's instructions; troubleshooting malfunctions; calling for repairs; evaluating new equipment and techniques.
- Worked to ensure the security and integrity of the database of records for the establishment.
- Designed mechanisms to efficiently operate the storage and retrieval records of hundreds of employees.
- Provided technical support for software and hardware for the establishment for seamless delivery of public service.

Product Manager, Soft Infrastructure

- Contributes to the development and the validation of long-range planning and forecasting models for digital infrastructure.
- Contributed to the development of positioning and key strategies for the brands.
- Planned and prioritized strategic business activities and customer/prospect development towards achieving periodically defined business aims.
- Design, facilitate and conduct customer surveys and produce values adding reports for informed decision-making.
- Responsible for liaising between internal and external business units to facilitate the development of profitable business and sustainable relationships.
- Implemented the marketing plans and key strategies

Publications