

**DISASTER AND EMERGENCY MANAGEMENT (DEM) POLICY SHIFTS,
AND LEARNING IN MANITOBA, CANADA**

BY
MD SOWAYIB SIKDER

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Natural Resources Institute
Clayton H. Riddell Faculty of Environment, Earth and Resources
University of Manitoba
Winnipeg

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Abstract

The purpose of this study was to examine the dynamics of change of DEM policies of the Province of Manitoba. I followed a case study approach and applied qualitative research techniques. The findings of the study reveal that the current state of DEM policies of Manitoba has evolved through five different eras since 1929. Overall, DEM policies of the Government of Manitoba followed a reactive approach to major environmental events. Among numerous policy drivers, natural and human-made extreme events, both inside and outside Manitoba, played a pivotal role in shifting policies from one era to another. Policy learning from events has occurred. However, major barriers to policy learning were structure of government, cognitive dimension of policy makers, and resource constraints. It is concluded that a proactive and learning-based approach is required for formulating forward-looking DEM policies that would be capable to deal with emerging scenarios, such as climate change.

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DEDICATION

To my beloved wife

GAUSIA SUBORNA

*Who believes - she loved me
Hundred times, in hundreds forms
And will continue to do so
In years after years, eons after eons*

Table of contents	V
Abstract	I
Acknowledgement	II
Dedication	IV
List of tables	VIII
List of figures	IX
Appendices	IX
Abbreviations and acronyms	X
Chapter 1: Introduction	1
1.1 Context and background	1
1.2 Disaster and Emergency Management (DEM) in Manitoba	4
1.3 Purpose and objectives	11
1.4 Methodological approaches	12
1.4.1 Single-embedded case study as strategy of inquiry	12
1.4.2 Data collection procedures	14
1.4.3 Validity and ethical considerations	16
1.5 Research significance	17
1.6 Organization of the thesis	18
1.7 References	20
Chapter 2: Disaster and Emergency Management (DEM) policy in Manitoba: A longitudinal analysis	24
2.1 Introduction	24
2.2 Theoretical considerations	26
2.2.1 Patterns in policy development	26
2.2.2 Policy change processes.	28
2.3 Methodology	32
2.4 DEM policy in Manitoba: longitudinal analysis	35
2.4.1 Relief based recovery era (1929)	36
2.4.2 Civil Defence Era and political leadership (1939-1966)	37

2.4.3 Peacetime emergency and collaborative approach (1967-1990)	44
2.4.4 Integrated all-hazards approach (1991-2000)	51
2.4.5 Risk based comprehensive emergency and civil protection (2001 onwards)	56
2.5 Evaluating DEM policy change in Manitoba	66
2.6 Pattern of policy development and change	69
2.7 Conclusion	75
2.8 References	76
Chapter 3: DEM Policy drivers in Manitoba	88
3.1 Introduction	88
3.2 Drivers in policy change	89
3.3 Methodology	91
3.4 DEM policy drivers in Manitoba	94
3.4.1 Major disaster events as drivers of policy change	94
3.4.1.1 Events inside Manitoba	94
3.4.1.2 Events outside Manitoba	101
3.4.2 Lead policy actors and underpinnings	103
3.4.2.1 Lead policy actors	103
3.4.2.1.1 Politicians and bureaucrats as lead actors	103
3.4.2.1.2 Federal government as a lead actor	105
3.4.2.2 Underlying factors that shape policy	107
3.4.2.2.1 Risk perception of policy makers	107
3.4.2.2.2 Policy makers' preference toward DEM	109
3.4.2.2.3 Relationship among policy actors	112
3.4.2.2.4 Decision making mechanism of the sitting government	113
3.4.3 Stakeholders and interest groups	115
3.4.3.1 NGOs	116
3.4.3.2 Advocacy coalitions	117
3.4.3.3 General public	119

3.4.4 Learning by policy actors	121
3.5 Discussion and conclusion	122
3.6 References	129
Chapter 4: DEM policy learning in Manitoba	135
4.1 Introduction	135
4.2 Policy learning and change	135
4.3 Methodology	137
4.4 Results and discussions	138
4.4.1 Policy change processes as reactions to events	138
4.4.2 Nature of learning from events and in policy domains	149
4.4.3 Barriers for proactive and forward-looking learning and policy change	152
4.4.3.1 Structure and mechanism of disaster management	152
4.4.3.2 Cognitive dimension of policy makers and key actors	156
4.4.3.3 Resource constraints	156
4.5 Conclusion	157
4.6 References	159
Chapter 5: Discussion and conclusions	164
5.1 Key policy shifts in Manitoba DEM policies	164
5.1.1 Major findings concerning three objectives and the linkages among the findings	164
5.1.2 Other key observations and reflections	170
5.2 Major contributions of this study	175
5.2.1 Understanding the history and dynamics of the DEM policy of Manitoba	175
5.2.2 Rethinking of policy drivers and their mechanism	175
5.2.3 Incorporating proactive learning in DEM policy	176
5.2.4 Policy implications	176
5.3 Limitations of the study	177
5.4 Future research	177
5.5 Recommendations	178
5.6 References	180

List of tables

Table 1.1. Relationship among population, peak flow of water and flood loss in Manitoba	5
Table 1.2. Disaster and Emergency Management system in Manitoba	10
Table 1.3. Summary of research objectives, research questions, methods and rationale	15
Table 1.4. Chapters and content of the thesis	19
Table 2.1. Steps followed in Document review	33
Table 2.2. List of Acts (including amendments) which were amended under The Security Management Act, 2002	58
Table 2.3. Timeline of evolution of Manitoba DEM policies by era	65
Table 2.4. Comparison between the DEM policy eras of Ontario and Manitoba	74
Table 3.1. Steps followed in the document review	93
Table 3.2. Flood events inside Manitoba as policy drivers based on opinion of KII respondents	95
Table 3.3. Flood events of Manitoba as DEM policy drivers	98
Table 3.4. Fire events as policy drivers in Manitoba	99
Table 3.5. Events outside Manitoba as policy drivers in Manitoba	102
Table 3.6. Federal government as a Manitoba DEM policy driver	107
Table 3.7. Policy makers' preferred mitigation measures	110
Table 3.8. Policies formulated in Manitoba pertaining to structural and non-structural concentration	110
Table 3.9. Mode of interaction among policy actors	112
Table 3.10. Summary of the role of NGOs and interest groups in DEM policy making	120
Table 3.11. Role of learning in policy change in Manitoba	122
Table 3.12: Summary of the findings (policy drivers)	125
Table 4.1. Event-related learning in Manitoba DEM policy	142
Table 4.2. Nature of learning in DEM policies of Manitoba (1929-2016)	151
Table 4.3. Evidence of learning at the municipality level following Birkland's (2009, p. 153) parameters	155
Table 5.1. Summary of major findings of the study	165

List of figures

<i>Figure 1.1.</i> Map of Manitoba	4
<i>Figure 1.2.</i> Major disasters in Manitoba (1904-2014)	7
<i>Figure 1.3.</i> Escalating cost of disasters in Manitoba	7
<i>Figure 1.4.</i> Disaster and Emergency Management system in Manitoba	9
<i>Figure 2.1.</i> Howlett and Cashore Framework	27
<i>Figure 3.1.</i> Spreading municipal concern by AMM to the citizens before the election	118
<i>Figure 4.1.</i> Event related policy learning	140
<i>Figure 4.2.</i> Proposed Event related policy learning model of Birkland (2009)	148

Appendices

Appendix A: Certificate of completion of TCPS 2: CORE	184
Appendix B: Ethics approval	185
Appendix C: Invitation letter to the Respondents	186
Appendix D: Sample consent form	187
Appendix E: Questionnaires	190
Appendix F: Policy drivers in Canadian Perspective	195
Appendix G: FIPPA Approval	196
Appendix H: List of Manitoba laws related to Disaster and Emergency Management	198
Appendix I: Time line of evolution of Manitoba DEM policies	199

Abbreviations and acronyms

AMM	Association of Manitoba Municipalities
CAAR	Canadian Association of Agri-Retailers
CANUS	Canada-United States Reciprocal Forest Fire Fighting Arrangement
CEPA	Canadian Emergency Preparedness Association
CIFFC	Canadian Inter Agency Forest Fire Center
DEM	Disaster and Emergency Management
DFA	Disaster Financial Assistance
DFAA	Disaster Financial Assistance Arrangements
EMO	Emergency Measures Organization
FACO	Financial Assistance for Cottage Owners
FEMA	Federal Emergency Management Agency
FPT	Federal-Provincial-Territorial
GLFFC	Great Lakes Forest Fire Compact
ICS	Incident Command System
IJC	International Joint Commission
JEPP	Joint Emergency Preparedness Program
MACO	Manitoba Association of Cottage Owners
MANFF	Manitoba Association of Native Fire Fighters
MEP	Manitoba Emergency Plan
NFFC	Northeastern Forest Fire Compact
NGO	Non-Government Organization
NIMS	National Incident Management Systems
PFRA	Prairie Farm Rehabilitation Act
RRBC	Red River Basin Commission

Chapter 1: Introduction

1.1 Context and background

This thesis research concerns disaster and emergency management policies, their changes, and their drivers in the Province of Manitoba, Canada. Before discussing the context of the study, some key terms need to be introduced and clarified along with an explanation of the meaning and operational definition of these terms. *Hazards* are defined as ‘potential threats to humans and their welfare’ (Smith, 1992). These are primarily the natural events that may affect different places at different times (Blaikie et al., 2014). A *disaster* is the realization of a hazard (Smith, 1992). A disaster happens when significant numbers of ‘vulnerable people experience a hazard and suffer damage’ or livelihood disruption (Blaikie et al., 2014). Disaster implies a broader scope in terms of impact and duration. For example, a drought may extend to more than 5 years while *emergencies* are special circumstances or imminent situations or conditions that require prompt action (Emergency Measures Act, 1987). Conceptually, disaster management encompasses a cycle that consists of mitigation, preparedness, response and recovery (Henstra & McBean, 2005; Henstra, 2010; Waugh & Hy, 1990). An emergency exists only in the preparedness and response stage of a disaster management cycle. Since the era of deadly domestic terror attacks has emerged in the USA, disaster policy and emergency policy have been fused together (Sylves, 2014) and the term emergency management is used operationally with such an integrated meaning by governmental institutions in North America. Emergency management thus appears as the “application” side of disaster policy. In policy analysis, some policies therefore fit with emergency policy and some policies with a broader scope fit within the disaster policy umbrella. In the present study, both emergency policy and disaster policy have

been combined together and are sometimes used synonymously, and the term “Disaster and Emergency Management (DEM)” is used for policy analysis in the Manitoba context.

In recent decades, the Disaster and Emergency Management (DEM) policy in Canada has shifted from a civil defence-oriented approach to a comprehensive management policy approach. Some of the DEM policy drivers that have led to such shifts include foreign nuclear threats, domestic threats, industrial and technological accidents, the diffusive role of the United Nations, and the terrorist attacks of 9/11 along with health pandemics (Henstra, 2013). Moreover, pressure from insurance companies, the Federal-Provincial-Territorial (FPT) collaboration and political leadership have also contributed to the shifts in Canadian DEM policy.

Different types of policy learning play a significant role in policy change. They have been studied in different policy contexts; some examples include disaster and emergency management (Birkland, 2006), governance (Gerlak & Heikkila, 2007), environmental policy (Fazey, et.al, 2005), and international politics and policy (Crescenzi, 2007). In the case of disaster policy, a highly visible extreme environmental event may induce policy learning as well as policy change (Birkland, 2006). For example, policy makers learn from repeated floods and in turn propose rigorous actions to reduce flood risks (Henstra, 2011). The enacted or proposed laws or regulations can be used as evidence of policy learning as well as policy change (Birkland, 2006).

Extreme environmental events such as the 1950 Manitoba flood have played a major role in disaster and emergency policy change in Manitoba. From 1904 to 2014, the Province of Manitoba experienced a total of 119 disaster events (Jones, 2014). Among these events, floods, droughts, storms and wildfires occurred most frequently and caused high economic losses. The

Province of Manitoba has formulated more than a dozen acts, a plan, several guidelines, committees, boards and several organizations for disaster and emergency management since 1929. The DEM policies of Manitoba have evolved over a long period of time and changed along with the Canadian federal policies. However, our understanding of the relationship between learning from extreme and noticeable events and policy formulation or change is still poor, which is primarily attributable to the lack of adequate research on these issues.

The policy process is too complex and one single existing policy theory cannot explain all policy processes. Some actors act only in some specific phases while others may act throughout the policy process. Moreover, drivers for a particular policy cannot be generalized for another policy. Identifying drivers for the DEM policy is therefore essential to unearth the underpinnings of the entire policy process. Investigating the policy drivers of Manitoba's DEM policies can provide us a comprehensive understanding of the policy processes and the decision-making mechanisms.

In Canada, especially in areas of natural resource use and management and environmental management, provinces possess a proportionately higher concentration of policy development as well as change authority and responsibility (Boyчук, 1998). Ironically, existing literature on provincial governments and their policies, especially the critical ones, is very limited (Imbeau & Lachapelle, 1996). In Manitoba, the provincial policies have been shaped and influenced by community residents and the relationships between municipal, provincial and federal officials, as well as among interest groups and other agents of change which have not previously been examined. Therefore, an in-depth study of the DEM policies of the Province of Manitoba in Canada is critical in understanding the policy making processes and their changes

over time, at the provincial level, along with their implications for the reduction and prevention of disaster-risks.

1.2 Disaster and Emergency Management (DEM) in Manitoba

Manitoba has an area of 649,947 km², of which the land surface area covers 548,356 km². Ecologically, there is vast Prairie grassland in the south and the west, Canadian Shield lakes and forest to the north and east sides, and Arctic tundra in the upper north (Figure 1.1). The unique geography and varied climates across the Province result in a wide range of potential atmospheric and hydrological hazards (Government of Manitoba, 2017a).



Figure 1.1. Map of Manitoba (Google maps, 2017).

A wide variety of disasters has affected the Province of Manitoba in past decades (EMO, 2015) which has brought immense personal, material and economic sufferings to the people as well as to all levels of government of Canada (Canada's National Disaster Management strategy, p. 1). Manitoba suffered from the notable floods of 1826, 1950, 1966, 1979, 1997, 2009, 2011

and 2014. The 1826 flood is treated as the benchmark flood and was the worst in the history of Manitoba; it wiped out 75% of the German and des Meurons settlers in Manitoba (Bumsted, 2000; Rannie, 2003). The Dominion Lands Act, 1872, accelerated the European settlement (i.e. Mennonites, Icelandic, Ukrainians, Jews and French settlers) in Manitoba in the last two decades of the 19th century (Lehr, 1996). The increased population growth continued for the next two decades of the 20th century (Haque, 1996), which had a noticeable influence on the increased loss in the floods of Manitoba, even when the volume of water discharge during floods was similar (Table 1.1). Another reason for increasing flood loss was the absence of any clearly defined DEM policy until the 1960s. As noted by Mahmud (2015), after each flood there was a shift in flood mitigation efforts, and these were reflected in the construction of the Winnipeg Floodway after the 1950 flood, community ring dikes after the 1979 flood, floodway expansion after the 1997 flood, and flood proofing of houses after the 2009 flood. All the changes were indicative of incremental shifts in DEM policy. The Floodway for saving the City of Winnipeg provided better protection and minimized loss not only during the 1979 flood but also in numerous other flood years. Nonetheless, it is important to note that the “city-centric” flood protection measures increased the potential of flood loss in other areas of Manitoba’s river basins.

Table 1.1. Relationship among population, peak flow of water and flood loss in Manitoba

Floods	Population (Year)	Peak Flow Rate (m ³ /s)	Flood Loss (Estimated at 2014 \$)
1826	4500-5000***	6400	5 billion
1852	10,000 (1850)**	4700	30 million
1861	25,228 (1871)*	3540	35 million
1950	776,541 (1951)*	3060	1.2 billion
1979	1,026,241 (1981)*	3030	200 million
1997	1,113,898 (1996)*	4615	750 million
2009	1,200,000 (2008)*	3625	1.1 billion
2011	1,250,000 (2012)*	3300	1.3 billion

Source: Data compiled from Mahmud (2015), * Government of Manitoba (2017b), ** Haque (1996), *** estimated from Bumsted (2000).

The second most frequent natural hazard in Manitoba is drought. Notable recent droughts occurred in 1990, 1991 and 1992, and losses incurred by these events were \$58.1, \$14.6 and \$58.0 million respectively. These losses were mostly attributed to damages to cereals and low livestock yields. These droughts were primarily “climatic droughts” where surface water droughts were reported (Public Safety Canada, 2015).

In recent decades, wildfire in Manitoba has also become a yearly phenomenon. In 1989, the Province of Manitoba experienced a total of 1,229 forest fires, which was the worst amount of forest fires in Canadian history; ‘they raged across northern Manitoba, forcing the evacuation’ of approximately 25,000 people in 25 communities and caused a \$1.8 million loss. The Province experienced 1,148 wildfires during the 2003 season. Approximately 900 people were evacuated from Thompson and there resulted a million dollar loss (Public Safety Canada, 2015). Wildfires are becoming alarming because every year Manitoba is required to spend millions of dollars compared to other infrequent disasters, such as floods and droughts.

As a Prairie province, Manitoba also suffers from tornadoes, winter storms, storms, heat waves, biological epidemics, tornadoes, chemical releases from derailment and cold spells (Figure 1.2). In recent decades, a trend of escalating costs of disaster is evident in Manitoba (Figure1.3).

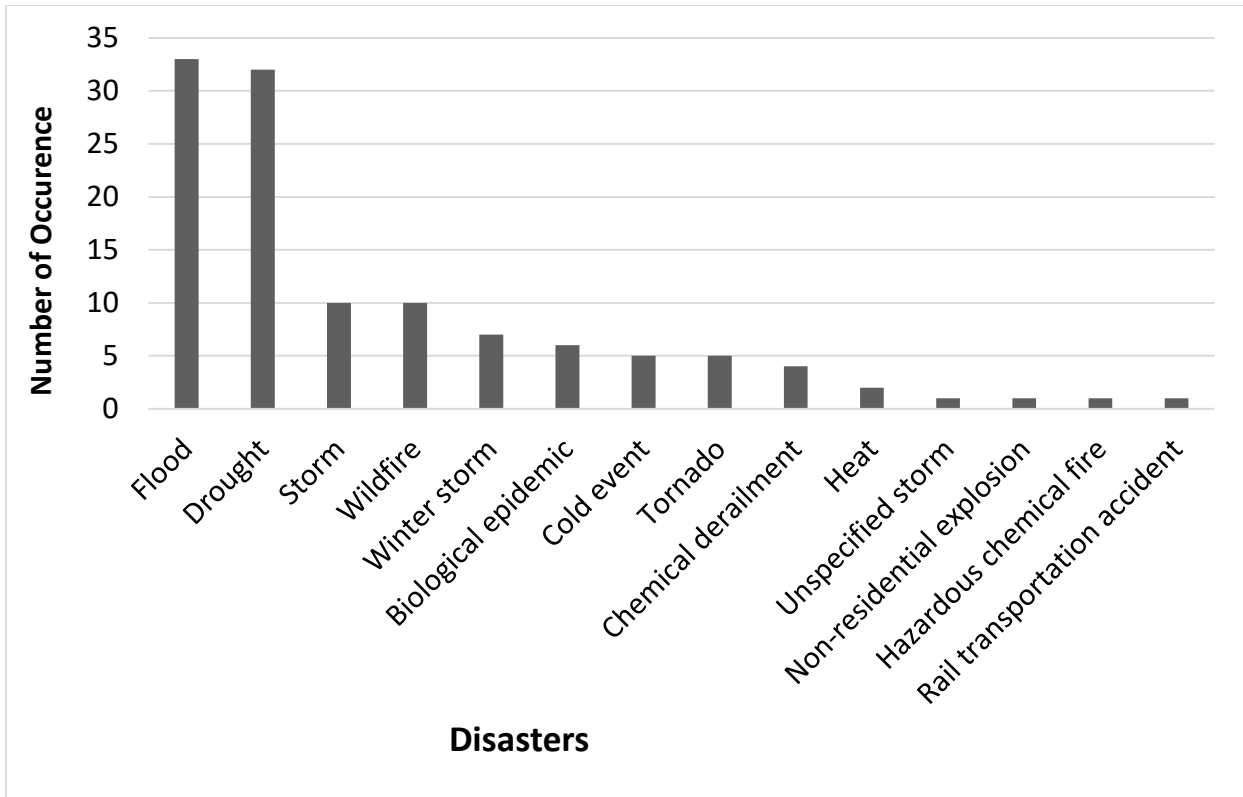


Figure 1.2. Major disasters in Manitoba (1904-2014). Source: data adopted and modified after Public Safety Canada, (2015).

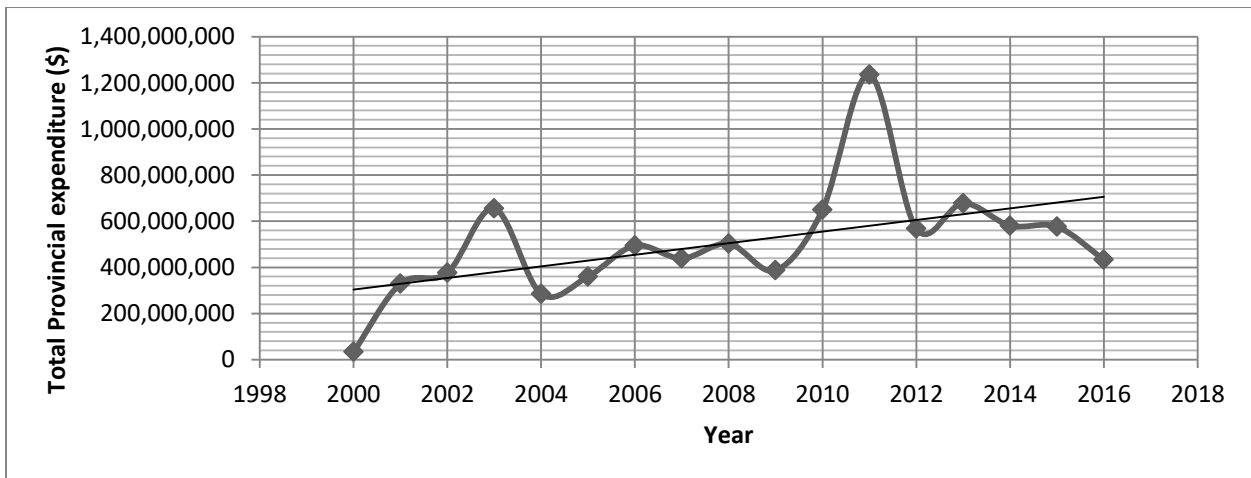


Figure 1.3. Escalating cost of disasters in Manitoba (Data compiled and collected from EMO and Sustainable Development, Manitoba, 2017).

In case of dealing with potential disasters, all levels of government (provincial, federal, territorial) along with NGOs and citizens share the responsibility (Public Safety Canada, 2015). According to the National Disaster Management strategy of Canada, the responsibility “*to know what to do during disaster*” lies with individuals. The local government, provincial government and federal government join subsequently to deal with unusual situations surpassing capacity at each level. But the role of a province in disaster and emergency management is crucial as it has the authority to formulate the provincial policy and to play a key role in coordinating the disaster management activities carried out by local agencies and the federal government.

According to the Emergency Management Framework for Canada, 2007, “F-P-T governments adopt a comprehensive all-hazards approach to coordinate and integrate prevention and mitigation, preparedness, response and recovery functions to maximize the safety of Canadians” (MREM, 2011, p. 6). In addition, according to the Manitoba Emergency Plan (MEP, 2009), the current disaster and emergency management system in the province is grounded on four pillars of the disaster cycle: mitigation, preparedness, response and recovery (Table 1.2) and assigned responsibilities to EMO as the main coordinating agency as well as to the provincial departments and local governments.

Diagram of Disaster and Emergency Management System (DEMS) of Manitoba

	Preparedness				Response				Recovery				Mitigation			
	Creating plans	Training	Exercises	Education	Evacuation & shelter	Coordination	Protecting structures	Communication	Counseling	Rebuilding, reentry, clean up	Restoring services	Financial assistance	Land use planning	Own dept. plan	Policy	Incentives
Individual	e.g. Individual plan,	e.g. Participates as trainee,	e.g. Own exercises	e.g. Self-education	e.g. Evacuating, Taking shelter, Filling ESS forms		e.g. Building dykes etc.	e.g. Be informed and contact with EC	e.g. Consulting with local authority	e.g. Own work, keeping records, receipts and vouchers	e.g. Consulting with local authority	e.g. Contact with local authority & MEMO, apply for DFA	e.g. Be informed about Zones and hazard prone areas		e.g. Be informed about relevant and latest policies	e.g. Knowing the provisions for getting incentives
Local	Local emergency plan, Community Advisory Committee, Evacuation plan	Training for volunteers citizens and officials	Full scale, table-top and functional exercises	Demonstration, Developing apps, Celebrating Emergency Preparedness Week (1st week of May)	Declaring evacuation, Enforcing by local Police, Local ESS, NGOs, Opening reception center	Activating local EOC, Mobilizing Emergency Control group by EC	Providing support for operations	Declaring state of local emergency, 24-hour phone line, Preparing CSR	RHA, Community mental health services, Kinetic Community health center, Manitoba Farm and Rural Support Services	Giving permission for re-entry	Services for Health and Hydro	Preparing CIA	Development plan, by-laws, by local authorities, Zoning by-law for municipalities, District zoning by-law for planning districts, Development permit	Own program	Formulate laws, by-laws and plans for mitigating hazards	
Provincial	IAPC, MEP, Pandemic planning, Business Continuity Plan	Advanced training for ECs, Online free training for all, Disaster Management conference	Reporting to MEMO after exercises	Manitoba Community Preparedness Award, Providing information about emergency alerts, Publishing 72-hour brochure	Manitoba Family Services, ESS and NGOs	Activating MECC, Hazard specific steering committee, IAPC of MEMO, DM committee on EM and PS, Cabinet	Provincial assistance if local capacity is overwhelmed	ARES, WebEOC for Communities, Radio-television announcement, Receiving CSR, Provincial emergency declaration	Public Health Offices	Bacteria testing subsidy program, Groundwater Management, Manitoba Conservation, Manitoba Hydro, Manitoba Office of Drinking Water	Groundwater management, Manitoba Conservation, Manitoba Hydro, Manitoba Office of Drinking Water	Receiving CIA from local authorities, Provincial DFA policy and regulations	Review of Zoning by-laws by the Minister (Community and Regional Planning), Planning regulation, Manitoba Planning excellence Award, Manitoba land use and development web application	Conservation, Sustainable Development, Infrastructure, Health and Depts. that deal with hazards	Hazard mitigation policy formulation	No DFA claim for risky zone development, Funding for individual mitigation for home
Federal	JEPP	JEPP	JEPP	Federal website of 'Get Prepared'		Regional PS, National PS, Dept. of National Defence	Federal assistance if provincial capacity is overwhelmed	NPAS, National Emergency Declaration				DFAA		Federal-Provincial-Municipal joint mitigation projects	National Mitigation Strategy	

* ARES-Amateur Radio Emergency Service, CIA-Community Impact Assessment, CSR-Community Situation Report, DFAA-Disaster Financial Assistance Arrangement, DFA-Disaster Financial Assistance, DM-Disaster Management, EC-Emergency Coordinators, EM-Emergency Management, EOC-Emergency Operations Center, ESS-Emergency Social Services, IAPC-Inter-agency Preparedness Committee, JEPP-Joint Emergency Preparedness Program, MECC- Manitoba Emergency Coordination Center, MEMO-Manitoba Emergency Measures Organization, MEP-Manitoba Emergency Plan, NPAS-National Public Alerting Systems, PS-Public Safety, RHA-Regional Health Authorities. Sources: Manitoba Emergency Measures Organization, Manitoba Emergency Plan, Municipal Emergency Plans, and Public Safety Canada.

Table 1.2. Disaster and Emergency Management system in Manitoba

<p style="text-align: center;">Mitigation</p> <p>Empowered by the Emergency Measures Act, 1987 the Manitoba Emergency Measures Organization (MEMO) is responsible for coordination, managing and directing emergency management across the province. Pursuant to section 2 of the Act, MEMO is also responsible for developing and maintaining the policies and guidelines along with disaster assistance and dismissing financial claims. Moreover, it supervises the Manitoba Emergency Plan (MEP) developed by each local authority. According to section 6 of The Emergency Measures Act, 1987, MEMO also conducts an annual review of the MEP in consultation with the appropriate departments. In Manitoba each department develops its own mitigation programs like land use zoning, building structures, etc.</p>	<p style="text-align: center;">Preparedness</p> <p>According to the Emergency Measures Act, 1987, every department is responsible for preparing an emergency management program/business continuity program to show what services are expected from the department and how they would provide the critical service during a disaster. Moreover, each authority must have emergency plans, a local emergency response control group and a municipal emergency coordinator for writing the emergency plans, planning preparedness activities and coordinating emergency response. The local authority has the option for mutual agreement with other local governments as well and may share resources.</p>
<p style="text-align: center;">Response</p> <p>In the aftermath of an event, it is expected that individuals should prepare for and initially deal with potential emergencies or disasters at least during the first 72 hours. Usually emergencies are then resolved by traditional first responders, i.e. police, fire and EMS, perhaps with some specialized assistance. The municipal emergency plan will be activated. Responders will establish appropriate on-site management in accordance with their established procedures. The Municipal Emergency Operations Centre (EOC) is likely activated whereas departments and involved industry may also activate EOCs. After that, provincial departments, equipment and staff may be required and the Manitoba Emergency Coordination Centre (MECC) may then be activated. When an emergency approaches, the provincial emergency plan and other local emergency plans take into action. Along with this, a local authority or the minister can declare the state of emergency and the local authority can exercise powers like controlling travel, evacuation and entering into any area without a warrant.</p>	<p style="text-align: center;">Recovery</p> <p>After the emergency, provincial Disaster Financial Assistance (DFA) funding is offered to recover from the event. There are guidelines established by EMO for both private and public sectors. Affected people are expected to contact Manitoba Emergency Measures Organizations (MEMO) (MEP, 2009). However, private claims are limited up to \$240,000. Provincial departments are required to complete, maintain and document detailed damage reports, site reports and contracts, invoices and financial records for all claimed costs. The province will contribute 65% of the cost in case of owned equipment and this is capped at \$5 per capita for municipal expenditures.</p>

1.3 Purpose and objectives

The general purpose of my research is to examine the DEM policies of the Province of Manitoba and to delineate the underlying dynamics of their changes over time. The outcomes of this research would assist in mapping the future discourse of DEM policies in Canada at the provincial level.

The specific objectives of my research are to:

- a) analyze the dynamics of DEM policy change in the Province of Manitoba over time;
- b) identify the drivers of DEM policies in Manitoba; and
- c) examine the relationships between policy change and learning at various levels.

Specific research questions under each objective are as follows:

(a) Analyze the dynamics of DEM policy change in Manitoba:

1. What caused the changes and when?
2. How has the policy formulation evolved?
3. What were the patterns of DEM policy shifts in Manitoba?

(b) Identify the drivers of Manitoba DEM policy:

1. What policies have thus far been formulated by the Government of Manitoba in DEM?
2. Which policy actors had significant influence in DEM policy making in Manitoba?
3. What has been the mechanism of policy driving and evolution?

(c) Examine the relationships between policy change and learning at various levels:

1. Who learned what?
2. What were the sources of learning?
3. How did the learning trigger policy shift?

4. Was learning transferred from one level to another?
5. What is the nature of learning in the DEM context?

1.4 Methodological approaches

The objectives of this research demand a thorough understanding of policy process, origins, reasons for policy shifts, and linkages with learning. They also require identifying the policy actors who have had a profound influence over the DEM policy. Here, I seek answers by examining Manitoba's social settings, the concerned institutions and the individuals who are embedded in these settings. The research requires access to policy history, major events, people's knowledge and newspaper documents. These characteristics of my proposed research coincide with the idea of Berg (2004) and Creswell (2009, p. 174) about qualitative research that includes natural settings, the use of multiple sources of data, inductive data analysis, the socio-political context of the study, interpretive inquiry and a holistic account of the issues. Qualitative research is primarily concerned with exploring phenomena and provides an "in-depth understanding of experiences, perspectives and histories in the context of circumstances or settings" (Spencer et al., 2003), and it attempts to identify "the how and why of a situation" (Patton, 2002). In this respect, my inquiries concentrate on how the DEM policies changed and why such changes occurred in the Province of Manitoba.

1.4.1 Single-embedded case study as strategy of inquiry

It is worth noting here that Creswell (2009, p. 12-13) identified three strategies of inquiry (qualitative, quantitative and mixed methods) and five different research designs, which include ethnography, grounded theory, case study, phenomenology, and narratives. The "case study" approach is more relevant to my study, which follows a holistic process of exploring

events, activities, processes or individuals (Creswell, 2009, p. 13). In other words, “it is an empirical inquiry investigating a contemporary phenomenon within its real-life context and is applicable where the boundaries between phenomenon and the context are not clearly evident, and multiple sources of evidence are used” (Yin, 1984, p. 23). It allows the researcher to achieve greater depth by using various data collection procedures (Stake, 1995). The “case study” approach is best suited when considering ‘the how and why questions, or when the investigator has little control over events’ (Schell, 1992; Baxter & Jack, 2008). An exploratory case study is used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2003). A case study may have single/multiple sites and sources of information on the basis of which the case is identified. Cases with a ‘single source of information’ are termed as *holistic cases* while ‘cases with multiple sources of information’ are *embedded cases* (Yin, 1984).

The case study approach best suits the design of my study because it represents a comprehensive research approach appropriate for the use of multiple sources of evidence. The DEM policy issue is specific to the Province of Manitoba. This research aims to study the DEM policy from the 1930s to the present, and thus it is time bound. The specific research questions will include “how the policy shifted over time,” “why the shift took place,” and the focus on a real-life setting where the policy context has not been clearly evident. This study can therefore be regarded as a single case of Manitoba DEM policy, representing a Canadian province as well as a critical test of relevance to the existing theories. The sources of information regarding DEM policy are multiple entities including individual or organizational documents, and the social memory of policy makers (politicians and bureaucrats) and the policy stakeholders (NGOs, mass people, interest groups). To unearth the policy dynamics, the units of analysis (actual source of

information) therefore follow the embedded design as it includes multiple units of analysis and looks for a consistent pattern of evidence across the units in a case (Yin, 1984).

1.4.2 Data collection procedures

In this study, three specific data collection methods, namely, Document Review, Key Informant Interview (KII), and Stakeholder Survey, were used to procure all required information from different sources and to cross-check the validity of information. Documents provided the background information and history of Manitoba DEM policies while the KII outputs were used to capture the social memory of policy makers, preferably from the politicians and senior bureaucrats. KII helped to explain how the DEM policies were developed in the past, what are the present practices in policy making and their implementation. As the stakeholders' experiences, opinions and their involvement in policy making can best be obtained by surveys, the questionnaire survey technique was also adopted in the present study. In addition, KIIs were conducted to capture the local level learning and its relationship with the various levels of governmental institution's learning and adoption of policies.

For each objective of the research, more than one method was employed, as data were collected from different sources by adopting different methods to ensure the validity. For each method, a certain group of respondents was selected, and separate instruments were developed. Some questions were kept the same for all groups of respondents because it would serve more than one objective. These questionnaires' outputs helped reveal the policy drivers, dynamics of policy change, and the link between learning and policy formulation. A summary of the study objectives, research questions and methods is given in Table 1.3.

Table 1.3. Summary of research objectives, research questions, methods and rationale

Objectives	Research questions	Methods	Rationale
Exploring the dynamics of DEM policy change in Manitoba	<ol style="list-style-type: none"> 1. What caused the changes and when? 2. How have the policy formulation evolved? 3. What were the patterns of DEM policy shifts in Manitoba? 	<ul style="list-style-type: none"> • Document review; • Key Informant Interviews; [19 Key Informant Interviews (10 bureaucrats, 3 politicians, 6 NGOs)] 	<ul style="list-style-type: none"> • Documents provided the background information and history of Manitoba DEM policy. • KII helped to explain how the DEM policies were developed in the past and what the present practices in policy making are.
Identifying the drivers of Manitoba DEM policy	<ol style="list-style-type: none"> 1. What policies have thus far been formulated by the Government of Manitoba in DEM? 2. Which policy actors had significant influence in DEM policy making in Manitoba? 3. What has been the mechanism of policy driving and evolution? 	<ul style="list-style-type: none"> • Document review; • Key Informant Interviews; [19 Key Informant Interviews (10 bureaucrats, 3 politicians, 6 NGOs)] 	<ul style="list-style-type: none"> • Documents provided the policy drivers in the past and their mechanism. • KII helped to explain what policy drivers acted in both past and present time.
Examining the relationships between policy change and learning at various levels	<ol style="list-style-type: none"> 1. Who learned what? 2. What were the sources of learning? 3. How did the learning trigger policy shift? 4. Whether learning was transferred from one level to another? 5. What is the nature of learning in the DEM context? 	<ul style="list-style-type: none"> • Document review; • 21 Key Informant Interviews; [10 bureaucrats, 3 politicians, 8 municipal emergency coordinators] 	<ul style="list-style-type: none"> • Documents provide the evidence of learning. • KII explains how the learning transfers from local level to provincial level.

Each respondent was supplied schedule with the informed consent form and the questionnaire ahead of the interview. During the interview, respondents were reminded about the consent form. The researcher read out the summary and asked for opinions from each respondent. All but one respondent provided consent and signed the consent form willfully and voluntarily. The handwritten notes were taken for all the respondents who did not provide consent to voice record the interview. All recordings and consent forms were kept under strict protection and in a safe place with password protection at a University of Manitoba premise.

Data collection and analysis were conducted during the summer months of 2017. After the data analysis, results were examined through the lens of existing theories of policy process, change and learning to explain the dynamics of Manitoba DEM policy shifts and the role of learning.

1.4.3 Validity and ethical considerations

Qualitative validity means the checking of the accuracy of the findings and reliability, which includes the consistency of the research approach (Cresswell, 2009). This study followed the procedures suggested by Gibbs (2008) for reliability check. All data collected from interviews and surveys were coded, recorded with the permission of the respondents, and transcriptions were made with great care. Confidentiality was strictly maintained and notes and recordings were password protected. The data were triangulated for validation by examining evidence from different sources (documents, survey and KII) of information. Field work commenced following the reception of approval of the research by the University of Manitoba Joint Research Ethics Board.

The validation of data analysis is vital to ensure respondents' perceptions and the capture of information in a form true to the respondents (Patton, 2002). To obtain validation from the

interview notes, interview transcripts or notes for review were emailed to all KII respondents. The comments and suggested changes received back from the respondents were very minimal. In all cases, the respondents edited his/her own transcript/notes and sent them back with modifications. The validation process thus ensured the informants' messages were conveyed in a way that represents their responses.

1.5 Research significance

Scholarly research works on provincial governments, their roles and activities with respect to DEM policy making are scanty (Imbeau & Lachapelle, 1996). Moreover, researchers who have attempted to study provincial DEM policy issues have generally been inclined to investigate the areas where policy fields were more visible and pertinent to policy makers (Henstra, 2013). In Manitoba, to my understanding and knowledge, comprehensive research on DEM policy issues has not yet been pursued. This study therefore fills in a significant research gap in the DEM policy arena of Manitoba as well as Canada at large.

The historical patterns of policy development are receiving more attention by the scholars to explain the dynamics of policy change over time (Howlett & Rayner, 2007). They assist in explaining the underlying factors and in identifying the principal drivers of policy change. The present study therefore seeks to understand the DEM policy process of Manitoba and the dynamics of policy shifts over time. This study also attempts to reveal the policy actors, drivers and learning in Manitoba. This research is highly significant to fill the research gap and understand the DEM policy in Manitoba, which would ultimately lead to new knowledge generation and policy learning for the practitioners' community of the Manitoba provincial government, the federal government of Canada, as well as other stakeholders.

1.6 Organization of the thesis

This thesis is organized under five chapters (Table 1.4). *Chapter One* presents an introduction to the study comprised of the context and background, disaster and emergency management problems and issues in Manitoba, purpose and objectives, methodological approaches, research significance of the study and organization of the thesis. *Chapter Two, Three* and *Four* consecutively present the detail study of the three objectives. Each chapter includes relevant a literature review, methodology, results and discussion to meet the objectives. The methodology in each chapter may overlap with that of other chapters as each chapter is organized as “stand alone” or relatively independent but related chapters fit into the overarching theme of the thesis. Lastly, *Chapter Five* offers the overall conclusions drawn from this study, major contributions of this study, limitations of the study, as well as recommendations and scope for future work.

Table 1.4. Chapters and content of the thesis

Chapters	Contents
<i>Chapter One</i>	<i>Introduction</i> (context and background, Disaster and Emergency Management in Manitoba, purpose and objectives, methodological approaches, research significance of the study, organization of the thesis and references)
<i>Chapter Two</i>	<i>Disaster and Emergency Management (DEM) policy shifts in Manitoba: Longitudinal Analysis</i> (Introduction, literature review of the policy process and policy change, methodology, results, discussion, conclusion and references)
<i>Chapter Three</i>	<i>Policy drivers of Manitoba DEM policy</i> (Introduction, literature review for policy drivers and the mechanism of policy driving, methodology, results, discussion, conclusion and references)
<i>Chapter Four</i>	<i>Relationships between policy change and learning at various levels</i> (Introduction, literature review for policy learning and policy transfer, methodology, results, discussion, conclusion and references)
<i>Chapter Five</i>	<i>Conclusion</i> (contributions of this study, limitations of the study, recommendations, scope of future work, and references)

The thesis follows a peer reviewed journal manuscript format. The following chapters therefore should be regarded as “stand-alone” parts of the thesis: Chapters Two, Three and Four. As the methods of data collection, processing and analysis for these chapters were common in most cases, there are substantial overlaps in the methodology sections of these chapters. In terms of content analysis, there are also repetitions as required by the themes and issues in each of these three chapters. However, the above chapters are well articulated by the overall policy analysis goals of this thesis research.

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Chapter 2: Disaster and Emergency Management (DEM) policy in Manitoba: A longitudinal analysis

2.1. Introduction

The existing literature suggests that Canadian policy was mostly driven by exogenous shocks, interest groups, policy success in other jurisdictions, political ideology and federal-provincial relationships. It was observed that the constitutional structure of Canada may act as drivers of Canadian policy change. Regarding climate change, Harrison (1996) identified the oscillating pattern of activism of Canada which includes extremely high salience period (1988-92) and a period of declining (1993-97) which were driven by Federal-Provincial power dynamics and the role of United States. Canadian policy also experienced series of changes not only by the pressure from another country, but also from the pressure exerted by transnational actors (organizations) and indigenous groups (Bernstein & Cashore, 2000). Bradford (1999) identified actors of policy change during the two separate decades of economic crises. During 1935-1945 Canada experienced Keynesian revolution, *ad-hocism* in the 1970s and neoliberal restoration in between 1985-1995.

During the post-war period, 'business and labor interests, like politicians, were not policy innovators or sources of new national economic ideas' (Bradford, 1999) but they represented Technocratic Keynesian experts. Royal commissions, bureaucratic committees, inter-governmental conferences and bargaining interest groups played the central role in new idea generation and adoption to policy. Major decisions were initially deferred and then referred by the politicians to techno-bureaucrats. Thus, the large policy shifts came slowly through the 'political backdoor' (Bradford, 1999). Regarding disaster and emergency management (DEM) policy, Henstra, (2011) in his longitudinal analysis (1950-2010) identified several DEM policy

drivers that brought significant changes and led several eras in Ontario. For example, nuclear threat after World War II led an era of Civil defence which was shifted towards peacetime emergency measures due to the emergence of Hurricane Hazel.

The Disaster and Emergency Management (DEM) policy of Manitoba has evolved over a long period of time (i.e. 1929-2016) that includes several significant moves and changes in focus in terms of scoping. However, these changes were a combined effort of several policy drivers that acted for a certain period of time and defined certain eras with distinct DEM policy features. To meet Objective One (exploring the dynamics of DEM policy change in the Province of Manitoba over time), this research attempted to conduct a longitudinal analysis of Manitoba's Disaster and Emergency Management (DEM) Policy from 1929 to 2016 to examine how different policy change processes (section 2.2.2) shaped the evolving policy domain in this area. This study adopted a Document Review and Key Informant Interviews as data collection methods (section 2.3). My attempt at a longitudinal analysis (section 2.4) identified several distinct eras where particular type of policies were evolved in each era and embraced today's shape through incremental policy change. I drew upon Howlett and Cashore's (2009) *Policy Components* model to evaluate changes in policy elements of the identified eras (section 2.2.1 and 2.5). On the basis of evaluation, overall patterns of DEM policy development (section 2.6) were delineated.

2.2 Theoretical considerations

2.2.1. Patterns in policy development

To evaluate the changes in Manitoba's DEM policy and delineate the patterns of policy development, I will apply the Howlett and Cashore (2009) model of *Policy Components*. This model can link the policy elements to specific policy changes, explain the number, and determine the type of possible patterns of policy regime change. This model considers six policy elements (goals, objectives, settings, instrument logic, mechanism and calibration) that can undergo change. The first three elements of policy (goals, objectives and settings) are grouped under Policy Aims or Policy Ends, while the later three elements (instrument logic, mechanism and calibration) are grouped as Policy Tools or Policy Means.

The policy goals embrace the general aim that the government wants to achieve such as environmental protection. Goals can be traced by asking the question of what general types of ideas govern policy development. Objectives are very specific, formal and embody strategic purposes to achieve the goals. They are visible in the answers to what the policy formally aims to address; for example, saving a habitat to protect specific species. Settings include the policy requirements in a real-life situation. They become evident by asking the question regarding what are the specific on-the-ground requirements of policy; for example, sustainable levels of harvesting.

A summary of these six elements is presented in Figure 2.1. Policy tools are the instruments required to achieve the goals. The tools can be categorized into three parts: instrument logic, mechanism and calibrations. Instrument logic is the general norm for selecting the tool; it is traceable by finding the general norms that guide implementation preferences. The preferences for the use of coercive instruments or moral suasion can be cited as an example. A

mechanism refers to setting the types of instrument for policy implementation, for example, the use of different tools such as tax incentives or public enterprises. Calibration is for selecting the specific ways for instruments. For example, the use of mandatory versus voluntary regulatory guidelines or standards involves such a selection process.

Policy elements		Meaning	Examples
Policy Aims or Policy Ends	<i>Goals</i>	General aim that the government wants to achieve. <i>(What general types of ideas govern policy development?)</i>	Environmental protection; public safety; economic development.
	<i>Objectives</i>	Specific, formal and strategic purposes to achieve the goal. <i>(What does policy formally aim to address?)</i>	Saving habitat; increasing harvesting levels to create processing jobs.
	<i>Settings</i>	Policy requirements in a real life situation. <i>(What are the specific on-the-ground requirements of policy?)</i>	Sustainable levels of harvesting; considerations of the optimal size of designated stream-bed riparian zones.
Policy Tools or Policy Means	<i>Instrument logic</i>	General norms of selecting the tool. <i>(What general norms guide implementation preferences?)</i>	Preferences for the use of coercive instruments or moral suasion.
	<i>Mechanism</i>	Setting the type of instrument. <i>(What specific types of instruments are utilized?)</i>	Use of different tools such as, tax incentives or public enterprises.
	<i>Calibrations</i>	Selecting the specific ways for instruments. <i>(What are the specific ways in which the instrument is used?)</i>	Use of mandatory versus voluntary regulatory guidelines or standards.

Figure 2.1. Howlett and Cashore framework (Adopted and modified from Howlett and Cashore (2009, p. 39).

2.2.2 Policy change approaches

There is an ongoing debate in the policy change discourse regarding whether policymaking follows a linear/ rational process or a chaotic procedure dominated by different social, cultural and political forces. To unearth the process, various models were proposed by scholars over the years. For analyzing the policy process, these models and frameworks generally focus on the variables that determine the outcome of the process (Whittington & Van Loon, 1996) and activities that are involved in decision making (Adie & Thomas, 1987). Unfortunately, there is still confusion about whether the theories tend to explain how government actually makes decision or these are the statements of how decision making ought to occur. Another important aspect of policy studies is that often it requires more than one model to explain a particular policy process; hence, pre-determining one particular model for policy process explanation may not always be effective.

Policy change can refer to a shift from existing policy or structures (Bennett & Howlett, 1992). Policy can also take a new shape or be modified and maintain a continuation. However, policy change is complex as there is the stickiness of institutions and policy actors who always try to maintain the status quo or protect the traditional model (Pierson, 2000; Greener, 2002). Sometimes it causes high reversal cost (Levy, 1994). Once an organization starts down a track, past decisions often encourage policy continuity, which is called *Path Dependence Theory*. Path dependence is observed when it fulfills the conditions (such as in a situation where an attempt was made to change the policy but rejected due to costs) but it failed to provide more incentives as compared to the original policy. The window of exceptional opportunity, called *conjuncture*, was absent as critical juncture is required to bring a major change (Capoccia & Kelemen, 2007). Path Dependence Theory can thus explain the situations for policy continuation instead of policy

change. To explain the policy change rather than policy continuity four approaches were found in the literature: i) *incrementalism*, ii) *policy diffusion*, iii) *institutional change* and iv) *punctuated equilibrium*.

The *Incrementalist Model* concedes that the policy process encompasses a series of small changes in existing policy by a repeated trial and error method until new approaches to the issues are developed. A major change in policy happens through a series of small changes and each small change would not fundamentally “rock the boat” (Sutton, 1999, p. 10) and the policy process is just “disjointed incrementalism or muddling through” (Lindblom, 1979, p. 517).

Policy diffusion is a process where ideas move from one place and are adopted by another (Shipan & Volden, 2008). This can happen by learning, imitation, coercion and economic competition. Policy makers can learn the best practices of other governments as well as across jurisdictions, imitate other governments or be forced to act. Some policies tend to have faster diffusion rates than others, and the pattern of diffusion in different regions varies significantly (Meseguer & Gilardi, 2009).

In certain circumstances, the overlapping of *institutional change* and policy can bring a change in policy. Streeck and Thelen (2005) explained that policy change can happen due to several types of institutional change such as the displacement of institutions due to traditional arrangements, layering due to addition to an existing institution, drift due to not being adaptive, conversion as a result of new goals and exhaustion caused by the erosion of resources.

When an idea attains greater attention, expands rapidly, possesses enough potential to disrupt the equilibrium of the political system and brings a change, it is referred to as *Punctuated Equilibrium* (Baumgartner & Jones, 1991). There are beliefs and values concerning a particular

policy (which referred to a policy image), and there are institutional locations where decisions are made (often referred to as a policy venue) (Baumgartner & Jones, 1991). Punctuated equilibrium is the interaction of these policy images and policy venues. Policy actors tend to find the new policy venues to adapt to a new environment. When the venue changes, the image (Policy) can be changed. This theory is able to explain how policy actors choose the venues and how policies are framed.

Disasters can act as ‘focusing events to induce policy learning’, which is an *event-driven policy change* approach (Birkland, 2006). Policy actors ‘incorporate new information and insights’ revealed by a disaster and purposefully apply them to the design of more appropriate or effective policies. When an event happens, a policy failure is often revealed, hearings are held about this failure, and policy changes (whether regulatory or statutory) are adopted to prevent the failure from recurring. Lesson-drawing and policy transfer can be an outcome of learning. An inclination towards policy learning and lesson-drawing can assist decision-makers to respond ‘more quickly or appropriately to crises and may lead to policy innovation or termination as well as policy transfer and/or convergence’ (Stone, 1999, p. 52). Learning leads to the development of “consensual knowledge” by specialists about the functioning of state and society; often it is also accepted as valid by decision-making elites (Stone, 2001). Policy transfer or other outcome or even no outcome can be a result of learning. These processes can happen through networks at various levels (e.g. between individuals, between and within organizations) (Stone, 2001).

Interest groups always play important roles in case of policy change. Two approaches have hitherto evolved to capture the dynamics of interest groups in policy change process: *policy networks* and an *advocacy coalition framework* (ACF). A *policy network* is a group of organizations that are connected by resource dependencies and each group can be distinguished

by the structure of resource dependencies (Rhodes & Marsh, 1992). Though the networks can be of different types, ‘ranging from highly to loosely integrated networks and differentiated by their membership’, the coalition among them can determine policy outputs (Rhodes & Marsh, 1992). The policy network is effective in explaining interaction among stakeholders.

According to an *advocacy coalition framework*, due to some common interest among the stakeholders, a coalition develops. When the ideas of coalition successfully interact with the political sub-system, policy change occurs. This model consists of relatively stable system parameters which influence external (system) events. These two together or individually influence the resources of sub-system actors. In the policy sub-system, there are different coalition groups based on different beliefs, strategies and resources. Within the limit of conflicts, the government makes the decision (Sabatier, 1988). The decisions by policy-makers influence ‘governmental programs’ and thus affect ‘policy outputs as well as policy impacts’. ‘Feedback effects’ are also evident in the policy subsystem (Sabatier, 1988). This framework has been widely applied in different sectoral policy though it is difficult to determine the belief of policy actors as well as to identify all the external and internal factors (Sabatier, 2005).

To understand the evolution and DEM policy change processes in Manitoba, drawing insights from the above discussion, I focus on finding out i) how incremental changes result in a major policy shift; ii) the role of diffusion processes as a mechanism to change the DEM policy; iii) the role of interest groups in terms of exerting force to the DEM policy and iv) how mega events or potential focusing events punctuate the equilibrium (i.e. a major paradigm shift) of prevailing DEM policy.

2.3 Methodology

Published and unpublished documents were used to obtain background information and substantiate the findings from the interview responses; they provided information on government processes, political processes and public opinions. The document review was conducted following a systematic procedure to identify, analyze, and derive useful information from existing documents (WBI, 2007). Archival records, library documents, research articles, NGO documents, media reports, government policy documents, and files and records were reviewed to identify the enacted DEM policies and how the policies were shaped through time.

To fulfill the objectives of the research especially, Objective One (exploring the dynamics of DEM policy change in Manitoba), a document desk review, was undertaken for the purpose of obtaining historical insights. The DEM policy of Manitoba evolved through several decades and hence understanding how the policy was framed initially was emphasized. Understanding the historical roots was also necessary to explain the conditions or environments of policy development. As Merriam (1988) noted, “for historical and cross-cultural research, relying on prior studies may be the only realistic approach”, document review was therefore the best suited option for attaining the research objective.

Document review used several sources of data, and there were opportunities to verify these (Angrosino & Mays de Pérez, 2000) as a means of triangulation (Denzin, 1970, p. 291). To address limitations, retrieved data were compared with different sources and triangulated with other methods such as, key informant interview outputs. Bowen (2009) in this regard cautioned that a “wide range of documents is better although the question should be more about the quality of the document rather than quantity”. Before starting the document review, I planned and followed the steps outlined by O’Leary (2014). The following steps were applied:

Table 2.1: Steps followed in Document review

Plan	Activities performed
Selecting potential sources of information	The Manitoba Archives for archival records, library of the Manitoba Legislature and University of Manitoba; University of Manitoba's link to Google Scholar for research articles; Annual reports and documents of NGOs who deal with disasters; Online search for media reports; Government of Manitoba and EMO website for government laws, Acts and policy documents; files and records; Public Safety Canada website.
Accessing the data	Obtained Pass to use the Manitoba Legislature library, the Manitoba archives, and University of Manitoba library membership to access the journals and books.
Removing Bias	All sources were considered; no priorities were given to any particular document; sources were verified; the background of the documents was explored; sought answers to who produced this document, why and when.
Developing skills for review	All documents were read thoroughly and marked on the basis of type of information they provided
Ensuring credibility	Similar type of information retrieved from various sources to compare, inconsistent data were removed, and authenticity of the documents was ensured
Knowing the data	The researchers looked for different policies and analyzed how they evolved
Ethical issues	The confidential documents were used following the provisions of <i>The Freedom of Information and Protection of Privacy Act</i> (FIPPA).
Backup plan	All documents were stored in a safe place and online documents were stored in a password protected file.

I read all the documents carefully and developed a flag mark strategy for note taking. I then analyzed the notes. Intensive reading was preferred over coding because it helped to generate informed judgment about the historical events and processes.

Key informants can provide information that is not first-hand (Patton, 2002) and can give in-depth information about the central idea. Information sometimes is confined to a certain group of people, and therefore, KII has its own rationale to use in certain conditions. Interviews are useful when participants could not be observed directly in the past but could provide historical information (Creswell, 2009). They are used to understand experiences and how and why things

change in social and political processes (Patton, 2002; Rubin & Rubin, 2005). Semi-structured interviews allow exploring perspectives and opinions on complex and social issues (Barribal & While, 1994). They also enable participants to express their opinions freely and can be put into pre-determined categories (Patton, 2002). However, identifying the informants is always a challenging task and the successes depend on the nature of the research.

The collection of data to meet the objectives of how and why the DEM policy shifted over time and to acquire in-depth information regarding policy demands the application of semi-structured interviews. DEM is just one single policy and all the policy makers do not have access to and knowledge about this area of research and the sector. In order to capture the social memory about past and present stories of the DEM policy it was essential to identify the policy makers of DEM. Selected politicians and bureaucrats of Manitoba were therefore considered as potential key informants identified from documents, websites and personal contact on the basis of certain criteria, including current and ex-officio, relevant experience in the DEM policy arena.

For key informant interviews of bureaucrats, participants were selected purposively on the basis of DEM policy making experience, present/ex-officio bureaucratic experience, or involvement with political institutions as present or past politicians. A contact list of 15 bureaucrats, including retired officials, was formulated through email as their email addresses are publicly available. A total of 10 bureaucrats from various backgrounds and various positions responded positively to be interviewed. Obtaining appropriate consents, all the interviews were recorded except one, 4 follow-up interviews over phone and email communications were carried out for 2 respondents.

From the document review, notable policy makers were identified. They were selected purposively depending on their availability and willingness. To receive consent from politicians an invitation letter with the interview questions and informed consent form was sent to each political party of Manitoba so that they could mobilize an appropriate member of the party. The political party offices then emailed the date and time to me for the interview. A total of 3 politicians were interviewed.

2.4 DEM policy in Manitoba: longitudinal analysis

The Province of Manitoba is located in south-central Canada bounded by the Province of Saskatchewan to the west; by Hudson Bay, Nunavut and Northwest Territories to the north; by the Province of Ontario to the east and by the states of Minnesota and North Dakota of the USA to the south. As of June 1, 2016, it had a total population of 1,339,308 (Government of Manitoba, 2017).

The Province of Manitoba is governed by the Legislative Assembly of Manitoba which is a unicameral legislature. The Premier represents the leader of majority party. The Lieutenant Governor of Manitoba represents the Queen Elizabeth II as head of the state and appointed by the Governor General of Canada on the advice of the Prime Minister of Canada. At federal level, the representation of Manitoba is characterized by 14 Members of Parliament and 6 Senators.

Over the past 100 years, Manitoba faced major challenges to absorb more than 100 disaster events. First, due to limited financial capacity and limited resources, the Province always struggled to manage mega events, which instigated federal co-operation to attain self-dependency in Disaster and Emergency Management. Secondly, to engage and to keep pace in pursuance of federal laws, the Province of Manitoba used different policy instruments. One such

example is the legislation to compel municipalities and other provincial departments to have an emergency plan and emergency co-coordinators at the municipality level. The Province aimed at ensuring public safety and building a safer community while facing the continuously changing nature of the disaster and emergency events.

2.4.1 Relief based recovery era (1929-1938)

The Canadian prairie region aspired and implemented rapid farming policies in the early 1930s. However, the Prairie provinces suffered consecutive droughts (1929, 1931 & 1936), dust storms (1934), plant rust, heat waves (1936), grasshopper plagues and water shortages during 1931-1938, causing immense social and economic hardship, commonly known as the “dirty thirties” (Arbuthnott & Schmutz, 2013). The Province of Manitoba experienced a significant drop in income (49%) in 1934 compared to 1928-29 (from \$466 to \$240 per capita income) (Canada, 1940). To “sustain homes and families, people of Western Canada were forced to accept relief from all levels of governments and other organizations” (PFRA, 1961, pp. 5-6).

Moreover, “public funds were necessary to supply seed, feed and fodder to the farmers, as well as food, fuel and clothing” to help the farming population, and the “demoralizing effect of destitution left its mark on many” (PFRA, 1961, pp. 5-6). Late in 1934, a committee was set up federally for assessing the existing condition and bringing solutions for this problem. The outcome was the passing by the Parliament of the Prairie Farm Rehabilitation Act (PFRA), which was assented to on April 17, 1935. The Act initiated the rehabilitation of drought in the Prairies provinces such as, Manitoba, Saskatchewan and Alberta. An initial appropriation of \$4,750,000 was made to cover the cost of rehabilitation activities for a period of five years. Through an amendment to the Act in 1937, the PFRA was extended to include land utilization

and resettlement. It was realized, however, that for the development of a sound agricultural economy on the Prairies, more long-term measures for rehabilitation would be necessary. In 1939, additional financial allocations were made and the five-year limitation to the PFRA was removed. The essential feature of the Act was to give encouragement to farmers in solving their own problems, and development was along the following three lines: Cultural, Land Utilization and Water Development (PFRA, 1961, pp. 5-6). Though the pastures were monitored by the pasture managers and experts providing the support, they were managed centrally by the federal government (Arbuthnott & Schmutz, 2013).

The primary assistance provided by the federal government mainly was relief-based and facilitated the relocation of the farmers into new farming areas through subsidy (Marchildon et al., 2008). Manitoba received 17% among \$292 million of the relief assistance provided in the Prairie provinces during 1930-1937 (Canada, 1940; Marchildon et al., 2008). The concept of mitigation and preparedness for natural hazards was absent at that time.

2.4.2 Civil Defence Era and political leadership (1939-1966)

Civil defence initiatives in emergency management began to take place in Canada in the late 1940s. Fisher (1999) labeled 1939-1965 as the Civil Defence era in Canada while Burtch (2009) referred to 1945-1963 as the Civil Defence period. In 1939, a few weeks before entering the World War II, the federal government adopted the Defence of Canada Regulations under the War Measures Act, 1914. In 1948, a Civil Defense Organization in the federal Department of National Defense was formed that focused on enemy attack, the nuclear threat and the protection of civilians. The federal government moved for partnership with the provinces for coordination and to support local planning (Henstra, 2013). For coordination, a Federal-Provincial Conference on Civil Defence took place in 1950, and a Federal-Provincial Advisory Committee was formed

that gave the responsibility to the provinces for organizing civil defence in municipalities by providing training and information (Henstra, 2011), implying a delegated authority in emergencies. Under such an arrangement, municipal Civil Defence committees would be responsible for coordinating the community participation.

In 1950, Manitoba formed a provincial Civil Defence Control Committee, and Winnipeg emerged as the first Canadian City that established an operational civil defence organization while recovering from its major flood in that year. Later on, 18 municipalities joined to form The Greater Winnipeg Civil Defence Committee. This initiative perhaps was prompted by the disastrous Red River flood in 1950 and the Korea War (Burtch, 2009, pp.76). In the same year, after receiving the mandate from the citizens through voting, St. Boniface established a civil defence organization that could fight against floods and attack from other countries. The Province of Manitoba promulgated the Emergency Measures Act in 1951 and subsequently replaced it with the Manitoba Civil Defence Act in 1952. This Act for the first time explained the “differences and similarities between civil disasters (such as floods) and war emergencies; which was a significant step in the development of emergency legislation in Manitoba” (Lindsay, 2014, p.167). Though this Act gave more power to the provincial government for war disaster, it also recognized provisions for both war and civil disasters. Pursuant of section 8 of the Civil Defence Act, 1952, a municipality could establish committees and an emergency plan to deal with disasters/wars within the municipality. For example, the rural municipalities of Dufferin, Grey, Roland, and Thompson formed committees and established a plan in 1968.

It is notable that extreme environmental events played a major role in Manitoba disaster and emergency policy change. Manitoba experienced major flooding in 1826, 1852, 1861, 1882, 1904, and 1948 (Bumsted, 1987). The ‘most devastating flood in the first half of the 20th century

occurred in 1950' (Rashid, 2011). From the historical perspective, The Dominion Lands Act, 1872, accelerated the European settlement (i.e Mennonites, Icelandic, Ukrainians, Jews and French settlers) in Manitoba in the last two decades of the nineteenth century (Lehr, 1996). The trend of increasing population continued for the next two decades of the twentieth century (Haque, 1996), which had profound effects upon the increased flood loss in Manitoba. An analysis of historical data shows that the 1861 flood had a peak flow rate of 3540 m³/s and caused a loss of \$35 million while the 1950 flood had a peak flow rate of 3060 m³/s but caused a flood loss of \$1.2 billion (Mahmud, 2015). Another reason for increasing flood loss was the absence of any clearly defined disaster and emergency management policy for natural disasters up until the 1960s.

In 1950, Canada did not have a clearly 'articulated national policy for dealing with the financial exigencies of national disasters', and this absence was itself a disaster (Bumsted, 1987). Prime Minister Louis St. Laurent agreed to assist Manitoba by following the Fraser River flood formula of 1948 in case of a declared "national emergency," which meant that the federal government would cover 75% of the costs of fighting the floods and repairing dykes (Robinson & Cruikshank, 2007).

Premier Douglas Lloyd Campbell of Manitoba emphasized on relief and maintained an unambitious policy of reconstruction (Bumsted, 1987, p. 348). The role of Premier Campbell during the 1950 flood was also criticized for his slow style as he failed to ask for the federal financial assistance and put less pressure in terms of shifting the financial responsibility to the federal government (Bumsted, 2002). A federal-provincial commission named the Carswell-Shaw Commission was formed to assess the cost and the amount Manitoba might receive from

the federal government. Subsequently, Manitoba received 50% of the amount estimated by the 1953 Carswell-Shaw Commission.

The government of Manitoba formed a Royal Commission on Flood Cost-Benefit in 1956 to explore the protection measure options such as flood mitigation and protection measures. The Royal Commission reported that Manitoba could save \$ 2.73 for every \$ 1 spent on flood protection works, and recommended flood protection infrastructures including floodways, dams, reservoirs and diversion channels (Government of Manitoba, 1968). On the basis of Flood Cost-Benefit analysis, the Royal Commission made recommendations influenced the Manitoba's DEM policy afterwards. The cost of the 1950 flood and reconstruction was highly political and involved not only Manitoba politics but also the federal-provincial relationships (Bumsted, 2002). Premier Duff Roblin, who was the head of a minority government (1958) in Manitoba, took the idea of constructing a floodway and used it as his main election manifesto. The opponents mocked this idea as "Roblin's Folly" or "Duff's ditch" but he won the election by securing 36 seats out of 57 in the 1959 election. Thus, the history of the floodway began and Manitoba started moving forward with reconstruction, leaving behind the previously followed relief-based approach.

Acting on the recommendations of the 1958 Royal Commission report, the governments jointly undertook the Red River Floodway Project. A 50-kilometre floodwater diversion channel, which started in 1962 with a \$37 million commitment from the federal government, was completed in 1968 at a total cost of approximately \$60 million (Shrubsole, 2000). The threat of nuclear attack though dominated the emergency planning of Manitoba in the early 1950s, which gradually shifted to the issues of the 1950 Red River flood and financial incentives. Mitigation through structural measures focused on Winnipeg was also the outcome of the 1950 flood

(Rannie, 1998). Manitoba was more proactive than any other province where Premier Duff Roblin used the recommendation of the Royal Commission as the election manifesto, he was successful in negotiating with the federal government, he convinced Prime Minister John Diefenbaker to pay 60% of the construction cost through a multi-year cost spreading idea, and the federal government and Manitoba entered into an agreement (Passfield, 2001).

Under the leadership of Premier Duff Roblin the Red River floodway was constructed and opened in 1968, which was the first mega-scale flood mitigation measure in Manitoba (R17). This era was the breakthrough period as the sympathetic Prime Minister John Diefenbaker was willing to pay more attention to the provinces of Saskatchewan and Manitoba: with drought prevention in Saskatchewan, and flood protection in Manitoba. Manitoba premier Duff Roblin was therefore able to get this project off the ground (R2). One respondent opined that

“It was also an era that demanded a certain policy or created policy requirements that transformed politicians and stakeholders” (R19).

The recommendations of the Royal Commission report resulted in the construction of the Red River floodway in 1966 to divert the Red River flood waters around the City of Winnipeg (Government of Manitoba, 1968; Haque, 2000; Simonovic & Carson, 2003). Other structural measures including, the Portage Diversion, the Shellmouth Dam were evident as a result of the Royal Commission’s study (Haque, 2000).

The Royal Commission also examined the role of flood insurance as a viable option for recovery from floods. However, the Commission closely examined the experience of USA and recommended a policy to generate a “flood assistance fund” instead of implementing a flood

insurance policy (Bumsted, 2002). The policy recommendation by the Manitoba provincial government acted crucially in the legislations of the Canadian federal government.

While Manitoba was recovering from the 1950 flood, the Civil Defence program and the financial negotiations associated with this were also moving in a parallel direction. The federal government launched Civil Defence Financial Assistance Program (FAP) in 1952 so that the Provinces could develop and establish their own civil defence plans. From 1952 to 1959, yearly contributions of the federal government to the FAP almost quadrupled, from \$250,000 to over \$1,000,000. The federal government included peacetime projects between 1956-57 where the basic formula governing the operation of the FAP called for making a federal contribution as high as 50% of the cost of approved projects, leaving the province and the municipalities to share between them the remaining 50%. After 1959, the federal share climbed to 75% while provincial and municipality shares rested at 15% and 10% respectively.

Though the federal government was providing financial assistance to the provinces, different provinces reacted differently. In this regard, Fisher (1999) also cited that the danger of attack was “not that great” due to its diminishing importance (Burtch, 2009, p. ii). Moreover, the impossibility of prevention against atomic attack, undefined financial responsibility, limited capacity of the military, and indifference of the military to civil defence played a significant role. For this reason it was suggested to prepare civil defence survival plans for those cities/municipalities that have more than 10,000 people. The Liberal government in Ottawa in 1954 felt doubt about the effectiveness of the civil defence program and formed an Inter-departmental Working Group on War Measures in 1956. In 1957, the Working group recommended for establishing a civil defence organization (CDO) in Canada as there was “evidence of conflict and duplication in the arrangements of many government departments”

(EPC, 1998, p. 2). This resulted in establishing of an Emergency Measures Organization (EMO).

The working group opined that:

“an emergency government organization comprising a federal emergency headquarters in the vicinity of Ottawa, a regional emergency headquarters in each province that would include both federal and provincial component as well as an army component, and possibly a number of sector headquarters in each province” (EPC, 1998, p. 2).

The Working Group’s principal recommendation was accepted by the Liberal Cabinet in April 1957 and in the same year, a new Emergency Measures Organization (EMO) took the responsibility of coordinating emergency management for the federal government. In response to the federal initiative and continual persuasion with financial incentives, the Manitoba Emergency Measures Organization (MEMO) was established in 1959.

There was a growing focus on peacetime emergencies due to public indifference to the risk of war (Fisher, 1999) and the emergence of natural and human-made disasters (Legislative Assembly of Western Australia, 2002, p. 18). The federal government was more focused on civil defence whereas provinces were pushing for peacetime emergencies. However, as a result of federal-provincial-territorial discussions held between 1959-1962, the provinces adopted several wartime civil defence responsibilities by 1963 such as, civil emergency planning. At the next conference in 1965 the provincial leaders stressed the federal government to place more focus on peacetime emergencies such as Hurricane Hazel (Henstra, 2011). On February 1, 1966, Minister of Industry was given the authority for EMO to coordinate the initial response to a peacetime disaster.

The civil defence era started from 1939 with the emergence of World War II and existed up to 1966 as the Canada’s EMO took the responsibility for coordinating the initial response to a

peacetime disaster. The civil defence era embodied preparing for nuclear war, national survival, and the creation of EMOs throughout Canada and North America. Until the 1997 era, all governments seemed to have an understanding that the “best bang for your buck” was in mitigation rather than response and recovery (R17).

2.4.3 Peacetime emergency and Collaborative approach (1967-1990)

The growing attention to domestic threats and natural hazards due to the series of events observed in the 1950s and 1960s led to the peacetime emergency management approach instead of civil defence planning (Henstra, 2013). From 1967, the federal government began to reduce the budget for civil emergency measures and the federal government froze the EMO program in 1968. Due to the reduction of financial assistance to Provinces, provincial EMOs protested for such federal action.

In these circumstances, Manitoba experienced a series of floods in the 1960s while the Prairie Provinces had severe droughts in 1967, 1968 and 1969. Under these circumstances, the provincial capacities to deal with them were questioned. Gradually, the federal and provincial governments developed a Federal-Provincial-Territorial (FPT) collaboration framework. The Disaster Financial Assistance Arrangement (DFFA) was formulated by the federal government in 1970. The Federal DFFA Payments amounted to \$11,464,005 out of an estimated total cost of \$14,523,061 (Public Safety Canada, 2011). Moreover, disaster assistance costs related to flood events continued to rise and, after a series of major floods in the early 1970s, the National Flood Damage Reduction Program (FDRP) was launched by the federal government in 1975.

The 1974 flood triggered the discussion about flood proofing and institutional measures because only structural interventions seemed inadequate to mitigate additional flood loss (Lehr &

Selwood, 1998). During the 1979 flood (the 6th worst event between 1800 and 1999) the Red River floodway was very effective and the larger communities were saved by the ring dikes although the southern part of the Province of Manitoba was affected. After the flood, Manitoba constructed ring dikes around the southern Manitoba communities to protect them from future floods. In addition, the designated flood area (DFA) design flood elevation for the dykes was implemented after the 1979 flood (Lehr & Selwood, 1998; Hawkins-Bowman & Newbury, 1999). A Red River Designated Flood Area was established through the federal initiative of FDRP mapping (Shrubsole, 2001). Under the program the “federal government signed bilateral agreements” with Manitoba to share the cost of a major floodplain mapping effort. But ambiguous jurisdictions and problems with enforcement contributed to a lack of compliance with floodplain regulations in Manitoba (IJC, 1997). The federal government decided not to renew the intergovernmental agreements under the FDRP. The Joint Emergency Preparedness Program (JEPP) was established in 1980 as an FPT program to support emergency preparedness training and the purchase of equipment at the local level. In the peacetime emergency era, Manitoba DEM policies were mainly driven by the federal initiatives and emphasized local and regional scale natural hazards such as, floods and droughts.

Emergency Preparedness Canada (EPC) became the lead federal agency in this field. The legislation gave powers to the minister responsible for the EPC to coordinate emergency preparedness measures within the federal government as well as to support the provinces and territories in developing their own emergency preparedness policies (Koji & Juillet, 2013). The Manitoba government promulgated the Emergency Measures Act in 1987, which outlined the duties and responsibilities of public sector agencies during an emergency, the requirements for emergency plans by municipalities and others, the use of additional powers to deal with an

emergency, and the provision of Disaster Financial Assistance by the provincial government. The concept of war emergency was not emphasized as in earlier times; it was not mentioned separately but power was placed under a generic emergency declaration (Lindsay, 2014). The S.M. 2013, c. 12 (Bill 37, 2nd Session, 40th Legislature) amended the Emergency Measures Act of Manitoba and added the provision for emergency declaration by the local authority (municipality).

While the scenarios and focus in federal and provincial policy were changing, events outside Manitoba came into the forefront once again in terms of policy formulation. In response to a train derailment in Mississauga, Ontario in 1979 and similar legislation in USA resulted in the Transportation of Dangerous Goods Act of Canada in 1980 (Rankin, 1990) which describes the handling, transporting, packaging and labeling of dangerous goods. Uniform federal provisions were also emerged as a response to that Act. The Government of Manitoba passed Bill 43 regarding the Transportation of Dangerous Goods Act in May 1983 to provide provincial legislation to parallel and supplement the Federal Transportation of Dangerous Goods Act of 1980. The Manitoba Transportation of Dangerous Goods Act, 1983, was not proclaimed as its implementation required the adoption of federal regulations. Instead, the Department of Environment and Workplace Safety and Health was developing a Dangerous Goods Handling Act and introduced the bill in August, 1983. There were consultations and meetings with industries, employer groups, labor unions, environmental interest groups and private individuals. Special meetings took place in Thompson, The Pas, Dauphin, Brandon, Morden, Portage la Prairie and Winnipeg. Manitoba enacted the Dangerous Goods Handling and Transportation Act on June 29, 1984.

Another event outside Canada impacted Canadian policy. The Bhopal tragedy of India on December, 2, 1984 drew public and political attention in many jurisdictions (Henstra, 2011). In response, a joint Industry-Government Steering Committee was formed by Environment Canada in 1985 to evaluate existing policy guidelines to prevent incidents with such impact and examine the government capacity to respond to an actual event like the Bhopal chemical disaster (EPC, 1998). Manitoba revised the Dangerous Goods Handling and Transportation Act in March 1987 following the submission of the report of a steering committee. The definition of “contaminant” and “hazardous waste disposal facility” was inserted in the amendment in on July 17, 1987. The Derailment Release from Rail propane tanker in Emerson happened on October 1, 1987 requiring the evacuation of 300 persons. However, the event was not able to bring any changes in policy.

In 1986, a sudden spring thaw and enormous amounts of rain caused severe flooding in the Dauphin Region, Portage la Prairie and the Northern Interlake regions. To fight the frequent flooding in Manitoba, the Province formulated the Dyking Authority Act, 1987, which intended to ensure that the dykes were well maintained. Moreover, for setting the rules on flood plain management, Manitoba enacted the Water Resources Administration Act in 1987, which basically prohibited buildings on designated flood areas unless passing through the two stage permit. It also gave the authority to the minister to order evacuation if any dike failed (Hawkins-Bowman & Newbury, 1999). Moreover, the Designated Floodway Fringe Area Regulation, 1989, was formulated to establish a designated floodway area and floodway fringe areas within Winnipeg. It set out a provision for designating a flood protection level and flood proofing criteria (Hawkins-Bowman & Newbury, 1999).

After the frequent flood events, wildfires impacted the Manitoba DEM policy. In 1989, more than 1,000 incidents of fire set the new record in Manitoba by causing the burning of 3.28

million hectares; this received wide media attention throughout the world (Hirsch, 1991), along with the Yellowstone fires (Carrier, 1989) and the China fire (Yun-qian & Ji-zhong 1989). Previously, some key operational strategies for fire regarding helicopter usage for initial attack evolved in North America during the early 1970s (Brown & Davis, 1973). Alberta was the first Western Canadian province to develop a formal preparedness system in 1983 (Gray & Janz, 1985) as a result of the record fire seasons in terms of hectares burned, fire incidence, and suppression costs from 1979 to 1983 (Konopelny, 1993). The 1989 Manitoba wildfire review recommended an Initial Attack Response because Mutual Aid could not address the problem adequately when fires were occurring at different places at the same time and competing for resources (Hirsch & Fuglem, 2006); and the system was implemented in Manitoba in 1990 (Gray & Janz, 1985) to ensure that all forest fires occurring within Manitoba's primary protection zone were given an appropriate initial attack response according to their risk of fire ignition, potential fire behavior and the resource or human lives at risk (Manitoba Initial Attack Response, 1990).

During the 1980s, considerable resources that had been under the control of local government were no longer under their control. Local governments did not necessarily have the resources that they would have had in the late 1960s and early 1970s. During that period, "communities tended to be more self-sufficient" (R12). They typically had their own fire service and own ambulance service or a private ambulance service, and many had their own RCMP detachments or their own local police department. Basically, the Civil Defence Order, 1959, specified that the RCMP along with Army would maintain the law and order, and conduct civil defence measures. As a result, the role of federal force was seen as 'extension of their peacetime responsibilities' (EPC, 1998).

Moreover, many smaller communities experienced a decline in population. The resources that once might have been under the control of the community were reduced in favor of larger regional centers, such as Brandon, Portage la Prairie, Steinbach, Thompson, and Dauphin. The combination of an aging population, reduced workforce in the community, and the practice of commuting to regional centers or to Winnipeg to work during the day created new local situations. There was a shortage of volunteers in fire departments as well. As municipalities had fewer available resources, there was a movement away from self-reliance within the municipality towards establishing aid agreements among local communities or rural municipalities.

In the early 1980s, all provinces opted for a resource transfer for Initial Attack between the provinces as well as with other states of the USA. Manitoba formed a compact named the Great Lakes Forest Fire Compact (GLFFC) with Ontario, Michigan, Wisconsin, and Minnesota while seven New England states of USA and Canadian provinces such as, New Brunswick, Nova Scotia, and Quebec formed the Northeastern Forest Fire Compact (NFFC) (Hirsch & Fuglem, 2006). This was a fundamental shift in Canadian fire management. The Canadian Inter Agency Forest Fire Center (CIFFC) was established in Winnipeg in 1981 for the resource exchange. Under the exemption facilities of Canada-United States Reciprocal Forest Fire Fighting Arrangement (CANUS), resources, such as crew and equipment, were imported into Canada during 1988-2004 (Hirsch & Fuglem, 2006). Manitoba's Wildfire Program was implemented with other agencies and jurisdictions and they shared resources (Manitoba Sustainable Development, 2017). Manitoba needed more value protection such as using sprinkler heads and pumps to protect the values. The fire fighters began to share new ideas and new equipment.

“We used to use a type of hose, another agency used another type of hose, and you could not fit the different sizes, they did not work together. So now every agency in Canada buys exact size of the hose” (R10, R14), two respondents commented.

Section 1 of Fire Hose Regulation of 1987(102/87 R) under the Fires Prevention and Emergency Response Act outlined that

“Every municipality using 1.5, 2.5 and 4 inch fire hose couplings and fittings on any water system or part thereof, or any fire pumpers to which fire equipment are attached, shall use only couplings and fittings in accordance with the specifications of the Manitoba Standard Screw Threads and as more particularly set out in the Schedule.”

A Mutual Aid arrangement and collaborative approach appeared in the policies of Manitoba. The Manitoba Emergency Plan (MEP), 1983, replaced the Manitoba Survival Plan, 1965, and inserted the provision of resource sharing from adjoining or neighboring municipalities through formal or informal mutual aid or other arrangements (MEP, 1988 pp.1-3). In addition, the Province of Manitoba felt the need to receive help from local responders. With the purpose of cooperation among other social organizations and government departments, the Manitoba Inter-Agency Steering Committee on Emergency Social Services (ESS) was established in 1990 to provide accommodation, clothing, food, registration, and inquiries during an emergency. Manitoba in this way expanded policy action from focusing on the event to providing better and wider responses to emergency through a Mutual Aid arrangement and a collaborative approach.

In sum, Manitoba placed more focus on peacetime emergencies since the 1950s. In the 1960s, municipalities were encouraged by the federal government to prepare their own plans during the Civil Defence period. In 1966, Canada’s EMO took the responsibility of coordinating the initial response to a peacetime disaster. The provincial emergency management policies were

prescriptive compared to other times but were pushing the municipalities for peacetime plans. In the 1970s, emergency planning was seen as a local function which could be passively supported by the province. The Province of Manitoba enacted the Emergency Measures Act in 1970 that provided the provisions for municipalities to adopt plans through their by-laws. Moreover, this Act had also a provision for declaring a state of emergency up to 90 days (The Emergency Measures Act, 1970). During the 1970s, both municipal and provincial emergency programs and planning significantly developed. Since the 1980s, a great deal of consideration was given to Mutual Aid beyond traditional local, state or provincial boundaries. For example, provinces in Canada began to organize along the same lines as American states and organized into regional compacts where they essentially agreed to provide mutual aid and assistance to one another as opposed to relying entirely on the federal government. Cooperation between northern US states and Canadian provinces was also developing. The involvement of federal government in peacetime emergencies was 'mostly on an ad-hoc basis' (EPC, 1998). As a new approach began during the 1990s as a result of newer types of events and financial involvement for DEM planning, a peacetime emergencies and collaborative approach embraced the era from 1967 to 1990.

2.4.4 Integrated all-hazards approach (1991-2000)

Events and learning from other jurisdictions have influenced the DEM policies of Manitoba. In addition, policy ideas entered into Manitoba as a result of imitating others. The USA started the Firewise program in 1986 following the devastating fire incidents in California and Florida in 1985. Since its inception, more than 700 communities in 40 states of the USA have adopted this program. Alberta was the first Canadian province to adopt a similar approach named FireSmart in 1990 to generate awareness of the Wildland-Urban Interface (Johnston &

Mowery, 2011). The FireSmart manuals were first published in 1999. Fort McMurray, Kamloops, Hinton, and Banff communities successfully started the program while Yukon invested more than \$1 million in this program. Most of the Canadian provinces and territories have ongoing FireSmart programs and the Province of Manitoba is part of this program (Hirsch & Fuglem, 2006).

Manitoba experienced the “flood of the century” in 1997. Over 7,000 military personnel were employed to prevent flood damage and relocate 28,000 evacuees (Haque, 2000). The ring dikes and Red River floodway experienced a serious threat as the floodway was designed to protect against a flow of 60,000 ft³/s (1,700 m³/s). However, the 1997 flow was 63,000 cu ft³/s (1,800 m³/s), which exceeded the design parameter (Mahmud, 2015). To address the situation, the province broke operational rules for the floodway to protect the city above the design level, causing additional flooding upriver (Mahmud, 2015). Because the policy or guidelines to pay the financial assistance to flood victims were unclear, the Emergency Measures Act was amended by the Bill S.M 1997, c-28 and under section 2.3, the provision of preparing and maintaining disaster financial assistance policies were inserted. In 1999, Manitoba promulgated provincial Disaster Financial Assistance (DFA) policy guidelines and regulations for both the private and public sectors.

On the basis of recommendation by the International Joint Commission (IJC) report, the Disaster Financial Assistance (DFA) limit was raised to \$100,000 from \$30,000. An improvement in flood preparedness was observed after the 1997 flood (Rannie, 1998). A new standard for dykes and buildings was set as the 1997 flood plus 0.06 m and 1997 plus 1.0 m respectively (IJC, 1997). A new Designated Flood Area Regulation in 2002 was promulgated as well. Following the 1997 flood, all the communities were required to build their own emergency

plan, which took an all-hazards approach (Halliday & Associates, 2009). A total of 13 community ring dikes were built after the flood in areas south of Winnipeg. Based on the public hearings, the Manitoba Clean Environment Commission recommended the floodway expansion to protect the city of Winnipeg (Manitoba Clean Environment Commission, 2005) against 1:700 floods (KGS Group, 2001; Halliday & Associates, 2006). A cost sharing agreement was signed in 2003. In 1997, following the flood, the Province of Manitoba appointed the Red River Floodway Operations Review Committee to review the rules and criteria for operation of the Red River floodway. The changes recommended by the Operations Review Committee were accepted by the Province in April 2000 and are incorporated into the current operating rules (Infrastructure Canada, 2005). “Since 2002, emergency summer use of the floodway has occurred several times. Each use of the floodway under Rule 4 resulted in artificial flooding. In addition to property damage, the public noted that artificial flooding causes stress and anxiety throughout the community” (Report on the Public Consultation, 2010). The Red River Floodway Act, 2004, was enacted and the Water Resources Administration Act, 1987, was amended in 2008 to provide compensation to the people who would be victims of artificial flooding caused by the floodway operations (Halliday & Associates, 2006). Under the new arrangement, the floodway operations would be guided by operating rules and regulated in such a manner so that the dikes of Winnipeg would not be overwhelmed. If an event larger than the 1997 flood occurs, it was assumed that there would be the need to create artificial flooding in the south inlet of the floodway. As a result, the mitigation measures were essential and evolved as an Act. In addition, citizens were provided financial assistance to raise their homes and build their own dikes so that these measures could provide a larger socio-economic return (Simonovic & Carson, 2003).

Political leaders along with the flood event played a significant role in the DEM of Manitoba. The expansion of the floodway was stimulated by the 1997 flood (Report on the Public Consultation, 2010). Manitoba Premier Gary Doer and the Canadian Prime Minister Jean Chrétien in 2003, agreed to contribute C\$80 million each to expand the Red River floodway which was the “largest provincial–federal infrastructure investment partnership since the original construction of the floodway” (Pinkowski, 2008). The collaboration between the Manitoba provincial government and the federal government resulted in new windows for policy development. For example, in 1998, the federal government launched the financial assistance for the prairie farmers through AIDA and Canada-Manitoba Assistance Program. The *Canadian Farm Income Program (CFIP)* replaced the AIDA program in 2001 where federal and provincial shared a 60:40 formula (Schmitz, 2008).

It was realized by regulators and policy makers that an integrated approach to planning could be effective and efficient as there are many commonalities in planning and responding to different types of hazards. An example is an evacuation plan (Etkin et al., 2011). Different departmental plans have varying objectives, and they possess the risk of conflict among them. An all-hazards approach can address them. The all-hazards approach offers numerous advantages in terms of cost effectiveness and logistical efficiency. A plan embedded with this approach requires the consolidation of all departmental plans and resources, and it ensures faster and unified action, which is generally not possible in the departmental plan of each organization while responding to a disaster or emergency (Gregory, 2015). An integrated all-hazards approach began to spring up in the early 1990s in the emergency management literature in the USA focusing on mitigation to prevent disasters, along with the traditional emphasis on preparedness and response. In 1992 the Federal Emergency Management Agency (FEMA), USA, adopted an

all-hazards approach that worked closely with state and local emergency partners. This approach was successful in responding to major natural disaster events, such as 1993 floods in USA, the Northridge earthquake in 1994, several hurricanes, tornadoes and terrorist events like the bombing in World Trade Centre (1992) and in Oklahoma City (Bullock et al., 2017). These success stories influenced the Canadian discourses of disasters and emergency management.

Moreover, the United Nations declared the 1990s as the “International Decade for Natural Disaster Reduction,” which had a great influence on Canadian emergency management (Henstra, 2013). The influence was first observed in Section 5.1 of the Federal Policy for Emergencies in 1995, which contained the explicit statement of an all-hazards approach to emergency preparedness. This provided a “formal recognition of a basic principle of emergency preparedness in Canada” (EPC, 1998). Moreover, the Section 5.2 of the Federal Policy for Emergencies in 1995 states that “a risk-based emergency management cycle should be embedded within an institution’s broader integrated planning processes”.

The Province of Manitoba adapted its legislative measures to an all-hazards approach in the late 1990s. The Province repealed the Manitoba Survival Plan, 1965, and formulated the Manitoba Emergency Plan, 1983, which was amended in 1988. The Manitoba Emergency Plan, 1988, extended its scope

“from a single departmental response to the fully co-ordinated, collective response of many or all department, to an emergency or disaster” (MEP, 1988, pp. 1-2).

This plan was amended by the Manitoba Emergency Plan, 1998, in which the provision of “responding to any emergency regardless of the type or magnitude” was added in the scope of the plan (MEP, 1998, p.2). This reflected the adoption of an all-hazards approach in the Province’s plans and programs. Although the term “all-hazards approach” formally appeared in

the Manitoba Emergency Plan (MEP) in 2009, however, the structure of the plan remained similar to MEP, 2000, as it clearly stated that

“The Manitoba Emergency Plan provides the basis for responding to any emergency regardless of the type or magnitude” (MEP, 2000, p. 4).

The declaration of the 1990s by United Nations as the “International Decade for Natural Disaster Reduction” and since a newer approach flourished in Manitoba during the 1990s, this era is referred to an integrated all-hazards approach (1991-2000).

2.4.5 Risk based comprehensive emergency management (2001 onwards)

Specific attention and rigorous planning is essential for particular events (e.g. terrorism, pandemic and flood caused mold issues) that are embedded with certain characteristics. Some events have particular characteristics that require special attention (Etkin et al., 2011). Canada experienced FLQ kidnappings in 1970 (October Crisis) and École Polytechnique violence in 1989 (Lindsay, 2009). Dealing with such events falls under the “Incident Command System” (ICS), which is an onsite command and control system for managing emergencies.

Manitoba generally follows a “North American standard” that sets out the organization structure and principles used in ICS. ICS was adopted in Manitoba as a fire program by the fire commissioner. It was developed after the California wild land/urban interface fires. It is still a fire-based concept but it has also other applicabilities. After the California fire, the US adopted National Incident Management Systems (NIMS) that led to the Canadian version of ICS (R12). Basically, after the 1970 California fire, California established a research project named FIRESCOPE that came out with the idea of an “Incident Command System (ICS). ICS was adopted by the National Interagency Incident Management System (NIIMS) in 1982, and FEMA introduced this concept throughout the USA after 1987. After the 9/11 incident, the Department

of Homeland Security of the USA formally adopted the National Incident Management System (NIMS) as the national model (Rowley, 2005). In Canada, it was first implemented by the Province of British Columbia as standard operating procedure in the mid-1990s. Later other provinces started to follow the same approach (Fire Fighting in Canada, 2008). However, CIFFC in 2002 introduced the Canadian version of ICS across Canada (ICS Canada, 2015). Later in 2015, S.M. 2015, c. 43 inserted the expression “On-site incident commander” instead of “Commanding officer” in the Emergency Measures Act of Manitoba.

The event of 9/11 triggered significant changes in both federal and provincial emergency management policies and programs in Canada. Moreover, the 2003 SARS outbreak and H1N1 influenza in 2009 were also vital policy drivers in emergency management (Henstra, 2013). These very significant changes underscore the greater importance attributed to national security and emergency management. The incidence of 9/11 and in response to the Resolution # 1373 of the United Nations, the Anti-Terrorism Act of Canada was introduced as Bill C-36 to “amend the *Criminal Code*, the *Official Secrets Act*, the *Canada Evidence Act*, the *Proceeds of Crime (Money Laundering) Act* and other Acts, and to enact measures monitoring the registration of charities in order to combat terrorism”. The Act received Royal Assent on December 18, 2001 (Department of Justice, 2017).

At the legislative assembly of Manitoba, Bill 2 - The Security Management (Various Acts Amended) Act was presented in November 14, 2001. In the legislature debate, the statement about Comprehensive emergency management was brought by Ashton (LA 458), Gerrard (LA 457–458), Lindsay (LA 456–459) and Smith (LA 458). This Bill 2 went through the whole process and the Bill came to us as an Act. In the preamble of the Act it is noted that

“WHEREAS the tragedies of terrorism of September 11, 2001, have threatened the sense of peace and security of all Canadians; AND WHEREAS the Province of Manitoba has reviewed its laws and procedures and determined that amendments to several Manitoba Acts are required to enhance security and improve emergency planning and response in the province; THEREFORE HER MAJESTY, by and with the advice and consent of the Legislative Assembly of Manitoba, brought changes in several Acts.”

The Security Management (Various Acts Amended) Act, 2002 brought changes to 9 existing Acts which mostly provided more powers to the authorities to ensure public safety. Information provided in Table 2.2 indicates the essence of such amendments made under each Act (see Table 2.2).

Table 2.2. List of Acts (including amendments) which were amended under The Security Management Act, 2002

Acts	Amendments
The Dangerous Goods Handling and Transportation Act, 1987	The director can order anybody who is dealing with dangerous goods.
The Emergency Measures Act, 1987	Making sure that every local authority should have an emergency plan (inserted in 2002)
The Manitoba Evidence Act, 1987	Disclosing information before a court or tribunal can be objected regarding security mater or public health issue
The Fires Prevention Act	More power to fire commissioner and ensuring an annual report in the local authority that contains information about available resources for response.
The Pesticides and Fertilizers Control Act, 1987	Tighten the security in case of crop-dusting, spraying equipment, pesticides and fertilizers.
The Private Investigators and Security Guards Act, 1987	Tighten the licensing requirements for security guards.
The Proceeds of Crime Registration Act, 1997	Allowing a restraint order made under the <i>Criminal Code</i> in respect of property belonging to or controlled by suspected terrorists to be registered in the <u>Personal Property Registry</u> .
The Public Health Act	More power to officials to deal health hazards; to detain and treat persons suffering from dangerous diseases, to collect and share information and more power for entry and inspection.
The Vital Statistics Act, 1987	Provision of punishment for false statements and making false documents; increasing punishment for such offences.

Source: Explanatory note of The Security Management (Various Acts Amended) Act, 2002.

The Government of Manitoba works in partnership with the major non-governmental organizations (NGOs) during an emergency. The role of NGOs is recognized in getting feedback on how to prepare to provide support to people when a natural disaster occurs, and how to

resettle after a disaster (R2) as some NGOs like the Red Cross were given a more prominent role by the federal government for providing support to the affected people, especially for First Nations communities of Manitoba. Though Shrubsole (2000) noted that the “support provided by the NGO community in reducing or increasing future losses is still unclear”, the Red River Basin Commission, a non-profit charitable organization, had influence on the DEM policy of Manitoba. In March 2002, the Red River Basin Commission (RRBC) was formed for building basin-wide consensus and acting together with a single tone. The RRBC has been asked by the IJC to put together a framework plan for floodplain management. The RRBC does not really give policy input directly but brings the concerns and, in some cases, policy has been affected due to that concern. For example, the RRBC pushed forward a policy for a 20% water retention target based on the 1997 flood level. The province of Manitoba accepted that policy and uses it as their water retention target.

The Province of Manitoba inserted section 2.2 of The Emergency Measures Act in 2006 that EMO shall prepare a provincial emergency plan. Manitoba EMO updated the Manitoba Emergency Plan (MEP) in 2009 in which it described the responsibility of individuals, departments, local authorities and NGOs in an emergency situation. The plan stated that emergency management in Manitoba is guided by the federal/provincial/territorial (FPT) document, “An Emergency Management Framework for Canada” (MEP, 2009). Manitoba follows the comprehensive emergency management in its principle because the Canadian framework clearly states that

“Emergency management in provincial, territorial and federal governments adopts a comprehensive all-hazards approach to coordinate and integrate prevention and mitigation, preparedness, response and recovery functions to maximize the safety of Canadians” (MREM, 2011).

To support and enable the Emergency Management Framework for Canada, 2007, the National Strategy for Critical Infrastructure and Action Plan was established in 2009. Since the provincial emergency management is guided by the Emergency Management Framework for Canada, the S.M. 2013, c. 12 (Bill 37, 2nd Session, 40th Legislature) amended the Emergency Measures Act of Manitoba, where the definition of “business continuity plan” “critical service” and “critical service provider” were added in section 1. The amended sections such as 8.3(1) and 8.3(2) of the Emergency Measures Act of Manitoba require that every critical service provider must prepare a business continuity plan, in accordance with the regulations, and submit it to the co-coordinator for approval.

In the recent past, Manitoba suffered from a number of events such as the H1N1 event, 2009, and the 2011 floods. H1N1 was a major concern for the health sector in the Province of Manitoba. Manitoba initially came to know about the disease outbreak in Mexico, which had about a 50% case fatality rate, a significant figure from a fatality perspective. The outbreak began in April 2009 and Manitoba moved immediately, purchasing vaccines, masks, gowns, needles, syringes, and other supplies for a mass immunization campaign (R16). The program aimed at protecting the highly vulnerable populations, such as indigenous people and northern people, and the communities most at risk of avian flu were given vaccines. One respondent noted,

“It was a big investment, no question about it but I think the public understood why we had to take those aggressive actions that the vaccines were available” (R2).

No new acts or regulations were formulated but this event resulted in changing the approach, and many procedural changes in health sector took place (R16).

The 2009 flood happened in March and was caused by a combination of snowmelt, seasonal precipitation and the spring breakup, which affected mostly the communities of Roseau River First Nation, Sioux Falls, Peguis First Nation, St. Andrews, St. Clements and Selkirk. The Red River floodway was not in operation until the ice jams were cleared out in April, which led to additional flooding in Selkirk. After the 2009 flood, 63 vulnerable structures were bought and transferred from risky zones, which is known as a buy-out program (Houllind, 2016). Some innovative ideas were implemented like an ice cutting machine, flood tubes, aqua dams, etc. Permanent flood protection measures were taken in Melita. New Designated Flood Areas have been identified after the flood. Emergency Prevention Orders, under The Emergency Measures Act, were passed by 18 municipalities to exercise the preventive powers (Halliday & Associates, 2006).

During the 2011 “superflood”, Manitoba operated the Fairford River Water Control Structure and diverted floodwater towards First Nations communities to protect downstream settler cities, namely Winnipeg and Portage la Prairie. This diversion flooded and permanently displaced most of the First Nations in Little Saskatchewan and Lake St. Martin (Thompson, 2015). The Province commissioned an urgent study for viable options in order to lower the water level of Lake St. Martin and Lake Manitoba (Government of Manitoba, 2013). It was alleged that the 2011 flood was a human-made flood because flooding on the lake was not a natural event, but so much water was diverted from the Assiniboine River to Lake Manitoba. So it was caused by government policy. The Lake Manitoba/Lake St. Martin Regulation Review Committee recommended additional water control works, more acceptable (to the First Nations) and practicable range water levels, and setting land use and zoning criteria. The committee specifically recommended “Designated Flood Areas” to be established in the Lake

Manitoba/Lake St. Martin area in a similar fashion to those in the Red River Valley. Designated Flood Areas are enacted via regulations under the Water Resources Administration Act. The committee also recommended that the Emergency Channel be made permanent for Lake St. Martin and a second channel be constructed between Lake Manitoba and Lake St. Martin that would provide the total outlet capacity to meet the original design criteria for the Fairford Control Structure.

Because the existing provincial flood protection policy does not provide adequate protection across Manitoba, both the Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report recommended that the Province should increase the standard for the Flood Protection Level to one based on a 1-in-200 year flood event and assist local developers and institutions in the application of a risk-based approach for developing a higher standard of flood protection (Government of Manitoba, 2013). However, a 1-in-200 year event was adopted as the flood protection level, after the recommendations of the report.

A shift towards risk based comprehensive emergency management was evident in Manitoba from 2001. Comprehensive emergency management referred to as an “all-hazards approach (covering natural, technological, civil, and biological disasters) and included each phase of the disaster management cycle (mitigation, preparedness, response, and recovery) as well as actors from various sectors (public, private, and nonprofit)” (McEntire, 2002). After the 9/11 incident, terrorism occupied the major attention in disaster and emergency management. Fitting “terrorism” as a hazard within the previously practiced all-hazards approach created certain awkwardness. As a result, FEMA (USA) who coined the all-hazards approach, was removed from its principal coordination responsibilities for all hazards preparedness, and was

placed under the Department of Homeland Security in the USA (Gerber, 2007). Moreover, traditional disaster management strategies focused on reducing the hazard and the physical processes of hazard.

There was a growing concern that disaster risk results not only from the hazard only rather the societal interaction of hazard and it was felt in general by policy makers that potential threats and loss need more societal attention. A broader “risk-based perspective” (including societal processes and implications) was also promoted by Global Assessment Reports of the United Nations Office for Disaster Risk Reduction (Merz, 2014). The Emergency Management Framework for Canada states that

“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”(MREM, 2011).

It is also politically viable to convince the society for prevention and mitigation if the concept of risk is promoted. The UN call upon “integrating the disaster risk reduction” into policy, planning and programs for the member countries significantly emphasized in the Hyogo Framework for Action 2005-2015 (UNISDR, 2007). In addition, the Sendai Framework Sendai Framework for Disaster Risk Reduction 2015-2030 (the successor of Hyogo Framework for Action and also supported by UN general Assembly) set the target for member states to develop coherent national and local frameworks of laws, regulations and public policies to address disaster risk (UNISDR, 2017). All these factors contributed to adopt a Risk based Comprehensive Emergency Management approach throughout Canada as well as in Manitoba which is also reflected in the Emergency Management Framework for Canada.

The DEM policies of Manitoba (1929-2016) have embraced five major eras where each era is characterized with distinct policy features and mechanism of policy development. A timeline of evolution of Manitoba DEM policies by era is presented in Table 2.3.

Table 2.3. Timeline of evolution of Manitoba DEM policies by era

	Relief based recovery era (1929-1938)	Civil Defence Era (1939-1966)	Peacetime emergencies and collaboration (1967-1990)	Integrated all-hazards approach (1991-2000)	Risk based comprehensive emergency management (2001 onwards)
Events	Droughts, Economic recession in North America	World War II, 1939; Korea war, 1950 and nuclear threat, Red River flood, 1950	Droughts 1967, 1968; Mississauga incident, 1979; Bhopal tragedy, 1984; California fire in USA, 1985; Record fire events, 1989 and declaring International Decade for Natural Disaster Reduction, 1989	Niverville fire, 1991; Red River flood, 1997	9/11 in 2001; Manitoba flood in 2009 and 2011
Federal government Actions	Committee for Assessing Crisis, 1934 and \$292 million of relief assistance	Federal-Provincial Advisory Committee and Fraser River flood formula for Manitoba in 1950; Inter-departmental Working Group on War Measures in 1956	Reducing federal budget for civil emergency, 1967; Joint Industry-Government Steering Committee, 1985		Forming Red River Basin Commission, 2002
Federal Plans		Defence of Canada Regulations, 1939; Civil Defence Financial Assistance Program, 1952 and Civil Defence Order, 1959	DFFA, 1970; JEPP, 1980; Transportation of Dangerous Goods Act, 1980; Emergency Preparedness Act, 1988; The Emergencies Act, 1988	Federal Policy for Emergencies, 1995; AIDA program, 1998	Anti-terrorism Act, 2001; The Public Safety Act, 2004; Department of Public Safety and Emergency Preparedness Act, 2005; Emergency Management Act in 2007; Canada's National Disaster Mitigation Strategy, 2008; Federal Policy for Emergency Management, 2009
Learning from others		US Federal Flood Insurance Act, 1956	Firewise program in USA; FireSmart program in Alberta, 1990	all-hazards approach adopted in USA, 1992	National Incident Management System (NIMS) adopted nationally by USA, 2001
Reports and documents		Carswell-Shaw Commission, 1953; Royal Commission, 1956; departmental Working Group on War Measures, 1957; Royal Commission report, 1958	Manitoba wildfire review, 1989	International Joint Commission, Red River Floodway Operations Review Committee, 1997; IJC interim report, 1998; Red River Flooding Final Report by International Red River Basin Task Force, 2000	Lake Manitoba/Lake St. Martin Regulation Review Committee, 2012; Manitoba 2011 flood review Task Force report in 2012
Organization restructuring at federal level		Civil Defense Organization, 1948; Measures Organization, 1957	Canadian Inter Agency Forest Fire Center, 1981		
Organization restructuring in Manitoba		Civil Defence Control Committee, 1950; Manitoba Emergency Measures Organization, 1959	Manitoba Inter-Agency Steering Committee on Emergency Social Services, 1990		
Actions of Interest groups			Provinces protested for EMO budget cut, 1968		AMM lobbied for new formula of cost sharing in 2009; MACO lobbied to the Province in 2011
Manitoba DEM Policy	Prairie Farm Rehabilitation Act, 1935; Prairie Farm Rehabilitation Act, 1937 Amended; Additional financial allocations and removing the 5year limitation to the PFRA in 1939	Additional finance and removing the 5year limitation to PFRA, 1939; Emergency Measures Act, 1951; Manitoba Civil Defence Act, 1952; Manitoba Survival Plan, 1965; Flood Plan for Manitoba, 1966	Emergency Measures Act, 1970; Manitoba Emergency Plan, 1983; Dangerous Goods Handling and Transportation Act, 1984; Emergency Measures Act formulated. And Fire Hose Regulation, 1987; Dangerous Goods Handling & Transportation Act Amended in 1987; Initial Attack Response launched in 1990	Emergency Measures Act was amended, 1997; Manitoba Emergency Plan Amended, 1998; Disaster Financial Assistance (DFA) policy guidelines, 1999	Designated Flood Area Regulation, 2002; The Security Management (Various Acts Amended) Act, 2002; Emergency Measures Act of Manitoba amended and business continuity inserted in 2013

2.5 Evaluating the DEM policy of Manitoba

The current disaster and emergency management policies of the Province of Manitoba have developed over time, involving a sequence of varied approaches and instruments to address the risks, and emerging emergency problems. Using the Howlett and Cashore (2009) *Policy Composition* model, the following section synthesizes changes in the scope and substance of policies throughout the period. The overall pattern of policy development is then analyzed.

Goals: From the beginning, the Disaster and Emergency Management policy of Manitoba has arrived at getting the people ready, managing resources and building a safer community. The goals were set by all governments of the Province of Manitoba irrespective of political party and targeting similar outcomes. They have adopted similar kinds of philosophy, including the involvement of all levels of government, financial cost sharing and devising plans. The goals thus remained similar.

Objectives: Relief-based recovery existed in the 1930s. Programs were set to recover after the events. With the emergence of WWII and nuclear threats the objectives shifted from response to civil defense. After the elimination of the war threat and the experience of some very large events, the objectives shifted towards peacetime measures focusing on natural disasters. The frequent occurrence of flooding and escalating cost of disasters influenced a shift from response towards mitigation. With the newer kind of events, federal influence and resource constraints, Manitoba set the new objectives of shared responsibility, Mutual Aid, and an all-hazards approach to planning. International focusing events in recent years, such as 9/11, triggered the adoption of a comprehensive emergency management approach in Manitoba.

Settings: With the gradual change in objectives, the settings have been changing as well. During the 1930s the settings embraced the response, recovery and rehabilitation activities, such as providing relief, financial assistance for relocation and the Prairie Farm Rehabilitation program. Civil defence focused upon preparing plans and programs at all levels for prevention and preparedness. The events in subsequent years required a policy move towards structural mitigation measures, mainly for flood-loss mitigation. Fire incidents in the 1980s revealed the policy requirement of Mutual Aid with other jurisdictions. These are reflective of that as the nature and characteristics of events were changing and on-ground situations were also changing with time.

Instrument logic: The federal government brought all levels of government on board and a Civil Defence financial assistance plan was put in place by them to develop provincial civil defence plans. Manitoba received finance from the federal government and changed their legislation to adjust to the federal level institutional change. Municipalities were encouraged by the federal government to prepare their own plans during the Civil Defence period. In the 1960s, the provincial emergency management policies were more prescriptive than during other times, forcing the municipalities toward peacetime plans. In the 1970s, emergency planning was seen as a local function which could be passively supported by the province. In this decade, municipal planning and provincial programs developed in a robust manner. The effectiveness of such plans was exemplary during the emergency. During the 1980s, the Province adopted a non-coercive approach as the municipalities had the power to make plans and implement them. The federal government's Emergency Preparedness Act, 1985, made it binding for the provinces to develop their policies. As a follow-up, the Manitoba Emergency Measures Act, 1987, required a mandatory plan to be developed by each municipality as well as a provision for provincial

disaster financial assistance. The Province developed an Emergency Plan with a mandatory provision for the municipalities to develop a plan that would take an all-hazards approach. The Province also used a compensation program for the victims of artificial flooding caused by Red River floodway operation. The Provincial Disaster Financial Assistance policy after the 1997 flood is also notable.

Manitoba significantly relied on the post-action reports and the recommendations accrued through them for developing policy and actions. Notably, the Royal Commission report after the 1950 flood, the International Joint Commission report after the 1997 flood, the Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report after the 2011 flood were significant. Though all recommendations could not be implemented, they shaped the DEM policy of Manitoba significantly. The non-use of flood insurance, structure-based mitigation, and the incorporation of non-structural measures are some of the noticeable examples. The commission reports were not mandatory for the government to carry out but the successful use of recommendations as election manifesto and a landslide victory afterwards proved the value of the reports. Citizens have trusted these Commission reports and thus placed silent pressure on the government to comply with them.

Mechanism and calibration: The federal government used financial assistance for the province and municipalities during the civil defence era. More formal programs were introduced subsequently, such as Disaster Financial Assistance Arrangements (DFAA) in 1970, Joint Emergency Preparedness Program (JEPP) in 1980, and the AIDA and CFIP programs. Since the 1980s, the federal government used the Acts, Strategies and policies (such as the Department of Public Safety and Emergency Preparedness Act, 2005, Emergency Preparedness Act, 1988, Canada's National Disaster Mitigation Strategy, 2008, Federal Policy for Emergencies, 1995,

Federal Policy for Emergency Management, 2009) to compel provinces and municipalities to bring change in the DEM policy in most cases. However, these instruments appeared prescriptive sometimes.

Manitoba primarily used legal instruments to compel the municipalities to prepare plans, for example, to develop a municipal emergency plan and adopt an all-hazards approach in planning. Manitoba also used a buy-out program and a resettlement program for the disaster victims. It developed provincial disaster financial assistance to the individuals, to private owners as well as to the municipalities. In 2016, the Province of Manitoba formulated a mandatory provision for the municipalities to appoint municipal emergency coordinators. Manitoba continued with the provincial-municipal discussions, brought the municipalities on-board, and often cases persuaded the local authorities to take action regarding disaster and emergency management.

2.6 Pattern of policy development and change

During the 1930s (the Relief-based recovery era), the incident of severe droughts and economic recession drove the policy forward. An incremental policy change was observed in this era. The Civil Defence era existed in Canada from 1939 to 1966. International events and local events acted as focusing events for civil defence. Manitoba embraced a different history from the 1950 flood onwards. Before the flood event, several drivers such as the Second World War, the Korean War and nuclear threats forced an emphasis on wartime emergency. The 1950 mega flood event punctured the equilibrium of the policy and brought about policy change. During the period of 1967-1990 (Peacetime emergencies and collaborative approach), the DEM policies of Manitoba were tending to be driven by the actual large events which led the Province towards structural mitigation. The success of the Red River floodway in the 1979 flood enhanced the

level of confidence for more structural measures. However, non-structural mitigation efforts were enhanced in Manitoba by the federal government under the FDRP program after the 1979 flood. Manitoba incorporated learning from other jurisdictions and also from other countries, specifically from the US. In the late 80s, Manitoba opted for cooperation from NGOs and social work organizations and became part of large compact groups seeking cooperative protection from fire emergencies because of resource constraints. During the 1990s, policies were changed as a result of different types of natural disaster events and learning from other jurisdictions. The focusing event of 1997 changed the entire picture of flood mitigation. From 2001 and onwards, Manitoba learned from international focusing events, such as 9/11, the H1N1 influenza, and the SARS outbreak, which led to comprehensive risk-based emergency management. Events outside the jurisdiction caused the policy diffusion in DEM policy change of Manitoba.

The change of DEM policies followed several patterns. Firstly, *event driven policies* (Birkland, 2006) existed in Manitoba. The events in the “dirty thirties,” the 1950 flood, wildfires in the early 1990s, the “flood of the century” and the 9/11 incident appeared as focusing events which forced the policy makers to act and also debarred the policy makers so that they maintained *Path dependence* or *Policy continuation* (Capoccia & Kelemen, 2007; Pierson, 2000; Greener, 2002). Each mega event revealed the policy failures and forced policy makers to think differently based on the lessons learned from earlier events; there was a push for new policies or modification of current policies. The continued effort of layering new policies over the previous ones (i.e. wartime emergency policy, peacetime policy, collaboration with others) is also present in Manitoba, which can be termed as *incrementalism* (Lindblom, 1979). World War II and other subsequent events such as the Korean War, the nuclear threat of being attacked, and the Cold War apprehensions led to the promulgation of the Defence of Canada Regulations, 1939, and the

Manitoba Emergency Measures Act in 1951, which mainly focused on war emergencies. The 1950 flood brought changes in policy and motivated the adoption of the Manitoba Civil Defence Act, 1952, where a distinction was made between civil disasters (such as floods) and war emergencies for the first time in the emergency legislation in Manitoba. Manitoba's Civil Defence Act, 1952 (and the subsequent Emergency Measures Act, 1970), provided the government during war emergencies than civil disasters. The new Manitoba Emergency Measures Act, 1987, emphasized mostly in peacetime emergency and made a provision for generic state of emergency declaration (Lindsay, 2014). However, events were mostly associated with political will. For example, combined efforts of 1950 flood and 1997 flood events and the politicians' initiatives brought changes in DEM policies in the Province of Manitoba.

Secondly, policies driven by federal actions appeared on several occasions. The legal binding of federal Acts and policies influenced the Province of Manitoba to act accordingly; for example, the federal government's Emergency Preparedness Act, 1985, made it binding for the province to develop its own provincial policies (The Manitoba Emergency Measures Act, 1987). Provincial emergency management is guided by the Emergency Management Framework for Canada, 2007, which bound Manitoba to insert provisions of a "business continuity plan" in the Emergency Measures Act of Manitoba, 1987, and to follow comprehensive emergency management in its principle because the Canadian framework had adopted a comprehensive approach earlier. Another example is the Transportation of Dangerous Goods Act of Canada, 1980, which bound Manitoba to promulgate the Dangerous Goods Handling and Transportation Act, 1984, in Manitoba. However, the federal government used financial assistance as a policy instrument to compel Manitoba to act in their way in the Civil Defence period, for example, by developing a provincial and municipal civil defence plan in 1954. This pattern appears as *policy*

diffusion by coercion (Meseguer & Gilardi, 2009), where the federal government forced Manitoba through its policy instruments. *Policy diffusion* (Shipan & Volden, 2008) from other jurisdiction was also evident in Manitoba. The Province adopted many ideas from other jurisdictions in their operational level. Learning took place from the US to save costs in dealing with different types of hazards, and the successful application of the Incident Command System (ICS) gradually led Manitoba to adopt an all-hazards approach and a Canadian version of ICS. Thus *policy diffusion* occurred through *imitation* (Meseguer & Gilardi, 2009). Another example of this was the adoption of FireSmart after similar successful applications in USA and the Province of Alberta.

Thirdly, the Mutual Aid agreement was a new DEM policy phenomenon in Manitoba. The province faced disaster and emergency events that were beyond its capacity to manage in terms of finances and resources. The Province moved for federal assistance and collaboration with others. It also brought provisions for local governments to enter into agreement with other jurisdictions to deal with disasters. The province itself became a part of a large compact group, the Great Lakes Fire Compact, in which it sought cooperation for fire emergencies because of the resource constraints.

Finally, political leadership shaped DEM actions in Manitoba. Punctuated equilibrium policy theorists have noted that a policy change can occur radically due to crisis event, elected officials and legislative committees (Givel, 2010). Prior to the 1950 flood, no punctuation in policy was observed for dealing with natural disasters. It is alleged that Premier Campbell failed to act according to the people's will after the 1950 flood but several Commissions were formed during his tenure to determine the cost of floods and options for flood mitigation and protection. Thus, there was no punctuation immediately after the 1950 flood, apparently due to the reasons

noted by Givel (2010), such as, resistance to new policy ideas and fragmented political jurisdictions between and amongst levels of government. Premier Duff Roblin used the Royal Commission recommendations as an election manifesto; this later led to the mitigation of floods via structural interventions for the first time in Manitoba. Premier Roblin's idea of "Building the Red River Floodway" attained great attention, it expanded rapidly, and it brought a change which initially started to follow the *Punctuated Equilibrium* (Baumgartner & Jones, 1991). In this case, the policy image (beliefs about a particular policy) was flood protection while the policy venue (decision making position) was the Premier of Manitoba. As the previous Premier lacked an ambitious vision and there was public dissatisfaction, Duff Roblin took advantage of that and selected the belief that was reinforced by a Royal Commission report. Thus he tried to control the image of the policy problem through the use of policy analysis. While sitting as head of a minority government, he feared that he would not be able to materialize his beliefs about flood protection. As a political policy actor, he then looked for the most favorable venue (Premier of Manitoba). After the landslide victory in election, Premier Roblin was able to get the federal government on his side and he implemented his policy belief through the Red River Floodway project. However, there was no actual policy change in Manitoba since changes in strategies and actions are not equivalent to policy change. In this regard, it can be concluded that policy makers rejected the earlier framework of ideas for interpreting the world (relief-based recovery), adopted a new program (flood mitigation) in Manitoba, and that was just the beginning of punctuation or denting of the punctuated equilibrium rather than an actual *punctuated equilibrium*.

The findings of this study can be compared with the neighboring Province of Ontario with regard to various era, duration and sequence (Table 2.4). My study results are consistent with the findings of Henstra (2011) though there are some differences in timelines and the absence of a few eras. For example, both Manitoba and Ontario had an era of civil defence and a peace time emergency period. But in Manitoba, the civil defence era followed a different time period. This can be attributed to the 1950 flood, which forced the adoption of civil disasters parallel to war emergencies.

Table 2.4. Comparison between the DEM policy eras of Ontario and Manitoba

Ontario	Manitoba
	Relief based recovery era (1929-1939)
Civil Defence (1950–1960)	Civil Defence era and political leadership (1939-1966)
Peacetime Emergency Measures (1960–1975)	Peacetime emergency and Collaborative approach (1966-1990)
Regressive Change: The “Lead Ministry” Approach (1975–1980)	-
Technological Emergency Planning (1980–1990)	-
Integrated, All-Hazards Emergency Management (1990–2003)	Integrated all-hazards approach (1991-2000)
Risk-Based, Comprehensive Emergency Management (2003–2006)	Risk based comprehensive emergency management (2001 onwards)
Emergency Management and Civil Protection (2006–2010)	-

The lead ministry approach and technological planning seen in Ontario were not observed in Manitoba; rather Manitoba embraced a collaborative approach for DEM that was merged with an earlier peacetime era. The two phases, the integrated all-hazards approach and comprehensive emergency management, appear similar between Ontario and Manitoba. Ontario had a civil protection phase which was not found in Manitoba; here the continuation of comprehensive emergency management was observed. These differences occurred due to the emergence of hazards, their types, federal involvement and interest groups’ activity. Political will also had a role here.

2.7 Conclusion

The Disaster and emergency management (DEM) policy of Manitoba began its journey from response, recovery and rehabilitation during the last century. World War II led to civil defence for preparing the communities. Mitigation was absent until the occurrence of the 1950 flood. Political leadership played a role to bring about mitigation measures. Mega events caused massive scale operational level change as well as policy change. Later, a series of events led to sharing the burden of disaster costs. Finally, the Province of Manitoba presently has an all-hazards planning for comprehensive emergency management strategy and a greater reliance on Mutual Aid at both the local level and the provincial level. Municipalities were viewed as partners, and small changes were made mostly due to the events inside or outside Manitoba. The fundamental emergency management paradigm and the doctrine that Manitoba followed has not been constantly shifting; rather they have tended to exist over a relatively long period of time and shifts have tended to be incremental. All the policy activities evolved mostly as incremental change, as well as from learning from others and from Manitoba-based experiences.

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Chapter 3: DEM Policy drivers in Manitoba

3.1 Introduction

Policy drivers are factors which motivate, or push to formulate, a new policy or bring about a change in existing policy. In a policy making process, many factors can act, but all the factors may not have the same role in formulating a policy or in bringing a change in the current policy. Moreover, each policy is different in nature and does not follow the same policy formulation process. One factor may not work for another policy initiation, and sometimes several factors act jointly and simultaneously. It is also observed that some factors act only in some specific phases while others may act throughout the policy process. To understand who or what makes policy, Lindblom (1980) suggests understanding the characteristics of policy actors, their powers, their specific roles, and the mechanism of dealing with other actors. Identifying policy drivers is, therefore, essential to understanding the whole policy process. In the Disaster and Emergency Management (DEM) context, identifying policy drivers is essential to unearth how this sectoral policy is influenced by different factors and how these factors tend to act on policy formulation and change.

This chapter analyses the DEM policy drivers in Manitoba (Objective 2). Section 3.2 offers a review of relevant literature on how drivers influence the policy. Section 3.3 contains the applied research methods, while section 3.4 analyses the DEM policy drivers of Manitoba, which include disaster events, lead positions, cross-scale learning and stakeholders. The results are compared and contrasted with the existing literature in section 3.5. In this section, concluding remarks are also incorporated.

3.2 Drivers in policy change

According to Simeon (1976), policy is the consequence of five elements which include: the environment, the distribution of power, prevailing ideas, institutional frameworks, and the process of decision-making. The interrelationships among factors and their independent contributions generally determine the fate of policy such as, policy change. *Policy change* refers to a shift from existing policy or structures (Bennett & Howlett, 1992). Policy change can happen in many ways, and various factors may be involved in the process. In this study, a *policy driver* is defined as any factor, such as ideas, paradigms, institutions, political agenda, stakeholders, community individual persons, documents or an event, which exerts some influence on policy development or change. One policy driver alone or in combination with others is capable of bringing substantial policy change (Capano & Howlett, 2009). Therefore, identifying policy drivers can help in understanding the underpinnings of a policy process.

In a policy change process, policy makers always try to maintain the status quo or protect the traditional model (Pierson, 2000; Greener, 2002). Still policy change happens. A policy can be changed as a self-continuing process. Hall (1993) opined that policy responds more directly to the consequences of past policy than emerging social and economic conditions since the policy makers' interest and ideals are shaped at any moment in time by "policy legacies" or "meaningful reactions to previous policies" (Weir & Skocpol, 1985). However, Capoccia and Kelemen (2007) mentioned that a critical juncture is required to bring a major policy change. In this respect, Baumgartner and Jones (1991) noted that when an idea attains greater attention, it expands rapidly and possesses enough potential to disrupt the equilibrium of a political system and bring a policy change. This "issue attention" may be caused by potential focusing events

(Birkland, 1997) as there is significant variation in government response to different events that have occur in the same domain (Baumgartner, 1998).

In a policy subsystem, because of some common interest among the stakeholders, a coalition develops among them which may change or influence the policy (Sabatier, 1988; Sabatier & Jenkins-Smith, 1999). Moreover, there are interactions among policy actors/makers. The pattern of interactions, types of policy actors and role of external factors affect the policy design and may decisively influence the final result (Real-Dato, 2009). Policy makers bring new ideas, experience or insights to changing or formulating policy, which is affected by external factors (Shulock, 1999). The cognitive characteristics of individual policy makers are also key factors in the policy process (Hecl, 1974). Again, the interest and preference of policy actors and makers sometimes determine the policy outcomes (Buthe, 2002) as they use power to influence the policy (Deeg, 2005). In addition to this, policy actors tend to find the new policy venues (institutional locations where decisions are made) to adapt with a new environment, which sometimes has an influence on policy (Baumgartner & Jones, 1991).

In the Canadian context, major policy drivers found in the existing literature include: exogenous shocks, interest groups, policy success in other jurisdictions, political ideology and federal-provincial relationships (Appendix F). Exogenous shocks were identified as the economic recession in 1981-82 (Golob, 2003), globalization and international crisis (Williams, 2009), derailment in Ontario (Henstra, 2011; Rankin, 1990), and the nuclear threat after World War II (Henstra, 2011). The evidence of interest groups as policy drivers was observed as environmental movement groups (Griffith, 2011); the insurance industry, provincial governments and small financial service providers (Williams, 2004); transnational organizations and indigenous groups (Bernstein & Cashore, 2000). The political ideology of the Ontario

Conservative government was evident in driving the 2004 Ontario housing policy (Bryant, 2004). A power contest between the provinces and federal government was mentioned on a few occasions as a policy driver (Rachlis, 2000; Lecours & Béland, 2010). However, policy success in another jurisdiction also drove Canadian policy (Pralle, 2006a).

To explain the policy choice and to establish the causal relationship, identifying the policy drivers is vital. This is because there are different perspectives of interest groups and the relationship among them varies significantly. Moreover, policy actors influence the implementation phase of the policy process (Begum, 2014), and feedback effects are strongly present in the policy subsystem (Sabatier, 1988). Once the policy drivers are identified, then it becomes easier to explain which actors play prominent roles, what are the key institutions, or what are the pertinent discursive structures or practices (Jones, 2009).

3.3 Methodology

To fulfill Objective 2 of this research, a 3-pronged methodological approach was applied. First, a total of 19 Key Informant Interviews (KIIs) were conducted. Second, a desk review of documents was carried out. Third, a triangulation of findings was performed to identify policy drivers.

For the key informant interviews of bureaucrats, participants were selected purposively on the basis of DEM policy making experience, present/ex-officio bureaucratic experience, or involvement with political institutions. A contact list of 15 bureaucrats including retired officials was formulated through email addresses as they were publicly available. A total of 10 bureaucrats from various backgrounds and various positions agreed to provide interviews. All

interviews were recorded except in the case of one respondent, and 4 follow-up interviews were conducted over the phone.

From the document review, a notable number of policy makers was identified. The final selection was made depending on their availability and willingness. To receive consent from politicians a letter of invitation (Appendix C) with the interview questions (Appendix E) and informed consent forms (Appendix D) was sent to each political party of Manitoba so that they could facilitate an appropriate member of the party. The political party offices then emailed the date and time to me for the interview. A total of 3 senior politicians were interviewed.

From the document review, at least 10 NGOs/stakeholders were identified and an invitation letter was sent to them. A total of 6 organizations took part in the interviewing process. Thus, KIIs were conducted with 10 bureaucrats, 3 politicians and 6 NGO/stakeholders to attain Objective 2 of this study.

The existing documents were reviewed to identify how the policies were shaped and influenced by different factors. The types of documents that were reviewed included archival records, library documents, research articles, NGO documents, media reports, government policy documents, and files and records. In some cases, the underlying factors were revealed by some journalists who produced some reports long after an incident.

Drawing from O'Leary's (2014) suggested steps, I developed a plan and executing sequences for the document review, as shown in Table 3.1.

Table 3.1. Steps followed in the document review

Plan	Activities performed
Selecting potential sources of information	I identified the following sources: (i) The Manitoba Archives for archival records, (ii) libraries of the Manitoba Legislature and University of Manitoba, (iii) University of Manitoba's link to Google Scholar for research articles, (iv) NGOs who deal with disaster for their annual reports and documents, (v) Online search for media reports, (vi) Government of Manitoba and EMO websites for government laws, Acts and policy documents, (vii) files and records, and (viii) Public Safety Canada website.
Accessing the data	Obtained passes to use the Manitoba Legislature library, to use the Manitoba Archives, received the University of Manitoba library membership to access the journals, books.
Removing bias	All sources were considered; no priorities were given to any document. Sources were verified, background of the documents was explored, sought answers to who produced the document, why and when it was produced.
Developing skills for review	All documents were read thoroughly and marked on the basis of type of information they provided
Ensuring credibility	Similar types of information retrieved from various sources were compared; inconsistent data were removed; and the authenticity of the documents was verified.
Knowing the data	Searched for different policies and knowing how they evolved
Ethical issues	The confidential documents were used by following <i>The Freedom of Information and Protection of Privacy Act</i> (FIPPA).
Backup plan	All documents were stored in a safe place and online documents were stored in a password protected file.

After collecting data, for textual analysis I organized the answers of the KII respondents based on some broad themes under two categories: i) themes for identifying drivers that influenced DEM policy directly, and ii) themes for identifying drivers that influenced DEM policy indirectly. The themes developed for the first category included: “disaster experience,” “policy change factor,” “influence on policy,” “policy driver,” and “decision maker.” Themes under the second category included: “decision-making,” “perception,” “preference,” and “relationship.” After retrieving the findings from the KII, the results were triangulated with the findings procured from the documents. The document review themes were developed earlier for both electronic and text documents. Themes for electronic documents included: “driver,” “actor,” “decision makers,” “influence,” “impact,” “effect,” “factor,” “enhanced,” “formulation,” “brought,” and “change.” For the text documents, I read the whole documents and matched them with the themes of the electronic documents. Finally, the findings are presented in section 3.4.

3.4 DEM policy drivers in Manitoba

This section deals with DEM policy drivers. Some factors are capable of bring change independently while several factors might have a combined effort. The policy makers' cognitive characteristics sometimes affect the policy, while on the other hand, the priority of sitting government determines the course of action. Involved stakeholders' opinions carry a significant weight in the case of DEM policy making. The findings are presented bellow while simultaneously compared and contrasted with existing literature.

3.4.1 Major disaster events as drivers of policy change

3.4.1.1 Events inside Manitoba

The events inside Manitoba that have functioned as drivers are mostly natural disasters. These include droughts, floods, and wildfires. Disaster events act as catalysts for issue expansion and policy making activities (Johnson et al., 2005). The government has tended to form a commission or study after a mega disaster such as, a committee was formed after the Dirty Thirties, a Royal Commission after the 1950 flood, an International Joint Commission Task Force after 1997 flood, and a flood taskforce review after the 2011 flood. All recommendations were given serious consideration and the government prioritized them and worked on the ones that provided the greatest protection to the public first. Major natural disasters that shaped the DEM policy of Manitoba are described below.

3.4.1.1.1 Floods. Amongst the natural disasters, flooding has been the most recurrent event and has played the most decisive role in shaping the DEM policy of Manitoba. As a result, floods have remained a prominent policy matter. The document review reveals that the floods in 1950, 1997, and 2011 were the most influential drivers that shaped DEM policy (Table 3.3) whereas bureaucrats and politicians ranked 2011 as the first, 1997 as the second, and 2009 as the

third most influential event in shaping DEM policy (Table 3.2). The key features of flood event-driven policies are presented in the following Table 3.3.

Table 3.2. Flood events inside Manitoba as policy drivers based on opinion of KII respondents

Events	Politicians	Bureaucrats	Total
1950	3	1	4
1979	0	2	2
1997	3	3	6
2009	3	2	5
2011	2	5	7
2014	1	1	2

The 1950 flood was overwhelming and the flood protection system was not in place at that time. This failure was the key driver to instigate the government of Manitoba to think that they needed to do something to mitigate the flood risks of the Province. In this regard one respondent noted that

“The 1950 flood was likely the most significant due to the impact on Manitoba’s capital city, Winnipeg, where there was more than 100,000 evacuees from Winnipeg and a great number of homes in the city were flooded. I think this event brought significant change”.

In terms of policy perspective, during the peak of the Canada-wide civil defence era, the 1950 flood in Manitoba could bring change in the Manitoba Civil Defence Act, 1952, which distinguished between war and civil emergencies for the first time (Lindsay, 2014). Moreover, the government of Manitoba formed a Royal Commission on Flood Cost-Benefit in 1956 to determine the protection measures such as flood mitigation and protection options (Government of Manitoba, 1968). The mitigation of flood in Winnipeg through structural measures was also the outcome of the 1950 flood (Rannie, 1998). The adoption of a “flood assistance fund” instead of flood insurance was derived from the Royal Commission report (Bumsted, 2002). Along with the recommendations of the Royal Commission report, Premier Duff Roblin’s leadership led to

the building of the Red River floodway, which was the first structural mitigation measure taken by the Government of Manitoba.

The Greater Winnipeg Civil Defence Committee was formed as a result of the Red River flood in 1950 and the Korean War (Burtch, 2009, p. 76). The Government of Manitoba formed a Royal Commission on Flood Cost-Benefit in 1956 to identify the protection measures (Government of Manitoba, 1968). Mitigation through structural measures that focused primarily on Winnipeg was also the outcome of the 1950 flood and the report's influence (Rannie, 1998). The adoption of a "flood assistance fund" instead of flood insurance was derived from the Royal Commission report (Bumsted, 2002). Moreover, significant changes were made after the International Joint Commission's recommendations.

One respondent claimed that engineering study reports have a greater influence on the DEM policy of Manitoba. He mentioned that as the standard model in Manitoba, "the engineering reports are to justify large public expenditure for disaster preparedness" (R6). But other respondents nullify this claim because finance has always been the key question. In this regard, another respondent opined that

"major studies only identify the works that should be done and not resulting any policy change. It is resulting in projects been undertaken but that is different from policy change".

The 1997 flood, which was termed as the "flood of the century," caused the greatest sufferings to Manitobans. The absence of a policy or guidelines to pay the financial assistance to flood victims was the reason to promulgate the Provincial Disaster Financial Assistance (DFA) policy, 1999, guidelines and regulations. The Rules of Operation for the Red River Floodway Control Structure were changed after a report of the Red River Floodway Operations Review

Committee, 1999. This event initiated the project to increase the size of the floodway and the community ring dikes in the Red River Valley. It also resulted in changes to land use planning and the procurement of a construction building permit in the flood zone that required buildings to be protected to 2 ft. above the 1997 flood levels. The International Joint Commission (IJC) Task Force was formed, and based on the Commission's recommendations the Red River floodway was expanded to provide protection against the 1:700 year flood, a rarer event than the 1826 flood, which was considered to be a 1:300 year flood (Halliday & Associates, 2009). Artificial flooding caused by the floodway and summer time use during emergencies of the floodway brought changes in The Red River Floodway Act, 2004, which contains provisions related to compensating landowners for artificial flooding caused by floodway operations. Regarding the 1950 and 1997 floods, one respondent mentioned that

“I think any major emergency or disaster can be referenced as having made an era significant in terms of formulating DEM policy would be the 1950 and 1997 Red River floods”.

After the 2011 flood another individual flood protection program was launched. A study by the 2011 flood review taskforce and the Assiniboine River and Lake Manitoba basin study assessed mostly the structural measures (community ring dikes and emergency channel) to improve the level of flood mitigation in those two basins. Based on the recommendation of the Lake Manitoba/Lake St. Martin Regulation Review Committee and the Manitoba 2011 flood review Task Force report, 1:200 years was adopted as the flood protection design standard instead of 1:100 year.

“The surface water management strategy was launched, that is sort of softer kind of policy document on water management generally but touched on flooding and drought, one respondent stated” (R15).

Table 3.3. Flood events of Manitoba as DEM policy drivers

Policy drivers		Explanations	Policy change processes involved
Key drivers	Supporting/Associate drivers		
Events			
1950 flood	Not evident	The Manitoba Civil Defence Act, 1952, distinguished between war and civil emergencies, which was subsequently replaced by Emergency Measures Act, 1970.	<i>Event-driven policy with incremental change (Adopting both war and natural emergencies)</i>
	Royal Commission report, 1958; Political leadership of Duff Roblin	Flood protection through structural intervention, did not result in a policy change but laid the foundation for building mitigation strategy in a later time.	Not full-fledged but beginning of <i>Punctuated equilibrium</i>
	Recommendation of Royal Commission report, 1958	Not having Flood Insurance Policy in Manitoba as well as Canada	<i>Negative Policy learning from other jurisdictions (USA)</i>
1997 flood	Absence of policy or guidelines to pay the financial assistance to flood victims	Manitoba promulgated the Provincial Disaster Financial Assistance (DFA) policy, 1999; guidelines and regulations.	<i>Policy learning from own experience</i>
	Artificial flooding, emergency summer uses of the floodway	The Red River Floodway Act, 2004	<i>Policy learning from own experience</i>
	Report of Red River Floodway Operations Review Committee, 1999	Rules of Operation for Red River Floodway Control Structure	<i>Policy learning from own experience</i>
2011 flood	Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report	Adopting 1:200 years flood protection as design standard instead of 1:100 year	<i>Policy learning from own experience</i>

3.4.1.1.2 *Wildfire*: After the flood events, wildfires such as the 1989 fire and the 1987 Wallace lake fire were found as major DEM policy drivers in Manitoba (Table 3.4). In 1989, more than 1,000 incidents of fire set the new record in Manitoba, they caused the burning of 3.28 million hectares, and they received wide media attention throughout the world (Hirsch, 1991). The 1989 Manitoba wildfire review recommended an Initial Attack Response (Hirsch & Fuglem, 2006); the system was implemented in Manitoba in 1990 (Gray & Janz, 1985). The success of

the Firewise program in the USA prompted the Province of Alberta to adopt a similar approach, named the FireSmart program, in 1990, to generate awareness of the Wildland-Urban Interface (Johnston & Mowery, 2011). The Province of Manitoba as well as most of the Canadian provinces and territories has ongoing FireSmart programs (Hirsch & Fuglem, 2006).

Table 3.4. Fire events as policy drivers in Manitoba

Policy drivers		Explanations	Policy change processes involved
<i>Key drivers</i>	<i>Supporting/Associate drivers</i>		
<i>Events</i>			
Forest fires in 1989, 1991	Record number of incidents, Media attention	Manitoba Wildfires Act, 1997	<i>Event-driven policy</i>
	Success of FireSmart program in USA	FireSmart program in Manitoba	<i>Policy learning</i> from other jurisdictions (USA)

3.4.1.1.3 Drought: Manitoba, as a Prairie province, suffered from consecutive droughts (1929, 1931 & 1936), dust storms (1934), plant rust, heat waves (1936), grasshopper plagues and water shortages (1931-1938), which caused immense social and economic hardship, commonly known as the “dirty thirties” (Arbuthnott & Schmutz, 2013). Moreover, the worldwide economic recession aggravated the problem. This combined impact prompted the federal government of Canada to set up a committee to investigate the situation and submit proposals for rehabilitation. The committee report after the dirty thirties resulted in the passing of the Prairie Farm Rehabilitation Act, 1935 (PFRA, 1961).

It is evident from the above discussion that major floods, droughts and fire events tended to bring policy change whereas events with lesser magnitude were unlikely to bring about policy change. For example, the Elie tornado in 2007 and the derailment release of the propane tanker in Emerson in 1987 were not able to bring any changes in policy. The reason for this was that existing Acts were sufficient to deal with the situations and the province maintained policy

continuation. Moreover, smaller events are unlikely to generate dialogues and change perceptions or priorities both politically and publicly. This observation supports the notion that policy makers are reluctant to change policies unless the existing *status quo* – the traditional mode of operation – is challenged (Pierson, 2000; Greener, 2002). I therefore conclude that the magnitude and timing of an event is crucial to bring change. The following quotes illustrate how an event, and under what conditions, can potentially act as a driver to shape policy.

“Events that are pretty scary, like it can kill people, very quick and if something like that happens that may act as catalyst for change because if one person dies that brings tragedy... until we have one of these things [Catastrophic events], stress builds on and people see government failed. So we have to fail. We have to run out of resources, run out of programs, run out the ability to manage the situation and say Oh! Man, we should have that capacity for the next time” (R19).

However, all large events cannot bring major changes, though large events tended to open a policy window. For example, 2009, 2011 and 2014 floods did not bring any major policy change whereas the 1997 flood brought major changes. Frequent occurrences of events leave little room for policy gaps, and all institutions remain engaged in dealing with the existing problem. Generally, major policy change is not needed as policy works have already been done gradually through *incremental policy change*. A paradigm shift in policy requires either a newer kind of problem or a complete failure of existing policies -- which is evident in Manitoba. For example, World War II and 9/11 brought major changes in policy. The 1950 flood brought significance change in policy ideas (i.e, structural mitigation) and a series of floods in the 1960s and the 1970 brought smaller changes until the 1997 flood that brought significant changes in policy. Again, major policy change always has costs. One respondent noted that “any new policy change or initiative is likely going to have some level of cost associated with it”. Therefore it cannot be predicted that all large events will bring major policy change.

Moreover, events are not sufficient for policy change unless politicians buy into them. .

One politician noted

“[Bureaucrats] prepared different options for us [politicians] but we [politicians] made the decisions whether we wanted to do so or not... we [politicians] make choices how we allocate resources”.

After an event it is the politicians who decide to proceed or not. In this regard, one bureaucrat opined that

“if the politician has a special interest in DEM after an event, it will likely allow the bureaucracy to receive resources and allow them to advancing the key DEM issues. Otherwise, it does not go anywhere (R16).”

3.4.1.2 Events outside Manitoba

Events outside Manitoba or even Canada that shaped DEM policy of Manitoba were mostly human-induced disasters. The major events that shaped DEM policy of Manitoba were the 9/11 incident, the threat of nuclear war, and the Bhopal tragedy. These events did not affect Manitoba directly but were forceful to bring about policy and procedural change in Manitoba as well as all Canadian provinces (Table 3.5).

After World War II, events such as the Korean War, the nuclear threat of being attacked, and Cold War apprehensions led to the promulgation of the Defence of Canada Regulations, 1939, and the Manitoba Emergency Measures Act in 1951, which mainly focused on war emergencies (Lindsay, 2014). An international event, the 9/11 terrorist attack, changed the role of DEM and put a greater focus on public safety. For example, under Bill C-36, Canada promulgated the Anti-Terrorism Act of Canada, 2001. In Manitoba, the explanatory note of The Security Management (Various Acts Amended) Act, 2002, provides the proof that several Acts were amended under the Security Management (Various Acts Amended) Act, 2002, as a response to the 9/11 incident and interest groups' actions such as the Canadian Association of

Agri-Retailers (CAAR), who demanded more security for the storage of agri-products, and the Canadian Emergency Preparedness Association, which demanded change in existing rules. The Bhopal tragedy of India instigated Environment Canada to establish a joint Industry-Government Steering Committee to review the existing measures for preventing such accidents. Following the recommendations of the report of the steering committee, Manitoba amended the Dangerous Goods Handling and Transportation Act in 1987, where the definitions of “contaminant” and “hazardous waste disposal facility” were inserted. Therefore, large disaster-events that occurred with very negative outcomes in another Canadian province or outside Canada resulted in policy change within Manitoba.

Table 3.5. Events outside Manitoba as policy drivers in Manitoba

Policy drivers		Explanations	Policy change processes involved
<i>Key drivers</i>	<i>Supporting/Associate drivers</i>		
<i>Events</i>			
Korean War, nuclear threat of being attacked, Cold War apprehensions	Not evident	The Manitoba Emergency Measures Act in 1951 (later replaced by Civil Defence Act, 1952)	<i>Event-driven policy</i> focused on war emergencies
9/11	Bill C-36 regarding Anti-Terrorism Act of Canada, 2001. Canadian Association of Agri-Retailers (CAAR) and Canadian Emergency Preparedness Association	The Manitoba Security Management (Various Acts Amended) Act, 2001	Event-driven policy, <i>Policy diffusion by imitation</i>
Bhopal tragedy	Steering committee’s report	Insertion of “contaminant” and “hazardous waste disposal facility” in the Manitoba Dangerous Goods Handling and Transportation Act, 1987	Event-driven policy change

3.4.2 Lead policy actors and underpinnings

3.4.2.1 Lead policy actors

In this section, I describe the role of lead policy actors, i.e. actors holding powerful positions, and key institutions that shape overall policy making processes. I also highlight how the cognitive dimensions of bureaucrats and politicians, as well as their relationship dynamics, have shaped the DEM policy of Manitoba. I identified 11 public office holders as the lead positions involved in DEM policy making in Manitoba. These lead positions and institutions are the Assistant Deputy Minister (ADM) of EMO; executive directors of all departments that are related to emergency management; the Minister for Infrastructure; EMO; the federal government; the Premier; Cabinet; the fire commissioner; the deputy minister; the Executive Council of the government; and Public Safety Canada. However, the influence of all 11 positions on DEM policy of Manitoba could not be verified.

3.4.2.1.1 Politicians and bureaucrats as lead actors: Policy makers, such as bureaucrats and politicians bring new ideas, experiences and thoughts for changing or formulating policy (Shulock, 1999), which is evident in the case of Manitoba. For example, the Assistant Deputy Minister (ADM) of EMO and the leaders of other key DEM organizations have key roles to play in advancing DEM policy. For example, when flood water in 2011 was coming down severely in the Red River, the ADM recommended opening up the dikes and artificial flooding by the Hoop and Holler opening (R2). Moreover, the Incident Command System (ICS) was adopted in Manitoba as a fire program by the fire commissioner.

The Premier of Manitoba played a vital role in terms of DEM policy making and change. For instance, during the 1950s, Premier Douglas Campbell organized a Royal Commission to respond to the 1950 flood. Duff Roblin, the Premier after him, actually implemented most of it. The premiers had a vital role in the 1990s and 2000s, when they ensured cooperation with the federal government. Examples of the premier's role are Duff Roblin and the federal government on the first floodway construction, Garry Doer and the federal government on the floodway expansion, Greg Selinger and the federal government on the emergency channel because

“The Province of Manitoba waived some of the environmental reviews and politicians moved very quickly to get the approval from federal government on this matter, as one respondent explained”.

The personal traits and cognitive characteristics of individual policy makers can have an influence in policy (Hecl, 1974). This is evident in Manitoba. For example, Premier Douglas Lloyd Campbell emphasized relief and maintained an unambitious policy of reconstruction after the 1950 flood (Bumsted, 1987, p. 348). Duff Roblin, while leading a minority government (1958), accepted the idea of constructing a floodway and used it as his main election manifesto. Roblin understood the failure of the past policies of Campbell and used this at a critical juncture for adopting radical policy change. Moreover, he was successful at obtaining the project approval and financial contribution by the federal government; this revealed his excellent caliber in convincing other policy actors.

The way any individual person perceives a risk is often different from how politicians perceive the risk (Mileti et al., 1975). Whether risk and disaster related issues would get priority depends on how politicians perceive them as they are the ultimate policy makers. Policy change

and learning related to risks and disasters are very unlikely to occur unless the policy makers perceive the risk and prioritize them (Slovic et al., 1979). In this regard, one respondent elicited

“There was a time before the election, bureaucrats wanted to cut a program. There was a recommendation not to have disaster assistance for mitigation program to protect home and property in south-western Manitoba and I thought it was unwise to cancel the program”.

The personal leadership attributes influenced policy; this was also evident in Benger (2016)’s study, where he mentioned that leadership style influenced the Harper government’s retreat from climate change. Again, the pattern of interaction, types of policy actors and the role of external factors affect the policy design and may decisively influence the final result (Real-Dato, 2009). Henstra (2011) noted that a new government can maintain the status quo or take a position of prioritizing emergency management. This phenomenon was evident after the 1950 flood, where Premier Campbell did not take proactive measures, but later Premier Roblin used the recommendations of 1958 Royal Commission report as an election manifesto and gained a majority in the next election. Adopting an issue as political ideology in Manitoba resembles the adoption of a bilateral free trade arrangement (FTA) as a federal election manifesto by the Mulroney government in late 1980s. Mulroney won the election and the FTA went into effect (Wilkinson, 2006).

3.4.2.1.2 Federal government as a lead actor

The federal government is a key actor that has shaped the DEM policy of Manitoba. Considerable parts of DEM policies have stemmed from federal government initiatives. For example, the Transportation of Dangerous Goods Act of Canada came into force on November 1, 1980 (Rankin, 1990). The Manitoba government passed Bill-43 regarding the Transportation of Dangerous Goods Act in May 1983 to provide provincial legislation to parallel and supplement

the Federal Transportation of Dangerous Goods Act, 1980, because of the legally binding provision. The similarly legal binding of the federal government's Emergency Preparedness Act, 1985, resulted in the Manitoba Emergency Measures Act, 1987. Again, inspired and influenced by US success stories, the Federal Policy for Emergencies, 1995, included an all-hazards approach.

The influence of federal policies upon provincial policy was evident in the DEM context when the all-hazards approach was inserted in the Manitoba Emergency Plan in 1998. In addition, to support and enable the Emergency Management Framework for Canada, 2007, the National Strategy for Critical Infrastructure and Action Plan was placed in 2009. Since provincial emergency management is guided by the Emergency Management Framework for Canada, the Emergency Measures Act of Manitoba was amended in 2013, where the definitions of "business continuity plan," "critical service," and "critical service provider" were added in section 1. The amended sections, such as 8.3(1) and 8.3(2) of the Emergency Measures Act of Manitoba, require that every critical service provider must prepare a business continuity plan.

One respondent noted that the "National Caribou Management Strategy influenced to change the Fire response zones in Manitoba as Caribou population is scared of fires." The federal Boreal Woodland Caribou Recovery Strategy was released under the federal Species at Risk Act (SARA) in 2012, which set targets for "maintaining undisturbed habitat within a range that must be maintained or restored to a minimum of 65 per cent to support caribou survival". Hence, provinces must complete range plans for each boreal caribou range by October 2017. The Province of Manitoba followed through and changed the fire response zones for protecting the caribou population. The federal government is evidently therefore very influential in formulating Provincial DEM policy as well as bringing policy change (Table 3.6).

Table 3.6. Federal government as a Manitoba DEM policy driver

Policy drivers		Explanations	Policy change processes involved
Key drivers	Supporting/Associate drivers		
<i>Federal government</i>			
The federal government's Emergency Preparedness Act, 1985	Not evident	The Manitoba Emergency Measures Act, 1987	<i>Policy diffusion by coercion</i> as there is legal binding for the province to develop their own provincial policies
Emergency Management Framework for Canada, 2007	Not evident	Inserting the provision of "business continuity plan" in the Emergency Measures Act of Manitoba, 1987 and to follow the comprehensive emergency management in its principle	Provincial policies are guided by Federal policies, which is <i>policy diffusion by coercion</i>
Transportation of Dangerous Goods Act of Canada, 1980	Not evident	Dangerous Goods Handling and Transportation Act, 1984 in Manitoba	<i>Policy diffusion by coercion</i> as there is legal binding of the federal Act.
Federal Policy for Emergencies in 1995	Adoption of all-hazards approach by FEMA, in 1992; Success stories in USA	Inclusion of all-hazards approach in Manitoba Emergency Plan, 1998	<i>Policy diffusion by imitation</i>
National Caribou Strategy	Not evident	Changed the Fire response zones in Manitoba	<i>Policy diffusion by coercion</i>

3.4.2.2 Underlying factors that shape policy

3.4.2.2.1 Risk perception of policy makers

The perception of risks is a fundamental component that shapes behaviors and actions required to cope with risks (Slovic et al., 1979). Regardless of structural barriers, the recognition of risks by policy makers is a critical component that shapes their decision-making process and their taking of appropriate programs for mitigation and preparedness to address risks (Mileti et al., 1975). It can change the view and tend to shape the way of thinking about governance when things are changing very rapidly. It often triggers a targeted approach as opposed to an across-the-board approach to risk management. Perceiving can lead to identifying the risk and other factors that can aggravate this. For example, identifying the flooding cycle historically, experience and the frequency of events prompted Manitoba to promulgate dozens of Acts and

policies for floods. The Red River floodway would not have been constructed in Manitoba unless there was the perceived flood risk for Winnipeggers. However, the Province perceived the risk after there was an event. For example, the original floodway was built in the 1960s in response to the 1950 flood; the expansion of the floodway took place after 1997 flood. In the Manitoba Emergency Plan (MEP), the annex considers Floods, Forest Fires, Environmental Accidents, Health Incidents, Severe Weather, Avian Influenza and Influenza Pandemic as phenomena of risk. Earthquakes or tsunamis are not included here as there is no previous evidence of such events or the probability of such events occurring is too low. These suggest that risk perception has a great significance in policy formulation and change.

The findings of my study show that the risk perception of policy makers is notable in terms of the recognition of past events such as floods and future climatic anomalies. Bureaucrats consider that risk is already here and it is changing with time and space. Politicians count a wider range of risk from experience and that can be aggravated by climate change. The risk perception of bureaucrats and politicians is highlighted in the following two quotes,

“Risk of life, property and environment by the frequency and severity of the incident”
(Bureaucrat’s opinion).

“I mean risk is something identifying flooding cycle historically, experience, and some degree of frequency of risk that is more challenging with climate change” (Politician’s opinion).

3.4.2.2.2 Policy makers' preference toward DEM.

Policy makers' preference sets the tone of policy (Buthe, 2002). For this purpose, the respondents (i.e. bureaucrats and politicians) were asked about how they see mitigation measures and what type of measure they would prefer. I found that bureaucrats consider both structural and non-structural mitigation measures whereas politicians mostly prefer structural measures because these measures receive wider attraction and are politically more attractive (Table 3.7). The tendency to demonstrate for the next election and the use of mitigation measures as political capital promotes structural mitigation measures. This finding supports the observation of Plümper et al. (2017), where they noted that as the government faces budget constraints and they have an election in mind, they are inclined more to publicly visible disaster preparedness measures than other options. Since politicians ultimately take the policy decision, a structure-oriented policy inclination is obvious in Manitoba, which is evident in Table 3.8 (discussed in detail in Chapter Four).

Table: 3.7. Policy makers' preferred mitigation measures

Groups	Structural	Non-Structural	Both
Bureaucrats			
R10, R14	<i>Mainly focus on structural side</i>	<i>Trying to incorporate it through various programs</i>	Yes
R11	<i>Successful in structural side</i>	<i>Now focusing on non-structural aspect</i>	<i>Both of them are effective</i>
R12	<i>Already done structural mitigation</i>	<i>Went for non-structural mitigation too</i>	<i>Both are part and parcel of mitigation and we have no preference one over another</i>
R13	<i>For flood, dike, ring dike and raising property is the best</i>	<i>Keeping new development out of flood risk area</i>	<i>Aware of both</i>
R15	<i>Good but expensive and may introduce false sense of security</i>	<i>Not good when an event exceeds the capacity of the system</i>	<i>Good mix of both measures is my preference</i>
R18	<i>Very effective but create false sense of security</i>	<i>It is required to address in both existing and future developments</i>	<i>Both are absolutely essential</i>
R19	<i>Politically easy for the politicians to get behind the structural things</i>	<i>Very difficult to get attraction on it</i>	<i>Both have a role to play</i>
Politicians			
R1	<i>Structures are prioritized very high level</i>		
R2	<i>I am in favor of good investment in infrastructure</i>	<i>We went for non-structural measures as basin wide political agreement but were unsuccessful as it requires US-Canada bi-lateral agreement.</i>	
R3	<i>After the 2009 flood we put ring dikes, purchased lots of flood equipment</i>		

Table 3.8. Policies formulated in Manitoba pertaining to structural and non-structural concentration

Structural concentration	Non-structural concentration	Both
The Dyking Authority Act, 1987	Designated Floodway Fringe Area Regulation, 1989	The Water Resources Administration Act, 1987
The Floodway Authority Act, 2004	Designated Flood Area Regulation, 2002	Manitoba Emergency Plan, 2009
The Red River Floodway Act, 2004	Designated Floodway Fringe Area Regulation, 1991 for City of Winnipeg	
Red River Floodway Regulation, 2009		
Floodway Compensation Regulation, 2009		

However, not only the political inclination to structural mitigation but the structures themselves can create an opportunity for building another structure (Box 3.1), which may lead to the formulation of associated rules or policies (Table 3.8). During the 1997 flood, the operation of the floodway increased upstream flood levels in Grande Pointe by 0.64 m but people thought that they were protected. This is why Shrubsole (2000) opined that structural works have contributed to a false sense of

Box 3.1

The irony of structural mitigation measure: One structure provokes for another

“If you have a structural mitigation in place such as dike and an event happened that exceeds the capacity, you may be able to raise the dike to provide a sufficient level of flood protection. This is my own hypothesis, if you have people who have become unaware of the risk because of the false sense of security, I think they engage in areas which are risky for example, developing in Assiniboine flood plain because they do not know or realize the risk of coming up a flood. Maybe the Brandon could be a good example. For example, up until 2011 people in Brandon commonly felt that the river never floods as there has only been one major flood event in last 20 years (in 1995), so development and building has continued on flood prone river valley. A lot of times, with structural flood protection measures particularly which redirects or store or change the water level in a given area, if you do not see those small and medium size events, it is very easy to forget the risks associated with less frequent larger events. Common sense and good engineering will tell people that there is a risk there but I think lots have been overlooked because people had not any flood in last 10/15 years. So they built multi-complex in flood risk areas until 2011 and 2014 flood that showed that river can flood still for these areas. Then expensive investments in further, larger structural mitigation measures (e.g. dikes) were required”.

security. Due to such false sense of security, people start building and development in risky zones until they face another disaster event. The Province of Manitoba conducted a cost-benefit analysis and concluded that staying on the vulnerable land is more cost effective than the buy-out program (Simonovic, 2011, p. 17). After the 1997 flood, the Province of Manitoba launched a *buy-out program* where 63 homeowners were bought out, primarily in the rural municipalities of Morris, Franklin and Ritchot. Rural homeowners in Manitoba’s Red River Valley received federal-provincial funds for flood protection. These included building a ring dike or elevating homes to a 1997 flood plus 2 ft. level. But, once the settlement becomes enormous in terms of

economy and the size of the community, it becomes ineffective for the government to adopt a buy-out program rather than construct structural interventions such as community ring dikes. For this reason, 13 community ring dikes along the Red River were constructed to provide flood protection.

3.4.2.2.3 Relationship among policy actors

Interaction among policy actors is important as it can sometime dictate the movement of a policy (Real-Dato, 2009). A common understanding between bureaucrats and politicians is helpful for any policy formulation as well as change. Bureaucrats, politicians and interest groups have their own norms and established protocols to communicate with each other (Table 3.9). However, interest groups have access to the ministers and premier directly to discuss their concerns. The findings show bureaucrats have good relations with politicians, and bureaucrats acknowledge the vital roles of politicians who take the final decision.

Table 3.9. Mode of interaction among policy actors

Bureaucrats	Politicians	NGOs and other stakeholders
<ul style="list-style-type: none"> • Inter-agency Emergency Preparedness Committee of EMO (R10,R11,R14,R16), • Training exercises at different levels (R11), • Conversations (R12), • Through a committee mandated by the study (R13,R15,R18), • Letters (R15), • Meeting directly with Minister and Deputy minister (R12) 	<ul style="list-style-type: none"> • Rallies in legislature (R1), • Demonstration (R1), • Caucus report (R1), • Feedback report from NGOs (R2,R3), • Interest group's meeting (R3) 	<ul style="list-style-type: none"> • Inter-agency Emergency Preparedness Committee of EMO (R7,R8), • Letters (R9), • Presentations and research reports (R5,R6), • Meeting directly with Minister and Deputy minister (R5,R6,R7,R9),

Disaster assistance has never been provided to cottagers until very recently. During the 2011 flood, politicians decided to provide disaster assistance to cottagers to address basic structural problems, repairs and prevention, and mitigation for the future. Bureaucrats prepared different options for politicians, who later decided to provide financial assistance for the cottage owners. In this regard one politician opined that *they (bureaucrats) prepare options, we (politicians) consult with them, we make choices how we allocate resources*. Again, the senior civil servants provide advice regarding what type of investment needs to be made and when. This result supports the finding of Shulock (1999) that policy makers bring new ideas, experience or insights in changing or formulating policy which is affected by external factors, and they sometimes try to use power to influence the policy (Deeg, 2005). For example, one respondent noted that

“I think the senior civil servants gave us the best advice and they created bigger positive differences for example, purchasing water bombers, upgrading the dikes and modernizing the weather forecasting technology”.

3.4.2.2.4 Decision making mechanism of the sitting government

In a policy process, decision-making by the government is influenced by several factors. I found two main factors related to decision-making mechanisms that ultimately operate as policy drivers. First, short-term measures are politically attractive due to budget constraints in other priority areas (e.g., health and education). Therefore, the provincial government generally counts the short-term window of four years. In this regard, Henstra (2009) cited that emergency management is often impacted by budgetary limits and fiscal austerity. In this connection one respondent opined that

“Governments are looking at short window like 4/5 years; their priorities are balancing the budget, health care and other things. So it is easier to postpone decision on things that cost money in mitigation or prevention perspective”.

In order to incorporate policy ideas into policy formulation even after careful study may falter due to financial constraints. In this regard, one respondent concluded that

“Consulting engineers were hired to do risk assessment in Assiniboine River and they gave us billion dollar proposal on how we manage those risks. Thank you [consulting firm] but we have to come up with billion dollars now” (R19).

Second, policy change is influenced by the political ideology of the sitting government. For example, the Ontario Conservative Party followed the neo-liberal concept of rent deregulation from 1995-2002 whereas after winning the 2003 election, the Ontario Liberal Party reinstated the earlier policy that was taken before 1995 (Bryant, 2004). Moreover, there is significant variation in government response to different events that have occurred in the same domain (Baumgartner, 1998). In this regard, José Real-Dato (2009) opined that a change of government causes change in the belief system from the earlier government, which was evident in Manitoba as the policy of Premier Roblin differed from that of Premier Campbell in the 1950s. Premier Campbell did not take proactive measures but later Premier Roblin used the recommendations of the 1958 Royal Commission report as his election manifesto and gained the majority in the next election. This finding supports the notion that a new government can take a position of prioritizing disaster and emergency management (Henstra, 2011).

However, from the late 1960s, a slight different story was revealed in Manitoba. After the floods in 1966 and 1979, the Conservative government instituted a flood mitigation program in Manitoba. After the 1997 flood, the Conservatives placed an individual flood protection program and a community ring diking program. The NDP governments followed up with the floodway expansion; after the 2011 flood they formulated their own individual flood protection and diking program. Every government (Conservative and NDP parties) showed consistency in dealing with

large flood events such as, Disaster Financial Assistance (DFA) programming, as well as changing maximum thresholds for assistance and thresholds in deductibles. They also established individual and community flood mitigation works after the 1997, 2009 and 2011 floods. As a flood mitigation incentive, if someone participates in the individual flood protection program for protecting their home, the DFA deductibles could be waived. Both governments (Conservative and NDP) supported this fair and consistent approach. The political ideology of the sitting government in the Province of Manitoba thus did not affect the flood policies significantly. This is because flooding in Manitoba is immensely important for economic health, and therefore priority was given to it by all political governments. Respondents concluded the story this way,

“From my perspective, it does not seem to matter what government is in place, government tends to react more or less the same way to a large event”.

“In Manitoba, I think every government has a different approach, different priorities and different levels of investment they want to make. But I think overall, across political spectrum there is a recognition that flood risk is here and something needs to be done , Government A versus Government B might have different approaches, different priorities but overall, I think there is no huge difference on their actions” (R15).

3.4.3 Stakeholders and interest groups

In this section, I highlight the role of key stakeholders and interest groups that often operate as policy drivers. Major agencies such as Manitoba Hydro, the Wildlife Association, the Canadian Association of Fire Chiefs, FEMA of USA, municipalities, insurance companies, citizens, academics, active groups, police chiefs, AMM, agricultural producers, the media, and First Nations are often found to be policy drivers. I elaborate their role below:

3.4.3.1 NGOs

Most of the respondents noted that NGOs work as partners with the government for disaster management. However, I found that some NGOs play a greater role in shaping policy whereas others have a very minimal role. NGOs working mostly with mitigation measures have had a greater role than NGOs working with recovery and assistance. For example I found that the Red River Basin Commission (RRBC) is a good example here. The Red River Basin Commission (RRBC), which has been working for the Red River Basin, was asked by the International Joint Commission to put together a framework plan for floodplain management. The RRBC pushed forward a policy for a 20% water retention target based on the 1997 flood level. The Province of Manitoba accepted that policy and used it as their water retention target.

Some NGOs are well-fed sister organizations of the government and thus have lost their effective and critical roles. The Red Cross provides humanitarian services but sends the bill to the government. The NGOs conducting research generally receive government funding and additional contracts for research. Therefore, NGOs lose their bargaining power for policy change in the DEM policy arena. During a catastrophic disaster event, NGOs collect donations and contribute to the government financially. However, such a role does not add any bargaining power to the NGOs because the financial assistance they provide is the money of the citizens. The government here uses them as a donation collector. The role of NGOs is viewed by one bureaucrat as follows:

“The NGOs and public at large are partners in the implementation of different policies but are not necessary the drivers of those policies” (R12).

3.4.3.1.1 Advocacy Coalitions

Stakeholders who have a common interest or common belief form a coalition and try to influence policy. This coalition is commonly referred to as an *Advocacy Coalition* (Sabatier, 1988; Sabatier & Jenkins-Smith, 1999). In the DEM policy of Manitoba, I found two types of *advocacy coalitions*, namely municipalities and their associations, and the Manitoba Association of Cottage Owners (MACO).

In the disaster management context, municipalities are the forerunners and first responders. Municipalities collectively believe that local level responses are vital for disaster management. This belief has motivated them to form coalitions, such as the Union of Manitoba Municipalities (UMM) and the Manitoba Association of Urban Municipalities (MAUM). These two organizations merged in 1999, and formed a common platform named the Association of Manitoba Municipalities (AMM). This eventually helped them represent all the municipalities with a unified voice to the Province, which has helped municipalities to generate a strong voice to lobby higher levels of government and to move forward ideas. AMM meets with the premier and ministers directly. Their primary interaction has appeared in an advocacy role to ensure their members have the resources and finances they need to deal with emergency management (Figure 3.1).



Figure 3.1. Spreading municipal concern by AMM to the citizens before the election.

Owing to a strong platform and collective voice, AMM was successful in influencing changes to disaster financial assistance policy. For example, in the past, municipalities were responsible for 10% of their claim, which was a financial burden for municipalities, but now the deductibles the municipalities are paying is \$5 per capita maximum. Therefore, a municipality having 2,000 people would get \$10,000 in deductibles, which is more generous than receiving 10% of the total disaster claims. The change to the disaster financial assistance policy was amended in 2009. Another example of policy influence by AMM occurred under the same policy. The provision was that if the Province used the equipment of the municipalities in disasters, such as in building dikes, municipalities used to receive only 16% of the hourly rate and now the policy change allows for them to receive 65% of the rate. Therefore, in a disaster or emergency situation, if municipalities have hired tractors or used their own equipment, the compensation will be 65% instead of 16%.

There are other examples of *advocacy coalitions* in the Province of Manitoba's DEM policy context. The Manitoba Association of Cottage Owners (MACO) was established to protest as a group for the unfair tax load assigned to recreational property owners. A total of 44 different Manitoba cottage associations became members of MACO to promote and advance the common interest of ratepayers in cottage areas. MACO mainly interacts with the policy makers and lobbies for their concerns. Disaster Financial Assistance (DFA) has never been provided to the cottagers before. However, after the 2011 flood, MACO lobbied, sent emails to the premier and discussed receiving such assistance. In response, politicians and the premier adopted the provision of Financial Assistance for Cottage Owners (FACO) as Flood-Protection Assistance for basic structural issues, repairs and prevention, and mitigation for the future. This provision provided financial assistance to cottage owners of up to \$100,000 (with permanent flood protection) under the Lake Manitoba Financial Assistance Program and cottage owners are now also eligible for up to \$34,400 to permanently flood proof their non-primary residences under the enhanced Action Plan for Lake Manitoba, (MACO, 2017).

3.4.3.1.2 General public

The general public can also bring change in policy; however, it does not happen often. The general public raises the issues of their concern by raising their voices, using media and others means. A key pathway for general citizens to influence DEM policy change has been through their local authority, such as the municipality or local MLA (R16). People can bring their ideas to the mayor, reeve, local council, emergency coordinator, or try to get media attention. One politician claimed that the general public is driving political decisions as well (R1). Bureaucrats' opinions contradicted this notion, noting that though the NGOs and public at

large are partners in the implementation of different policies they are not necessarily the drivers of those policies (R12). One respondent in this regard concluded that

“I cannot think of a time when general public has changed policy on emergency management” (R19).

It appears that, in effect, Manitobans have played a limited role in policy; in most cases they had no role in emergency policy formulation or change. There was a growing focus on peacetime emergencies in the 1960s due to public indifference (Fisher, 1999), which changed a policy focus to peacetime emergencies from civil defence. Later, the people of Manitoba did not play any active role in policy development or policy demand, and thus remained as an observer of the DEM policy. This result conforms to the finding of Petry and Mendelsohn (2004) that there is little evidence of the direct influence of public opinion on policy change. A summary of the role of NGOs and interest groups in Manitoba on DEM policy are presented in the Table 3.10.

Table 3.10. Summary of the role of NGOs and interest groups in DEM policy making

Policy drivers Stakeholders and Interest groups	Explanations	Policy change processes involved
RRBC	<ul style="list-style-type: none"> Adopting 20% water retention target based on the 1997 flood level 	<i>Policy learning</i>
AMM	<ul style="list-style-type: none"> While using municipal equipment, compensation will be 65% instead of the previously set 16%. The deductibles municipalities pay is \$5 per capita maximum. 	<i>Advocacy coalition</i>
MACO	<ul style="list-style-type: none"> Financial assistance to cottage owners of up to \$100,000 (with permanent flood protection) under the <i>Lake Manitoba Financial Assistance Program</i> and up to \$34,400 to permanently flood proof non-primary residences under the <i>Enhanced Action Plan for Lake Manitoba</i> 	<i>Advocacy coalition</i>

The role of interest groups in Manitoba DEM policy is similar as to the British Columbia Forest Policy, 1985, where the drivers were interest groups, organizations and indigenous groups (Bernstein & Cashore, 2000). This finding also supports the notion that the interests and preferences of policy actors sometimes determine the policy outcomes (Buthe, 2002) as they try to use power to influence the policy (Deeg, 2005), and it nullifies Henstra's (2011) argument that interest groups seldom form lobbies for or against policies in this area. In my study, I found no role of NGOs and the general public in DEM policy change. No public demand for specific actions or policy change was evident, which is similar to the notion of Henstra (2011) and Cigler (1988). Generally, this phenomenon can be termed as policies without a public (Birkland, 1998).

3.4.4 Learning by policy actors

Sometimes learning brought change on the operational level, policy level and thinking process. In Manitoba, policy learning stemmed from Manitobans' own experiences (e.g., value protection, designated flood area), from other jurisdictions (e.g., BCP and ICS), and from operational exercises (e.g., use of uniform fire equipment). These findings show a similar trend as that observed by Brody et al. (2009), who assert that policy makers learn from repeated events. Evidence for such claims is presented in the Table 3.11.

Table 3.11. Role of learning in policy change in Manitoba

Learning	Operational level policy change
Value protection	Use of sprinkler kits, heads, pumps to protect the values (R10)
Use of uniform equipment for fires	Fire department share ideas and new equipment. They used to use one type of hose, while another provincial agency used different types of hose, so Manitoba fire fighters could not fit the different sizes; they did not work together. Now every agency in Canada buys the exact same size of hose (R10, R14).
Doctrine from other jurisdictions	Manitoba follows Business Continuity Program (BCP) doctrine. It has intra-government BCP that follows essentially the standard doctrine of BCP, which uses emergency management concepts (R12).
Designated flood area (DFA) after an event	In 1997, there was only one DFA and it was in the lower Red River Valley (south of Winnipeg). After the 2009 flood, the government established a new DFA in the area north of Winnipeg (R18).
Investment in mitigation	Substantial learning comes out after an emergency is over. It shapes how money should be invested in mitigation for the long term, such as, in using an air ambulance, investments in infrastructure and emergency channels, and financial assistance to individual home owners and cottages to protect their property in future (R2).

3.5 Discussion and conclusion

The findings of my research revealed the multi-faceted nature of policy drivers of DEM policy change in Manitoba. These drivers are events, interest groups, lead actors and institutions, and the federal government. Though the cognitive domain and the preference of policy makers have been identified as indirect influencing factors, no direct relation in driving the policy could be substantiated by the data. The findings are summarized in Table 3.12.

Events can play a critical role in driving policy change. The role of disaster events as policy drivers depends on the magnitude of events. The magnitude of an event is a determining factor in receiving the government’s attention in policy making (Baumgartner, 1998). In this respect, Baumgartner and Jones (1991) noted “greater issue attention” by a “potential focusing event” (Birkland, 1997) often leads to policy change. In the Province of Manitoba, events inside Manitoba (the droughts in the 1930s, the floods of 1950, 1997 and 2011, forest fires in 1981 and

1991) and outside Manitoba (World War II, 9/11, the Bhopal tragedy) have brought significant change in DEM policy as these events have had a staggering impact on the society and received significant attention. However, not only mega events but also a series of smaller events drew significant attention and caused policy change in Manitoba. For instance, a series of natural events in the 1950s and 1960s in Manitoba and other Canadian provinces influenced adopting the DFFA program in Canada as well Manitoba.

Generally, after an event policy failure (May, 1992) is revealed, usually the lessons learned are documented (Birkland, 2009). In Manitoba, it was observed that after mega events inside Manitoba, several study commissions were sponsored to manage resources and livelihoods better. The recommendations provided by the commissions, though, were not mandatory for the government to carry out, yet consideration along with the impact of the event created policy learning opportunities and ultimately policy change. While Manitoba faced resource constraints in firefighting or learned from other jurisdictions about the mechanism of dealing with particular situations, the Province adopted learning as a tool of policy change. In most cases, it was evident that events were also associated with other factors such as, learning from other jurisdictions, experiential learning, and advocacy coalitions. The findings thus support the notion that one policy driver alone or in combination with others is capable of bringing substantial policy change (Capano & Howlett, 2009), and these were evident in the case of the Province of Manitoba.

In the Province of Manitoba, lead policy actors, i.e. actors holding powerful positions and key institutions, influenced the DEM policy. For example, the bureaucrats and the Premier of Manitoba played vital roles in terms of bringing new ideas into the policy. The federal government often diffuses their ideology into the provinces. The power contest between the provinces and federal government also determines the fate of provincial policy (Rachlis, 2000;

Lecours & Béland, 2010). As the Disaster and Emergency Framework of Canada provides the guideline to the provinces to enact policies following the guideline, federal influence cannot be denied. However, such federal influence in some cases follows coercive means while in other cases provinces just imitate the federal guidelines.

The cognitive characteristics of individual policy makers influence the policy (Hecló, 1974). The risk perception (Mileti et al., 1975) and the inclination to specific instruments (e.g. structural intervention) of the individual policy maker also influence the policy direction (Buthe, 2002). Moreover, the influence of personal leadership styles was also evident in Bengert's (2016) study, where he cited how leadership style influenced the Harper government's retreat from climate change. In Manitoba, Premier Douglas Lloyd Campbell emphasized relief and maintained an unambitious policy of reconstruction after the 1950 flood (Bumsted, 1987, p. 348). Duff Roblin adopted the idea of constructing a floodway and used it as his main election manifesto. Perceiving the flood risk of Manitoba and demonstrating assertive leadership, he brought about a new era of flood mitigation through structural interventions. These were followed afterwards by the success of structures proven during later flood events.

Table 3.12: Summary of the findings (policy drivers)

Policy drivers		Explanations	Policy change processes involved
<i>Events as Key driver</i>	<i>Supporting/Associate drivers</i>		
Consecutive droughts in 1930s	Economic recession	Passing the Prairie Farm Rehabilitation Act (PFRA), 1935	<i>Event-driven policy</i> focused on droughts and relief-based approach
World War II	Not evident	Adopting Defence of Canada Regulations, 1939	<i>Event-driven policy</i> focused on war emergencies
	Korean War, Nuclear threat of being attacked, Cold War apprehensions	The Manitoba Emergency Measures Act in 1951 (later replaced by the Civil Defence Act, 1952)	
1950 flood	Not Evident	The Manitoba Civil Defence Act, 1952, distinguished between war and civil emergencies, which was subsequently replaced by Emergency Measures Act 1970	<i>Event-driven policy with incremental change</i> (Adopting both war and natural emergencies)
	Royal Commission report, 1958; Political leadership of Duff Roblin	Flood protection through structural intervention did not result in a policy change but laid the foundation for building a mitigation strategy in later time	Not full-fledged but the beginning of <i>Punctuated equilibrium</i>
	Recommendation of the Royal Commission report, 1958	Not having Flood Insurance Policy in Manitoba and Canada	<i>Negative Policy learning</i> from other jurisdictions (USA)
Series of natural events in the 1950s and 1960s in Manitoba and other Canadian provinces	Public indifference to war emergencies, Lobbying by the provincial leaders, Escalating cost of disasters	DFAA, 1970	<i>Event-driven policy, Advocacy coalition</i> among provincial leaders
Forest fires in 1989, 1991	Record number of incidents, Media attention	Manitoba Wildfires Act, 1997	<i>Event-driven policy</i>
	Success of FireSmart program in USA	FireSmart program in Manitoba	<i>Policy learning</i> from other jurisdictions (USA)
1997 flood	Absence of policy or guidelines to pay financial assistance to flood victims	Manitoba promulgated Provincial Disaster Financial Assistance (DFA) policy, 1999; guidelines and regulations.	<i>Policy learning from own experience</i>
	Artificial flooding, Emergency summer use of the floodway	The Red River Floodway Act, 2004	<i>Policy learning from own experience</i>
	Report of the Red River Floodway Operations Review Committee, 1999	Rules of Operation for Red River Floodway Control Structure	<i>Policy learning from own experience</i>
9/11	Bill C-36 regarding the Anti-Terrorism Act of Canada, 2001; Canadian Association of Agri-Retailers (CAAR) and Canadian Emergency Preparedness Association	The Manitoba Security Management (Various Acts Amended) Act, 2001	<i>Event-driven policy, Policy diffusion by imitation</i>
2011 flood	Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report	Adopting 1:200 years flood protection as design standard instead of 1:100 year	<i>Policy learning from own experience</i>

Table 3.12 continued

Policy drivers	Explanations	Policy change processes involved	Policy drivers
Key drivers	Supporting/Associate drivers		
Resource constraint for fire fighting	Not evident	Resource sharing provisions inserted in the Fire Hose Regulation, 1987; The Manitoba Emergency Plan (MEP), 1983; Canada-United States Reciprocal Forest Fire Fighting Arrangement	<i>Policy learning from own experience</i>
NGOs and Interest groups			
RRBC	Not evident	Adopting a 20% water retention target based on the 1997 flood level	<i>Policy learning</i>
AMM	Not evident	While using municipal equipment, compensation will be 65% instead of the previously set 16% The deductibles municipalities pay is \$5 per capita maximum	<i>Advocacy coalition</i>
MACO	Not evident	Financial assistance to cottage owners of up to \$90,000 or \$100,000 (with permanent flood protection) under the <i>Lake Manitoba Financial Assistance Program</i> and up to \$34,400 to permanently flood proof non-primary residences under the <i>Enhanced Action Plan for Lake Manitoba</i>	
Federal government			
The federal government's Emergency Preparedness Act, 1985	Not evident	The Manitoba Emergency Measures Act, 1987	<i>Policy diffusion by coercion</i> as it is legally binding for the province to develop their own provincial policies
Emergency Management Framework for Canada, 2007	Not evident	Inserting the provision of a "business continuity plan" in the Emergency Measures Act of Manitoba, 1987, and following comprehensive emergency management in its principle	Provincial policies are guided by federal policies, which is <i>policy diffusion by coercion</i>
Transportation of Dangerous Goods Act of Canada, 1980	Not evident	Dangerous Goods Handling and Transportation Act, 1984, in Manitoba	<i>Policy diffusion by coercion</i> as the federal Act is legally binding
Federal Policy for Emergencies in 1995	Adoption of all-hazards approach by FEMA, in 1992; Success stories in USA	Inclusion of an all-hazards approach in the Manitoba Emergency Plan, 1998	<i>Policy diffusion by imitation</i>
National Caribou Strategy	Not evident	Changed the fire response zone in Manitoba	<i>Policy diffusion by imitation</i>

In Manitoba, it was evident that interest groups (RRBC, AMM and MACO) form an advocacy coalition that prefers to interact with the key policy makers, such as ministers or the Premier, and lobbies for their interests. The absence of such an advocacy coalition among other stakeholders (i.e. general people, NGOs) substantiates their lesser role in DEM policy.

The change of government causes shifts in the belief system of the previous government (Real-Dato, 2009), and the new government can maintain the status quo or take a new position of prioritizing disaster and emergency management issues (Henstra, 2011). From the findings of my study, it is evident that in terms of flood mitigation and disaster financial assistance, all governments (Conservative and NDP) followed a similar approach after the 1960s. Bryant (2004) noted that the political ideology of the Ontario Conservative government drove the Ontario housing policy, 2004, which reflected a departure from previous NDP governments; in contrast, the political ideology of sitting governments in the Province of Manitoba did not affect the flood policies. This was because flooding in Manitoba has been a significant threat to the economy and an environmental risk to lives and properties and thus was given priority by all political governments.

Finally, it can be concluded that the DEM policy of Manitoba has been influenced by different factors. Focusing events played the biggest role in new policy formulation, accompanied by gradual change. Among the events that happened in Manitoba, floods, forest fires and droughts were significant types of hazards whereas events outside Manitoba included 9/11, the Bhopal tragedy and World War II. The federal government played an important role in the evolution of the DEM policy of Manitoba through the FPT agreement and federal Acts, frameworks and strategies. Politicians and the relationship between the Premier of Manitoba and the Prime Minister of Canada to a large extent determined the fate of adopting DEM policy. Though there is no clear evidence of cognitive factors of policy

makers in policy change, the risk perception of floods and the success of structural interventions in earlier times have influenced all political parties and governments to adopt similar approaches and inclination towards adopting a structural mitigation approach to flood problems. Interest groups, such as, the Association of Manitoba Municipalities (AMM) and the Manitoba Association of Cottage Owners (MACO) succeeded in driving the policy in their favor on a few occasions. However, the role of NGOs has been very limited and the active role of common people or residents of Manitoba on the DEM policy of Manitoba has generally been absent.

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Chapter 4: DEM policy learning in Manitoba

4.1 Introduction

Policy learning and changes are inextricably interlinked with events and policy failures. Learning plays a role when an incompatibility of existing policy is revealed to deal with an emerging situation. Moreover, in the case of policy success, learning can trace conditions for success (May, 1992). Learning from disaster and emergencies leads to better adaptation or even prevention (Jasanoff, 1994) through redesigning the policy or new policy formulation. Policy making is a process of learning at multiple levels and through trial and error (Sing, 2001). Each level is distinct in terms of learning process and the impact of learning on policy. In institutions, transferring learning from one level to another level ensures the participation of all levels in a policy process. This chapter (Objective 3) as a part of this research explores the role of learning in DEM policies and the nature of learning in the Province of Manitoba (Section 4.4). Section 4.2 discusses theoretical considerations of learning while Section 4.3 elaborates on the methodology. Conclusions are drawn subsequently on the basis of the results and in light of existing literature.

4.2 Policy learning and change

Discussion and debates on policy learning and policy change mostly center around learning and change from events (i.e. natural and human-made disasters and emergencies). It is argued that learning from events and policy failures potentially leads to change in policies (May, 1992; O'Donovan, 2017; Dunlop, 2017). Both “event-based learning” and “learning from failures” approaches are predominantly reactive and top-down in nature. In this study, I have considered *reactive learning* as the learning from events that have been experienced directly and *proactive learning* as the learning from other means or indirectly (e.g. events outside jurisdiction). For example, Manitoba did not experience the H1N1 or 9/11 event

directly but the Province learned from others experiences such as what happened in Mexico and the USA. Proactive learning can also happen through mock exercises and future risk assessment studies (Table 4.3).

I argue that reactive and top-down approaches to policy change and learning in the context of natural disasters and emergency management are flawed. These approaches fail to recognize the importance of dealing with emerging scenarios such as climate-induced disaster risks. To expand my position, I draw insights from the existing literature on disaster management and resilience, and posit that the newly generated knowledge would significantly contribute to the policy change learning literature.

Resilience literature highlights the importance of learning at multiple levels and the feedback relationships among different scales for building capacity and resilience for future events (Reed et al., 2010; O'Brien et al., 2010; Johannessen & Hahn, 2013; Brody et al., 2009, Choudhury & Haque, 2016, 2017; Choudhury, 2016). Learning at one scale may significantly influence learning and capacity building at another scale (Berkes & Ross, 2016; Angeler et al., 2016; Liu et al., 2007). The roles of humans and institutions are emphasized here for learning from past events and experiences, but also the proactive roles are highlighted to prepare for unexpected and unforeseen events (Berkes, 2007, 2009; Folke et al., 2010). I posit that a learning approach (i.e. reactive) that does not recognize the feedback relationships and proactive capacity of humans to formulate forwarding looking policy is more likely to bring incremental or instrumental change at the policy level. These changes are typically *single-loop* and *double-loop* rather than *triple-loop* or a transformative change at policy level. *Single-loop learning* refers to minor adjustments made in response to mistakes; it is a routinized practice wherein assumptions are not challenged. *Double-loop learning* involves the examination of assumptions behind actions made in response to a crisis, and therefore constitutes “learning for improvement”; *triple-loop learning* involves making

changes to underlying norms and values and overall governance structures, i.e. a paradigm shift in thinking and action (Argyris, 1977; Waddell, 2005; Lee & Krasny, 2015; Lof, 2010).

Drawing insights from resilience and disaster literature, I argue that for better disaster management and to build resilience, both the human dimension (i.e. preparedness, learning, and anticipation) and structural measures are required (Etkin, 1999). A reactive approach to learning and policy change is likely to overemphasize the structural measures and undermine the human dimension. As a consequence, *single-loop* and *double-loop* changes are more likely to focus on structural and technological adjustments rather than documenting learning at the community scale – those who directly suffer from disasters.

Against this backdrop, I seek to explore i) the underlying characteristics of policy change processes from events, ii) the nature of learning from events in policy domains, and iii) the barriers for proactive and forward-looking learning and policy change.

4.3 Methodology

To explore the linkage between policy learning and policy change (Objective 3) this chapter follows multiple methods for data collection. A desk-review of documents was performed to delineate the evidence of learning. These activities included the reports, after-action reports, laws, by-laws, meeting minutes, leaflets, pamphlets and other documents.

A total of 21 Key Informant Interviews (10 bureaucrats, 3 politicians, 8 municipal emergency coordinators) were conducted to explore the mechanism of learning at the institutional level (Province of Manitoba and municipalities). Similar methods were adopted to explore the transfer mechanism of learning from one level to another level (from individual to municipal, from individual to provincial, and from municipal to provincial level).

A total of 10 bureaucrats from various backgrounds and various positions responded by agreeing to be interviewed. All the interviews were recorded except one respondent, and 4

follow-up interviews over the phone and email communications were carried out for 2 respondents. From the document review, notable policy makers were identified. They were selected purposively depending on their availability and willingness. To receive consent from politicians, an invitation letter with the interview questions and informed consent form was sent to each political party of Manitoba to find an appropriate member of the party. The political party offices then emailed the date and time to me for the interview. A total of 3 politicians were interviewed. For KIIs with Municipal Emergency Coordinators (EC), a total list of 30 municipalities were selected and contacted on the basis of their recent past experience of disaster incidents. It was revealed that one EC was working for more than one municipality, and had joined recently, and this person was unwilling to be part of this research. Eventually, 8 ECs agreed to participate and they were subsequently interviewed.

Data were analyzed after the data collection. The document review was used to identify the evidence of learning at all levels using the Birkland (2009) Framework (described in the following section 4.4.1). To measure the pattern of institutional learning in the Manitoba DEM context, instrumental and social learning indicators of May (1992) were followed.

4.4 Results and discussions

4.4.1 Policy change processes as reactions to events

Disaster policy learning and change is defined as the “prima facie” evidence of change “...that are reasonably linked to the causal factors that connected the event under consideration to its harms, and if addressing these factors would be likely to mitigate the problem” (Birkland,, 2009; p. 147). Major changes in DEM policy and learning are directly or indirectly linked to events inside or outside Manitoba. Therefore, I posit that policy change and learning in Manitoba are mostly reactive (i.e. event-driven) and top-down in nature rather than proactive. I posit that policy changes, resulting from policy failure and reactions to

events, may take place either in the form of the revision, amendment or updating of existing policies or by adding new layers within the spectrum of prevailing DEM policy. In investigating these issues, I adopted Birkland's model (2009) on policy change and learning, and examined how the prevailing policies succeeded or failed to deal with emerging conditions and resulted in some degree of major policy change.

Birkland's (2009, p. 153) model on policy change and learning (Figure 4.1) is helpful for understanding policy change resulting from events and failures. He argues that, first, all events do not receive the same attention. A few events characterized by the massive destruction of life and property gain greater attention than smaller events. Smaller events do not gain attention as they are less destructive and are managed as routine disasters. Second, most of the policy actors bring policy ideas to address the problem after an event. Third, after the disaster event, different groups become evident. Fourth, events drive group mobilization and these groups drive the discussion of policy ideas as they often come up with policy ideas and solutions to the problem. In the Legislature, the voices of these groups are heard. Fifth, policy change happens as the ideas were generated as learning from the event. Finally, learning may decay over time if it is not "fully institutionalized into the law, from legislation through regulation to the standard operating procedures of regulations" (Birkland, 2009, p. 153).

Drawing insights from Birkland's model, I investigated i) whether lessons learned documents were produced after disasters; ii) if they were produced, whether they resulted in actual policy change or became "fantasy documents" – these are usually produced by authoritarian actors to convince the general public that something is being done; and iii) whether the policy change is the result of a revision of existing policies based on learning -- this can be an incremental or a radical change; or layering. *Layering* refers to adding new goals and instruments within the existing policy regime (Béland, 2007). To this end, I

examined Birkland's model for a series of events to analyze policy learning processes over the period of time (Figure 4.1). Key words related to Birkland's model are italicized.

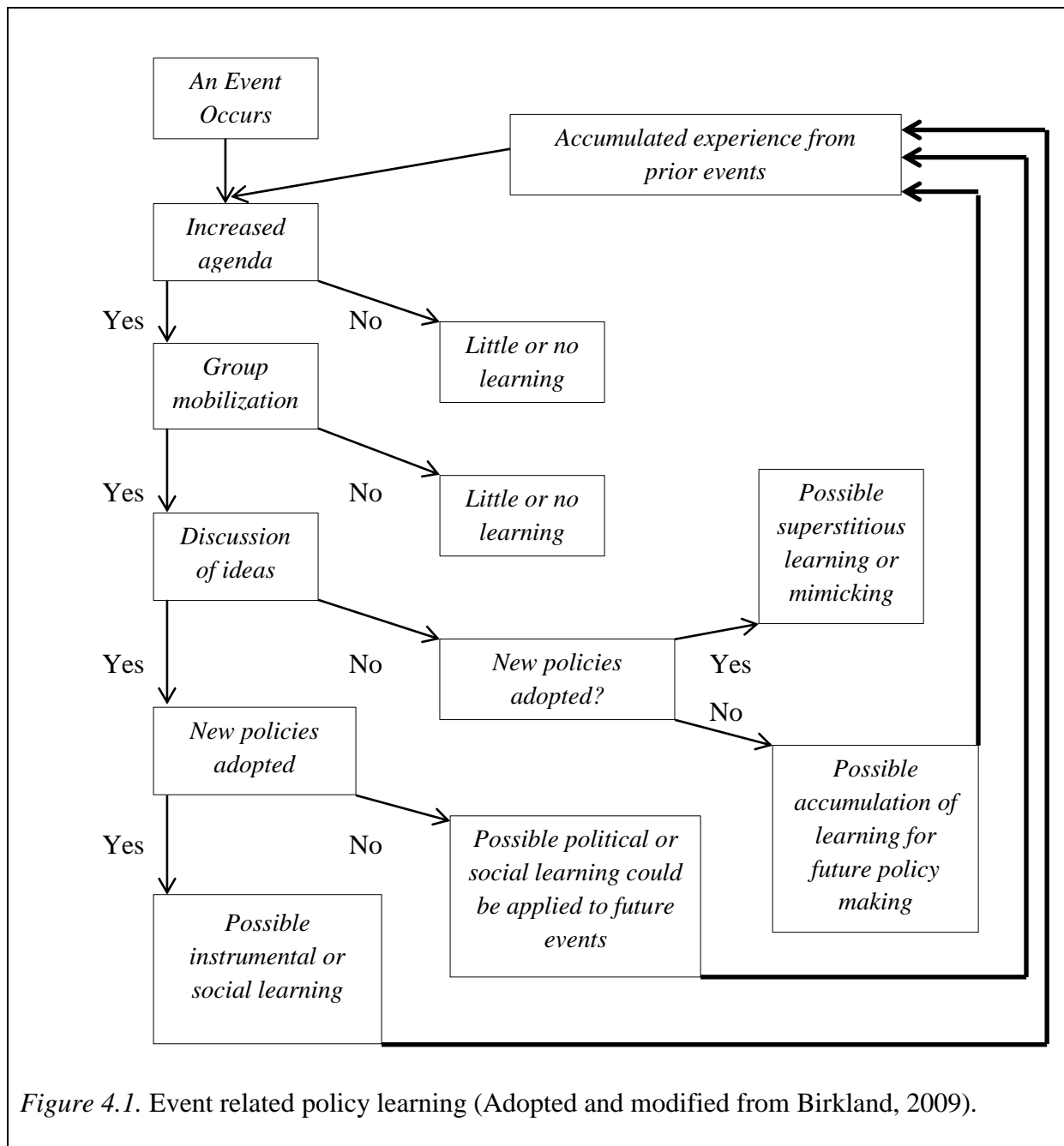


Figure 4.1. Event related policy learning (Adopted and modified from Birkland, 2009).

I begin with the drought event in the 1930s, which caused a major North American humanitarian crisis. To tackle the situation, the federal government of Canada was forced to adopt a radical relief-based policy so as to seek an immediate solution to the crisis. The series

of droughts in the 1930s received nationwide *attention* but policy change resulted without *group mobilization*. After the crisis, the federal government took initiatives to rehabilitate the Prairie farmers. To this end, a committee was set up based on the learning of this event and a *discussion of ideas* took place that resulted in the formulation of the Prairie Farm Rehabilitation Administration (PFRA) Act, 1935. Later on, this Act was modified further (i.e. the five-year limitation to the PFRA was removed and an additional financial allocation was made) because it was realized that for the development of a sound agricultural economy on the Prairies, more long-term measures for rehabilitation would be necessary (PFRA, 1961, pp. 5-6). The PFRA policy thus progressed through a gradual modification due to continuous learning (Table 4.1).

World War II and the subsequent nuclear threat during the Cold War resulted in the layering of policies within the broad spectrum of the DEM policy of Manitoba. This is because of the emergence of the newer kind of event (i.e. nuclear threat) as the existing policies were incompatible with the emerging context. In 1939, Canada began to participate in World War II and the Defence of Canada Regulations, 1939, was formulated federally under the War Measures Act, 1914, which indicated an incremental change in policy. However, provincial and municipal governments appeared as major involved groups due to the Federal-Provincial Advisory Committee (Henstra, 2011), which ultimately led to *a series of discussion* that followed the adoption of a common civil defence policy. The Manitoba Emergency Measures Act, 1951, was formulated and a municipal plan for war emergency was developed as the Provincial government realized that the local plan was vital for the war and the nuclear threat. The emergence of the newer type of event thus promoted a layering of policies.

Table 4.1. Event-related learning in Manitoba DEM policy

<i>Events</i>	<i>Increased agenda attention</i>	<i>Group mobilization</i>	<i>Discussion of ideas</i>	<i>Accumulated past experiences from events</i>	<i>Possible learning</i>	<i>Adoption of new policies</i>
1930s Droughts	Recognizing the need for relief	Not evident	Setting up a committee		Promoting rehabilitation for Prairie farmers	Prairie Farm Rehabilitation Act (PFRA), 1935
World War II	Entering into war	Not evident	Formulating several committees and organizations, federal-provincial-territorial conferences	Yes	Developing a municipal plan for war emergency	Defence of Canada Regulations, 1939; Manitoba Emergency Measures Act in 1951
The 1950 flood	Media attention around the world	Not evident	Forming several commissions	Yes	Differentiating Civil and War emergencies	Manitoba Civil Defence Act, 1952
	Royal Commission Report, 1958	Adopting recommendations of the Royal Commission Report, 1958, as the election manifesto by Duff Roblin	Promoting multi-year budget allocations for building the floodway		Promoting mitigation efforts for Red River floods in future	No
Floods in the 1960s	Efficacy of the civil defense program and escalating cost of natural disasters	Continuous pressure on the federal government from provincial and territorial governments for financial assistance	Federal-provincial-territorial conferences	Yes	Sharing the burden	The federal Disaster Financial Assistance Arrangement (DFFA), 1970
Forest fires in the 1980s	Global media coverage with other fire events and resource constraints to fight wild fires	Not evident	The Manitoba wildfire review, 1989	Yes	Suppressing fire at the beginning	Adopting Initial Attack Response
The 1997 flood	Media coverage as the entire province was under water	Not evident	International Joint Commission (IJC) report; public hearings conducted by the Manitoba Clean Environment Commission; Red River Floodway Operations Review Committee	Yes	Learning from own experience that the floodway is not enough to provide protection; compensating the victims due to floodway operations	Provincial Disaster Financial Assistance (DFA) policy, 1999; guidelines and regulations; The Red River Floodway Act, 2004; Rules of Operation for Red River Floodway Control Structure
The 2011 flood	Flood accelerated by human operation	Association of Lake Manitoba Stakeholders (ALMS)	Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report,	Yes	Previous standards were not enough	Adopting 1:200 years flood protection as design standard instead of 1:100 years
The 9/11 incident	Worldwide recognition	Public presentation at Legislative Assembly by Jeff Kisiloski of the Canadian Association of Agri-Retailers (LA 453–455) and John Lindsay of the Canadian Emergency Preparedness Association (LA 455–459).	Bill-2 in legislative assembly of Manitoba, and debate		Enhancing security and improving emergency planning and response in the province	The Manitoba Security Management (Various Acts Amended) Act, 2001
Mississauga train derailment, 1979	Media coverage	Unknown	Unknown		Developing procedures for the proper handling, transporting, packaging and labelling of dangerous goods	The Transportation of Dangerous Goods Act of Canada, 1980, and The Manitoba Transportation of Dangerous Goods Act, 1983
Bhopal tragedy, 1984	Media coverage	Major Industrial Accidents Council of Canada (MIACC)	Environment Canada established a joint industry - government steering committee in 1985; ministerial conferences	Yes	Defining “contaminant” and “hazardous waste disposal facility”	Revision of the Manitoba Dangerous Goods Handling and Transportation Act, 1987

The flood of 1950 in the Red River Basin of Manitoba was one of the devastating natural disasters in Canada in general and for Manitoba in particular. Canada did not have a clearly articulated national policy for dealing with the financial exigencies of national disasters until 1950 (Bumsted, 1987). Manitoba followed the Fraser River flood formula of 1948 to deal with the 1950 flood. Until 1950, the policy focus was mainly on civil defence. However, the learning generated by the 1950 flood brought about a radical change in policy, i.e. the Manitoba Civil Defence Act, 1952, replaced the Manitoba Emergency Measures Act, 1951. This policy replacement or amendment based on learning led to the creation of a fundamental difference between the civil and war emergencies.

After the 1950 flood, a Royal Commission report (1958) was produced. This report generated political learning – defined as “political learning entails policy advocates learning about strategies for advocating policy ideas or drawing attention to policy problems” (May, 1992, p. 339). Prima-facie indicators for political learning were: “change in political strategy, changing venues, new arguments, and new tactics to call attention to a problem” (O’Donovan, 2017, p. 543). The Royal Commission Report, 1958, was adopted as an election manifesto by Duff Roblin (Premier of Manitoba from 1958-1967). *Discussions* were held between federal-provincial levels around the issue of a multi-year budget allocation for building a floodway around the city of Winnipeg. A considerable number of recommendations were executed and a shift to mitigation from civil defence was clearly evident. This report did not bring further policy change; however, it is evident from this discussion that the Royal Commission Report, 1958, produced following the 1950 flood generated political learning that in turn shaped the emergency and disaster management strategy (i.e. application of structural measures). Birkland’s event-related policy learning (2009) model advocates that when there is no adoption of new policy, it is

likely to generate political learning. However, I found that political learning along with instrumental learning can also occur when there is an adoption of new policy.

The 1966 flood in Manitoba was the major disaster after the 1950 flood. After this event, *group mobilization* was not required as the politicians were actively negotiating with the federal government on behalf of the provinces including Manitoba. The core of the negotiation was related to sharing disaster recovery costs as they were escalating. The result was two-fold: i) expansion of structural measures built after the 1950 flood; and ii) adding new policy, i.e. layering. Concerning the former, the flood of 1966 generated an immediate examination and an assessment of existing plans and procedure (EPC, 1998). During the 1966 flood, the Manitoba Emergency Measures Organization prepared a flood plan very hastily under the direct instruction of Premier Duff Roblin for water control works and 64 miles long of dyking (Government of Manitoba, 2004). After the 1966 event, 64 miles of long ring dykes around valley communities were added to the Winnipeg floodway constructed after the 1950 flood (Government of Manitoba, 2004; Rannie, 1998). The 1966 flood resulted in the layering of policies in the form of cost sharing, i.e. the adoption of the federal Disaster Financial Assistance Arrangement (DFFA), 1970. Even though this policy was formulated at the federal level it added a new layer to Manitoba DEM policy.

In 1989, more than 1,000 incidents of fire set the new record for Manitoba, causing the burning of 3.28 million hectares and receiving media attraction throughout the world (Hirsch, 1991). The *group formation* was not evident but this event forced Manitoba to learn from other jurisdictions where similar events had happened before. Attention to and discussion of this new type of hazard resulted in additional layering of policy, i.e. Initial Attack Response. This policy

mainly dealt with issues at an operational level, such as value protection and using a common standard of fire hoses as a result of learning from this event.

The 1997 flood of Manitoba was identified as the “flood of the century.” The magnitude of this event was such that it resulted in i) the modification of existing operational policies and ii) the layering of new policy. The modification of operation policies took place in the form of expansion of structural measures (e.g. Red River floodway) as the 1997 flood exceeded all previous experiences. New standards for dykes and buildings were set (e.g., for dykes 0.06m above and for buildings 1.0 m above the 1997 flood level) (IJC, 1997). A total of 13 community ring dikes were built after the 1997 flood in areas south of Winnipeg. Based on the public hearings, the Manitoba Clean Environment Commission recommended the floodway expansion to protect the city of Winnipeg (Manitoba Clean Environment Commission, 2005) against 1:700 floods (KGS Group, 2001, Halliday & Associates, 2006). All the municipalities were required to build their own emergency plans, which took an all-hazards approach (Halliday & Associates, 2009). Concerning policy layering, the Provincial Disaster Financial Assistance Policy, 1999, was formulated and added within the broader spectrum of the DEM policy of Manitoba.

The flood in 2011 was a human-caused event as water was diverted from the Assiniboine River to Lake Manitoba to save the city of Winnipeg. It received significant attention as First Nations communities were severely affected. The Portage Diversion redirects water naturally headed to Lake Winnipeg in the Assiniboine River to Lake Manitoba. In some years, this has provided important flood protection to the city of Winnipeg, especially in the 1997 flood when water from the Assiniboine River was diverted into Lake Manitoba. In 2011, the Assiniboine River reached near-record levels and floodwater was diverted as the flows were greater than the

design capacities of the Portage Diversion (Thompson, 2015). In addition, when the water level was high in Lake Manitoba, the Fairford water control structure was opened up, which resulted in the rise of the water level by up to 2.4 feet above the normal water level in Lake St. Martin. A deliberate policy decision of Manitoba infrastructure and transportation to use the Portage Diversion and Fairford structures in 2011 thus resulted in floods in Lake Manitoba, Lake St. Martin and the Dauphin River. The Lake Manitoba/Lake St. Martin Regulation Review committee and the flood review taskforces were formed and several policies were changed as a result of learning from these new types of flooding. For these new types of flooding, previous standards were found inadequate; this resulted in adopting a 1:200 years flood protection protocol as the design standard instead of a 1:100 years protocol.

Events outside Manitoba, such as the 9/11 incident in New York (USA), the Mississauga (Ontario, Canada) train derailment in 1979, and the Bhopal tragedy of India in 1984 resulted in policy revisions or amendments as well as the formulation of new policies. The 9/11 incident in New York received world-wide attention and wide *discussion* in the Manitoba Legislature. *Group mobilization* was observed as a public presentation at the Legislative Assembly was made by Jeff Kisiloski of the Canadian Association of Agri-Retailers (CARR) and by John Lindsay of the Canadian Emergency Preparedness Association (CEPA). Moreover, the UN resolution and federal government's action seemed to make them vital actors here and influenced changes in several Acts of Manitoba. In this case, no new policies were formulated but several Acts were amended significantly, such as, The Manitoba Security Management (Various Acts Amended) Act, 2001. The Mississauga train derailment resulted in a new policy formulation (i.e. The Transportation of Dangerous Goods Act of Canada, 1980) at the federal level. Provincial governments were subsequently asked to formulate similar policies for themselves. In response,

the Province of Manitoba formulated its own policy (i.e. The Manitoba Transportation of Dangerous Goods Act, 1983) to deal with transporting, packaging and labelling of dangerous goods. The Bhopal tragedy of India in 1984 received great attention and *group mobilization* was observed (Major Industrial Accidents Council of Canada or MIACC). There was also *discussion* at ministerial conferences and Environment Canada established a joint industry - government steering committee in 1985. The policy of the Manitoba Dangerous Goods Handling and Transportation Act, 1987, was revised as a result of learning, and terms such as “contaminant” and “hazardous waste disposal facility” were inserted.

From the above discussion, I infer that overall policy learning and change in the Province of Manitoba resulted primarily from the reaction to events, both inside and outside Manitoba. They also followed a top-down strategy. Major events often generate policy learning and bring about significant change whereas small events also generate learning but often result in policy adjustment. Radical policy change in the form of the revision of existing policies or layering within the broad spectrum of policy is evident for an unfamiliar event (i.e. a slow onset event of this scale that has never happened before, such as the droughts in the 1930s) and events of mega scale (e.g., the hydrological extreme floods in 1950 and 1997). Incremental policy changes were generated by moderate events (e.g., the floods in 1966 and 2011) or events that took place in the past.

Overall, my findings are consistent with Birkland’s (2009) model though there are some nominal deviations. I found that some sequential stages of Birkland’s model are not necessary and could get skipped. For example, *group mobilization* in the case of the humanitarian context (droughts of the 1930s) and the *adoption of new policies* as learning can happen and instrumental change may occur even if no policy is being adopted (e.g. learning after the 1950 flood).

Birkland argued that political learning may take place if new policies are not adopted; however, if new policies are adopted then instrumental learning may take place. However, I found that political learning and instrumental change both may occur along with new policy adoption (Fig. 4.2). I therefore conclude that overall policy change may not follow Birkland’s (2009) sequential model and may even take different routes. A modified version of Birkland’s (2009) event-related learning model can thus be formulated in the following way (Figure 4.2).

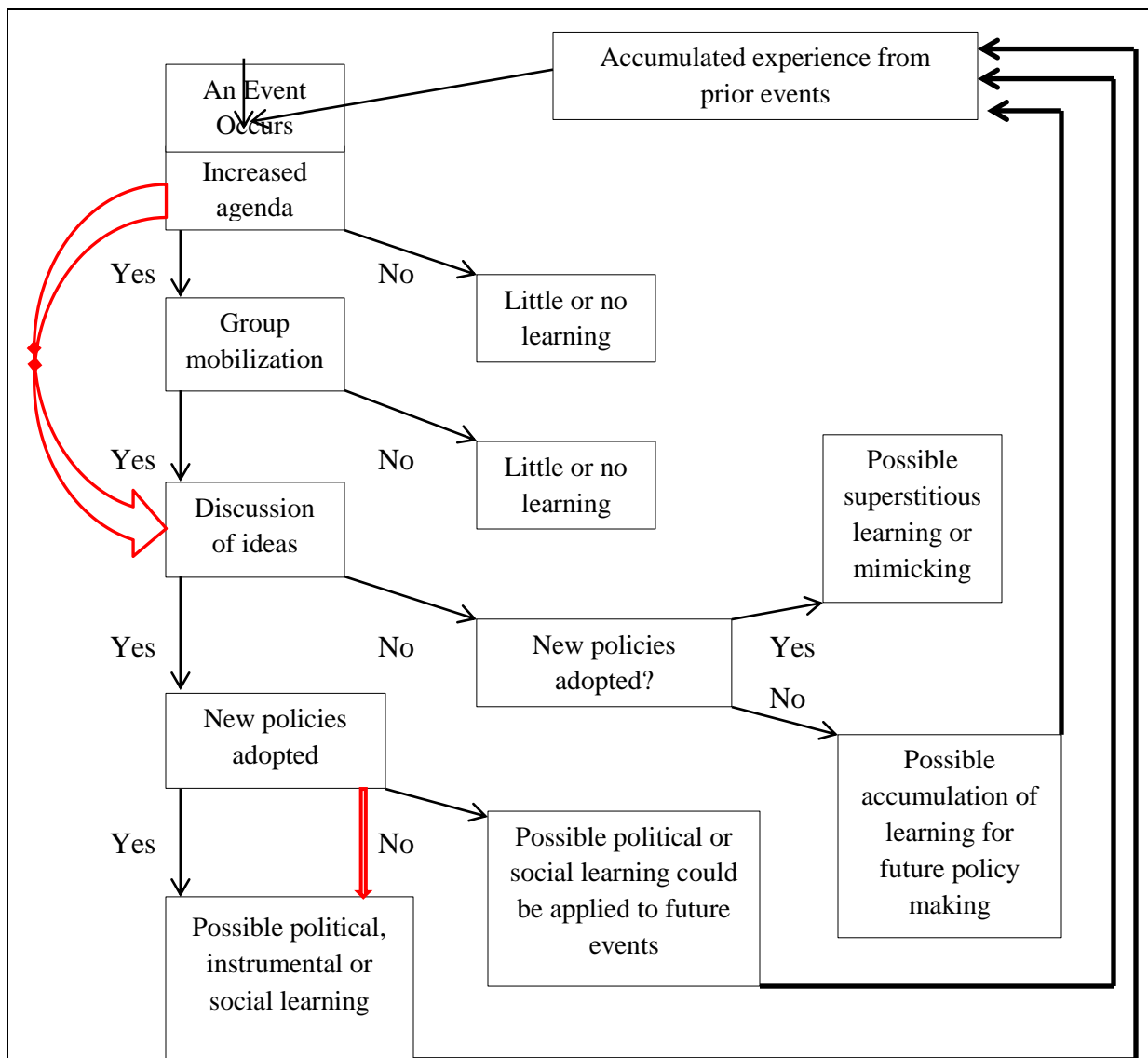


Figure 4.2. Proposed Event related policy learning model of Birkland (2009).

4.4.2 Nature of learning from events and from policy implementation

In the previous section, I discussed the types (i.e. revision or layering) of policy changes resulting from events. In this section, I focus on the nature of learning resulting from events. To this end, I draw insights from Peter May's (1992) discussion on instrumental and social learning. *Instrumental learning* is about the viability of policy interventions or implementation designs. *Policy instruments* are the prescriptive elements such as, rules specifying appropriate actions, incentives, capacity building and administrative arrangement (Elmore, 1987; Salamon, 1989; Schneider & Ingram, 1990, in May, 1992). *Social learning* refers to the social construction of the policy or problem where the focus is on policy goals and it leads to the redefinition of policy goals. *Social policy learning* occurs when the beliefs of policy actors are altered or changed in light of experience (May, 1992). I argue that learning from events or reactive learning is more likely to generate *single-loop* and *double-loop* (i.e. instrumental learning) rather than *triple-loop* or social learning (Table 4.2).

May (1992) described prima-facie evidence of each type of learning. For example, instrumental learning indicators entail the change in policy instruments like inducement, assistance, penalties, funding and organizational structures. In the case of instrumental learning, it was found that there were changes in the policy instrument such as, providing disaster assistance, organizational restructuring, prioritization of mitigation measures, cost-sharing mechanism, mutual aid agreement and more emphasis on a local-level emergency. Within instrumental learning some learning was *single-loop* whereas others were *double-loop*. Examples of *single-loop* learning are value protection by using sprinkler kits, heads, and pumps to protect properties and lives after the 1980s wildfire. Examples of *double-loop* learning are the

organizational restructuring of the Manitoba Emergency Management Organization (MEMO) and drastic structural mitigation measures after the 1950 flood.

Social learning evidence refers to the changes in policy goals or scope, such as policy direction, target groups, and rights bestowed by policy. The evidence for social learning includes assigning disaster responsibility at the provincial level, recognizing the disaster financial need for both public and private sectors and the gradual shift of policy objectives to attain the policy goal. For example, the DEM policy first started with a relief-based idea, which shifted from civil defence to peacetime emergencies after the catastrophic flood in 1950 and eventually to a comprehensive and all-hazards planning strategy after the 9/11 incident.

Table 4.2. Nature of learning in DEM policies of Manitoba (1929-2016)

Policy domain	Social learning	Instrumental learning		
		Double loop	Single loop	
Relief and Rehabilitation	Not evident	Relief and rehabilitation program under PFRA after 1930s	Removing five-year limitation to the PFRA	
Civil Defence Planning	Not evident	Developing provincial and municipal civil defence plans for war emergency during the civil defence era (Henstra, 2011) and providing federal financial assistance to the provinces under the Civil Defence Financial Assistance Program (FAP), 1952	Not evident	
Peacetime Emergency Policies	Recognizing peacetime emergencies after the 1950 flood, which brought fundamental change in the Manitoba Civil Defense Act, 1952, by differentiating between war and peacetime emergencies	Hazard (e.g., flood) mitigation through structural intervention	Expansion of floodway and building community ring dykes after the 1997 flood	
			Designated flood area after 1979, 1997 and 2009 floods	
			Adopting 1:200 years flood protection as design standard instead of 1:100 years	
			Setting new standard for dykes and buildings as the 1997 flood plus 0.06m and 1997 plus 1.0m respectively	
Collaborative Policies	Sharing risks and responsibilities: i) burden sharing in case of disasters, 1970	Change in mechanism for providing assistance such as, federal relief in 1930s (Marchildon et.al., 2008), DFAA after 1970, private financial contributions after the 1950 flood (Bumsted, 1987), financial assistance to flood victims after the 1997 flood	Raising the provincial Disaster Financial Assistance (DFA) limit to \$100,000 from \$30,000 after the 1997 flood	
			Adjusted formula to provincial and territorial governments increases as the amount of expenditures increases, rising from 50% of costs over the initial \$3.07 per capita up to 90% for costs exceeding \$15.37 per capita	
			The deductibles municipalities pay is \$5 per capita maximum, While using municipal equipment, compensation will be 65% instead of the previously set 16%	
	ii) consensus among all governments to accept natural disasters as a provincial responsibility (Bumsted, 1987)	Organizational restructuring of the Manitoba Emergency Management Organization as the Emergency Measures Organization (EMO), and EMO as the main provincial organization for disaster preparedness, response, coordination and assistance (The Emergency Measures Act, 1987)	Provincial disaster financial assistance for public and private sectors (Disaster Financial Assistance Policies and Guidelines (public sector and private sector) Regulation, 1999)	Preparing their own emergency plan by all provincial departments and municipalities
				Maximum payable assistance of \$240,000
				Financial assistance to cottage owners of up to \$90,000 or \$100,000 (with permanent flood protection) under the <i>Lake Manitoba Financial Assistance Program</i> and up to \$34,400 to permanently flood proof non-primary residences under the <i>Enhanced Action Plan for Lake Manitoba</i>
				Mutual aid agreement for fire response (Hirsch & Fuglem, 2006; Manitoba Sustainable Development, 2017),
				Inter-agency cooperation from 1990 (Epp et.al., 1998)
				Resource sharing provisions inserted in the Fire Hose Regulation, 1987; The Manitoba Emergency Plan (MEP), 1983
				Canada-United States Reciprocal Forest Fire Fighting Arrangement
Civil protection	Not evident	Not evident	Amendments of existing 9 Manitoba Acts after the 9/11 incident, 2001	

4.4.3 Barriers for proactive and forward-looking learning and policy change

In Section 4.4.2, I highlighted that policy learning can be limited to mostly instrumental learning if learning and policy changes are driven by events. Section 4.4.1 highlighted that policy change was mostly top-down and reactive-oriented, i.e. event-driven. However, the DEM policy of Manitoba has also been changed due to the events that occurred outside Manitoba or even Canada. This implies that the DEM policy of Manitoba has changed based on the assumption that Manitoba can experience similar events as the Mississauga train derailment in 1979, the Bhopal tragedy in 1984, or the 9/11 incident in 2001. Thus, the DEM policy of Manitoba was influenced by and changed even though Canada in general and the province in particular did not experience the events directly. This implies a proactive nature of policy change and learning.

However, there are still some barriers that limit the capacity of the Province of Manitoba to formulate proactive and forward-looking policies required to deal with unforeseen events induced by climate change. Different scholars have documented different factors (e.g., lack of capacity of policy makers, and experiences) that limit learning and constrain forward-looking policies. In the following sections, I discuss how i) the disaster management structure and mechanism, ii) the cognitive dimension of policy makers, and iii) resource constraints shape proactive and forward-looking learning and policy change.

4.4.3.1 Structure and mechanism of disaster management: Based on the results of the KII interviews and other survey results, I identified two problems with the existing disaster management practices of the Province of Manitoba that impede proactive and forward-looking learning: first, the lack of coordination among

different departments of government; second, the lack of coordination between the provincial and local authorities in terms of policy change and learning.

First, the lack of coordination among different departments of government impedes the sharing of learning and ideas. Different government departments are independent in terms of adopting policy or programs and their implementation. For example, the fire commissioner's office has its own program for firefighting while the Sustainable Development department has a wildfires program. Such sectoral and structural distribution among different departments means they are under different line budgets, under which programs are adopted. Therefore, learning in one department remains confined within the same organization and does not get easily transferred to other departments. In this context, one respondent opined that

“Some provinces have public safety departments [overarching department] which include fire, EMO, prisons etc., so they can align their energy, they can focus together, they can live or reach each other's program and policy and they can cooperate more easily in response”.

Second, the lack of interactive communication between provincial and municipality level institutions is one of the major barriers that impedes a) documenting learning at multiple levels; b) channeling learning from lower scales to upper scales for policy feeding. These consequently undermine proactive policy change and learning. The fundamental problem lies in the overall policy learning and change process, i.e. top-down approach. Due to such a top-down approach, policy change learning is largely determined by major events and policy failure. It is evident from Table 4.3 that learning took place at the municipality level. However, such learning was not scaled up due to the lack of appropriate social and institutional mechanisms (Löf, 2010; Webler et al., 1995). For example, municipal emergency coordinators (EC) elicited that there is no formal way of delivering the report and local community standings to higher authorities (i.e.

EMO). Notably, higher authorities rarely request lessons learned reports from the municipalities. All the respondents at the municipality level informed that there were rare instances where the province embodied the learning that occurred at the local level, except the flood forecasting method.

Municipalities do not submit any document to EMO unless they are asked to do so. Municipalities work with the Province but have very limited capability to affect major change. Broadly, although the Province is open to ideas, concepts, suggestions, or recommendations, there is no formal way of delivering the learning to the policy actors either from the community or from the NGOs to senior government institutions. Some NGOs, however, send their reports to EMO, while others share their story at meetings and the strong stakeholders directly contact the minister.

However, there is little evidence of coordination between the Province and municipalities; these mostly involved operational level change. For example, EMO provided the river discharge forecast in cubic feet per second (CFS). Municipalities requested an explanation in elevation so that they could apply it to prepare the citizens and wanted to know how high they needed to build the dikes. EMO kept making reference to the 2011 and 2014 floods and making reference to the flood forecast of 18,000 CFS. Following continuous pressure from the municipalities, EMO finally provided the CFS translated into feet/meters above the sea level. This was an operational level phenomenon. However, the bottom-up policy making based on local-level learning is still generally absent in Manitoba. In this regard, one respondent opined “EMO looks to get feedback from us, we share our stories but what happens after that I do not know.”

Table 4.3. Evidence of learning at the municipality level following Birkland’s (2009, p. 153) parameters

<i>Evidence of learning</i>	<i>Summary of the issue</i>	<i>Type of learning</i>
Any presentation made to the council meeting by any groups or delegates regarding DEM issues	Occasionally there is discussion about an issue like preventive things from past that kind of thing. One company made a presentation and was in 2014 after flood (R26)	Reactive
Change in the topic areas of public hearings and council meetings	There was a growing concern of having dust pan due to the fire activities. The Council meeting on April, 2012 was about “Is there a possibility of passing a by-law without reference to the permit? And just make farmers following the Wildfires Act?” (R21)	Proactive
	Regarding rural flooding, controlling lake levels was emphasized by the policy groups. Community groups thought differently and initiated discussion for agricultural run-off which was the change in topic area (R24)	
Any discussion in the council meeting on “lessons learned” after a disaster	EC reports to the council. If the committee thinks that it should be dug into depth then it can go further. Last time, they discussed about the alert system of the city (R25)	Reactive
Change in procedures, interpretation or implementation of regulations regarding DEM	In 2007, the action guidelines of one municipality added ICS and staging areas into the summer storms section which was based on one of exercises that revealed the absence of staging area (R23)	Proactive
	One RM have changed the previous plan because something was incorrect, like when you have a pandemic of health related issue, the previous plan suggested to flee from the RM and go to different places. The EC talked to people, hospitals and changed the emergency plan as they suggested like not to flee but stay home unless instructed by the RM (R26).	Proactive
Issuance of new and proposed regulations, by-laws, imposing tax or levies	There was a change in policy is a by-law as a learning from an exercise. The council can declare state of local emergency which allows EC to get into the house. But for each time EC need approval from the council. Then the council gave the power to Emergency coordinator to enter anybody’s house during emergency. During the emergency it is not possible to get the approval every 15 minutes to enter into a new house. So the council decided to give the authority to emergency coordinator to enter any house which was added to the Municipal Emergency Plan. “The Emergency Coordinator and deputy emergency coordinator have been delegated the authority under the by-law to exercise any of the emergency power wrote in section 12 of the Emergency measures Act, providing the council to declare the state of emergency”. This was done in 2000 and came into effect within one year (R22).	Proactive
	Sandbags cost money. So one municipality created and enforced a sandbag policy. Municipality will supply the sand for free, and may charge for the bag later. If there is DFA claim and municipality will claim that on DFA. Municipality will not bill for the bags, but if there is no DFA claim, citizens will be sent an invoice for the bags (R28)	Proactive
	The term “disaster” is not defined in the clause-186 of the Winnipeg Municipality Act. It is thus proposed (R24)	Proactive

4.4.3.2 Cognitive dimension of policy makers and key actors

The way any one citizen or individual or collective group of persons perceives the risk is often different from how bureaucrats, politicians or senior decision-makers perceive the risk (Mileti et al., 1975). Whether risks and disasters will get priority depends on how policy makers perceive them. Policy change and learning related to risks and disasters are very unlikely unless the policy makers perceive the risk and prioritize them (Slovic et al., 1979). One respondent in this respect opined that “senior officials might not perceive it to be an issue.” It was found that civil service personnel ignore public opinion and prefer to work following bureaucratic norms. The rigid mindset of officials and lack of openness to accept change often hinders the incorporation of new learning into policy. This is a major barrier for gradual improvement through the incorporation of new ideas and learning. One respondent explained

“... people sometimes do not want a change because they don’t like it or unfamiliar with it, not used to it”.

4.4.3.3 Resource constraints

Fiscal challenge is a barrier to incorporate new learning into policy as it involves cost expenditure. One respondent in this regard noted that “any new policy change or initiative is likely going to have some level of cost associated with it.” Since the government relies on taxpayers’ money and is answerable to them, it tries to balance the budget and spend the money on prioritized issues. This phenomenon impacts on receiving new funding that is required to bring policy change and its implementation. In this regard, one responded noted,

“If it is not a political or public priority matter, it is very difficult to get new funding in the current fiscal environment. So, fiscal challenge is definitely a potential barrier”.

4.5 Conclusion

Events-related policy learning has a profound influence upon Manitoba's DEM policy in terms of policy formulation and changes. Radical policy change is more likely to take place in the case of catastrophic events, whether there is a direct or indirect experience of them, while events of moderate magnitude are more likely to bring incremental policy change. This finding of my study supports Birkland's (2009) model with some deviations. Birkland (2009) argued in his model that the emergence of various groups is a necessary condition for policy change. I found that change in policies may take place even if group mobilization is absent. For example, group mobilization for DEM policy change in Manitoba was not required when the event occurred inside their jurisdiction as these events had significant impacts on them.

Regarding the nature of policy learning, policy change can be marked as a result of instrumental, political and social learning. Instrumental learning influences the policy by bringing minor changes to existing policies (*single-loop* learning) or by bringing the change in assumptions of action (*double-loop*). Instrumental learning is likely to stem both from smaller and mega events that happened within or outside jurisdictions, which is consistent with May (1992). *Social learning* or *triple-loop* learning was observed when the existing policy goal and instruments failed to deal with the emerging condition, even though it took place over a long period of time (20 years approximately). For example, the concept of peacetime emergencies was absent before the 1950 flood, and the escalating cost of natural disasters slowly turned the direction of existing DEM policies of Manitoba towards an all-hazards approach. Also, these factors instigated sharing the burden doctrine. When the thought processes shift significantly, they result in changing the policy goals and instruments as well. Therefore, triple-loop learning is always accompanied by single and double-loop learning.

Change in political strategies and tactics to address a problem (political learning) can occur when the existing political government needs to change the course of action due to the nature of the problem. This was evident after the 1950 flood of Manitoba. Politicians used new venues (becoming a dominant premier from being previously the head of a minority government) to advance the idea of structural intervention that was generated by learning from a Royal Commission report. The event of the 1950 flood rendered political, social and instrumental learning though no policies emerged from them; this observation is in contrast to the finding of Birkland (2009) as he noted that political learning happens only when no policy is adopted.

My study found evidence of learning at both municipal and provincial levels. However, local-level (municipal) learning is not being transmitted effectively to the provincial level due to several barriers, such as the disaster management structure of the government, the cognitive dimensions of policy actors, and resource constraints. These barriers in turn are major constraints to adopting a proactive and forward-looking DEM policy at the provincial level.

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Chapter 5: Discussion and conclusions

Canadian confederation was formed in 1867, and the Manitoba Act, 1870, created Manitoba as a province of Canada. However, the full legal autonomy of Canada was enacted in the 1930s, specifically under the Statute of Westminster, 1931. From that period, Manitoba as a province of Canada promulgated several Acts and policies for disaster and emergency management (DEM) which gradually took today's shape following uneven turns and momentum. In this chapter, I first attempt to synthesize the major findings concerning the three objectives of my study and the linkages among these findings (Table 5.1), and second, I reflect upon some other key findings of this thesis research.

5.1 Key policy shifts in Manitoba DEM policies

5.1.1 Major findings concerning three objectives and the linkages among the findings

The DEM policy of Manitoba began with a relief-based recovery strategy. Consecutive droughts in the 1930s were the major drivers for this policy formulation; however, droughts were also accompanied by economic recessions. These consequently created humanitarian crises that instigated the adoption of a relief-based recovery strategy. This regime began around 1929 and continued until 1938. Though this policy was reactive and mostly formed on an *ad hoc* basis, it was the first attempt in public policy to abandon a fatalistic attitude and to step forward by accepting disaster as a part of life (Clary, 1985). However, *single-loop* (e.g., removing the five-year limitation to the PFRA) and *double-loop* (e.g., the relief and rehabilitation program under PFRA after the 1930s) learning resulted from these events.

Table 5.1. Summary of major findings of the study

Objective one		Objective two		Objective one	Objective three
<i>Policy regimes</i>	<i>Time period</i>	<i>Drivers of policy change</i>		<i>Pattern of changes within the policy regime</i>	<i>Types of learning</i>
		Major drivers	Associated drivers		
Relief-based recovery era	1929-1938	Consecutive droughts in the 1930s	Economic recession	<i>Event-driven policy</i>	Instrumental (single and double-loop)
Civil Defence Era and political leadership	1939-1966	World War II	Korean War, Nuclear threat of being attacked, Cold War apprehensions	<i>Event-driven policy (Layering of policy)</i>	Instrumental (double-loop)
		The 1950 flood	Royal Commission report, 1958; Political leadership of Duff Roblin	<i>Event-driven policy with incremental change, beginning of Punctuated equilibrium, Negative Policy learning from other jurisdictions (USA) (revision and layering)</i>	Social and Instrumental (single and double-loop)
Peacetime emergency and collaborative approach	1967-1990	Series of natural events in the 1950s and 1960s in Manitoba and other Canadian provinces	Public indifference to war emergencies, Lobbying by the provincial leaders, Escalating cost of disasters, Resource constraints in the 1980s	<i>Event-driven policy, (revision and layering of policy)</i>	Social and instrumental learning (single and double-loop)
		The federal government (Emergency Preparedness Act, 1985)	Not evident	Federal coercion by legal binding (layering of policy)	instrumental learning (single and double-loop)
		Bhopal tragedy	Steering committee's report	Event-driven policy learning from other jurisdiction (layering of policy)	Instrumental (single-loop)

Table 5.1. Summary of major findings of the study (*cont'd.*)

Objective one		Objective two		Objective one	Objective three
Policy regimes	Time period	Drivers of policy change		Pattern of changes within a policy regime	Types of learning
		Major drivers	Associated drivers		
Integrated all-hazards approach	1991-2000	Forest fires in 1989, 1991	Success of FireSmart program in USA	<i>Event-driven policy and Policy learning</i> from other jurisdictions (USA) (layering of policy)	Instrumental (single-loop)
		The 1997 flood	Absence of policy or guidelines to pay financial assistance to flood victims, Artificial flooding, Report of the Red River Floodway Operations Review Committee, 1999, IJC Taskforce report	<i>Policy learning from own experience</i> (layering of policy)	Instrumental (single and double-loop)
		Federal government (Policy for Emergencies in 1995)	Success of all-hazards approach in USA	Federal coercion, policy diffusion from other jurisdiction (layering of policy)	Instrumental (single-loop)
Risk-based comprehensive emergency and civil protection	2001 onwards	9/11	Federal government, Stakeholders (CAAR, CEPA)	Learning from other jurisdictions, event-driven policy (layering of policy)	Instrumental (single-loop)
		Interest groups (AMM)	Not evident	Advocacy coalition	Instrumental (single-loop)
		2011 flood	Lake Manitoba/Lake St. Martin Regulation Review Committee and Manitoba 2011 flood review Task Force report, Interest group (MACO)	Event-driven policy, advocacy coalition (revision of policy)	Instrumental (single-loop)
		Federal government (Emergency Management Framework for Canada, 2007)	Not evident	<i>Policy diffusion by coercion</i>	Instrumental (single-loop)

The shift from the Relief-based Recovery to the Civil Defence Era and Political Leadership was triggered by two very different types of major events, namely World War II and the catastrophic flood in 1950, together covering the period from 1939 to 1966. Public safety was a major concern during World War II, and hence, Canada established civil defence organizations and adopted a civil defence plan as part of Canadian participation in NATO (Newton, 1997). *Coercive federalism*¹ led all Canadian provinces to accept the federal idea that emergency is a local function due to the nuclear threat and emergence of local extreme events. The federal policies dominated the DEM arena up to the mid-1960s, which focused on wartime measures, including preparedness, response and recovery. World War II resulted in a *layering* of the DEM policies of Manitoba within the existing policy regime and generated some *double-loop* learning outcomes.

The flood in 1950 in Manitoba shifted the attention to natural disasters. This event was a major policy driver and generated *social policy learning*, i.e. a fundamental difference between war and peacetime emergencies. *Social learning* was also accompanied by *double-loop* learning outcomes (developing provincial and municipal civil defence plans for war emergency, providing federal financial assistance to the provinces under the Civil Defence financial assistance program) and *single-loop* (building a floodway) learning outcomes during this era. Similarly, Birkland (2004) found that the aviation disaster in the USA led to both social and instrumental learning. However, in my study of Manitoba, social and instrumental learning outcomes were generated by natural disasters whereas in Birkland's (2004) case study (i.e. aviation disaster) these were generated by human-made disasters.

¹ It is viewed as a process whereby the federal government acted profoundly to compel the states and counties to achieve the national goals of public safety (Birkland & Waterman, 2008).

Escalating costs from successive natural disasters inside Manitoba and other provinces, along with an event outside Manitoba (e.g., the Bhopal tragedy), brought a new era in policy regime that I term as the Peacetime Emergency and Collaborative Approach Era. Other socio-political mechanisms (e.g., public indifference to war emergencies, lobbying by the provincial leaders, and resource constraints in the 1980s) also operated as drivers that eventually resulted in the emergence of this era. For example, provincial leaders as *advocacy coalitions* lobbied the federal government to bring change in the program for their advantage (Stevenson, 2007). This era brought a cost-sharing mechanism through the Disaster Financial Assistance Arrangement (DFAA) in 1970.

In this era, new social learning (e.g. sharing risks and responsibilities), *double-loop* learning (e.g. change in mechanism for providing assistance through DFAA) and *single-loop* learning (e.g. preparing their own emergency plan by all provincial departments and municipalities) were evident. In the Civil Defence and Political Leadership Era, social learning was generated by major internal natural disasters (i.e. the flood in 1950) whereas social learning in this era was generated by the compounding effects of multiple events and associated socio-political dynamics. For example, Manitoba's resource constraints led to resource sharing with other jurisdictions (municipalities and provinces) through mutual agreement from the 1980s. This evidence supports the argument that the municipalities' lack of resources to provide effective emergency services has caused them to be dependent on each other (Palm & Ramsell, 2007). A similar mutual aid arrangement was also evident in the USA where the states developed inter-jurisdictional and regional partnerships (Kapucu & Garayev, 2009).

The success of an *all-hazards approach* in the USA, along with the existing policy failure, shifted the Manitoba DEM policies towards an *all-hazards approach* in the 1990s. The nature of disasters became more complex worldwide after the 1950s (Smet, et. al, 2012). The emergence of newer and more frequent events such as fires, floods, and technological accidents inside or outside Manitoba in the 1970s and 1980s revealed the hazard-specific policy failures. Moreover, the federal policies, the 1997 flood and the International Joint Commission Report also influenced the embracing of such a shift. The *ad hoc* approach of providing provincial financial assistance to the victims became permanently adopted into the policy after the 1997 flood. Learning from one's own experience and from others resulted in both *double-loop* (e.g. provincial disaster financial assistance for public and private sectors) and *single-loop* learning (e.g. maximum payable assistance of \$240,000) in this era.

Lastly, the DEM policy of Manitoba embraced comprehensive emergency management after the 9/11 terrorist attack in USA in 2001. The underneath policy drivers in this era included events inside and outside Manitoba, the federal government and interest groups. However, the learning that appeared in this era was mostly characterized by instrumental policies and *single-loop* learning (e.g. amendments of the existing 9 Manitoba Acts after the 9/11 incident, 2001).

The evolution of DEM policies in Manitoba thus generally followed a reactive approach to events both inside and outside Manitoba. The magnitude, frequency and nature of events caused a shift in the era and different types of learning. The existing state of DEM policy of Manitoba includes all four components of the disaster management cycle: mitigation, preparedness, response, and recovery and rehabilitation. However, it took almost 90 years and involved five different eras. For example, the recovery and rehabilitation phase was observed in the 1930s, preparedness appeared during the civil defence era, the mitigation and response phase

emerged and was documented after the 1950 flood, and a comprehensive framework has been documented since 2001.

5.1.2 Other key observations and reflections

The DEM policy changes in Manitoba occurred due to the direct or indirect influence of several policy drivers such as, major events, the federal government, interest groups, political leadership and policy learning. A few key observations follow.

- 1) The debate over events as drivers of policy change: The history of natural disaster policy, as it evolved, mostly has been formulated in reaction to natural disasters or the public outcry from a failure of policy makers to address local, regional or national distress (Rivera & Miller, 2006). Event-driven policy change discourse revolves around a debate whether an event is sufficient to facilitate change or not (Scolobig et. al., 2014; Nice & Grosse, 2001; Birkland, 2009). Policy change in Manitoba has occurred mostly due to the mega events that occurred both inside (droughts of the 1930s, fires in 1987, floods of 1950, 1997, and 2011) and outside its jurisdiction such as, national (technological accident in Mississauga) or international events (terrorist attack of the USA and the Bhopal tragedy of India). In Manitoba, most of these events were associated with other supporting policy drivers such as, political will after major or extreme events to bring policy change. However, war events and disasters that caused humanitarian crises alone were able to bring policy change. Scolobig et al. (2014) noted that the commissions (formed after events) could play a role as a major policy driver such as in Italy, where they brought about a paradigm shift in the Italian landslide risk policy. In Manitoba, the Carswell-Shaw Commission, Royal Commission, International Joint Commission, Red River Basin Commission Task Force and the Flood Review Taskforce placed all the policy options with the government for flood protection. The

recommendations were not mandatory for the government to adopt; however, these reports indirectly acted as associated policy drivers after an event, especially major flooding events.

2) Central government as a key policy driver: The federal government always plays a critical role in setting up the direction of provincial policies, and the degree of influence depends on the power contest between the provinces and the federal government (Lecours & Béland, 2010; Rachlis, 2000). For example, Birkland & Waterman (2008) opined that the federal government of the USA has always pressured the state governments to comply with federal standards in pursuit of national goals. In Canada, the federal government through its policies often attempts to offload its primary responsibilities onto the provinces and municipalities (Newton, 1997). So that they comply with federal goals, the federal government uses coercive instruments (legal binding) and financial instruments (disaster assistance, mitigation cost) against the provinces. In Manitoba, the federal government appears as the second most important DEM policy driver.

3) Advocacy coalitions as major DEM policy drivers: The profound role of advocacy coalitions is evident in the forest policy of British Columbia, Canada (Bernstein & Cashore, 2000; Hoberg & Morawski, 1997). Like other sectoral policy, the role of advocacy coalitions was evident in the DEM policy context, which is very similar to Scolobig et al.'s (2014) observation that hydrologists and geotechnical expert groups influenced the Italian landslide risk policy. Though events and the federal government influenced the DEM policies of Manitoba throughout the entire period, the role of interest groups became quite visible after the 1997 flood. These were mostly concerned with the financial responsibilities and assistance. Interest groups came to the forefront mostly after the events to deal with specific disaster-related problems, in particular in localities with specific concerns (Stallings &

Quarantelli, 1985). For example, coalitions were formed by the victims of the human-induced flood in 2011, and they raised their concern through the Association of Lake Manitoba Stakeholder (ALMS) and Cottage owners of Manitoba.

I posit that *group mobilization* is very unlikely during the early stage of policy evolution and become more likely after some initial policy works are completed and where some localized and very specific groups of people are affected adversely with previous policy actions. For example, during the 1930s and in the 1950 flood, the activities of interest groups were absent but they appeared after the 1997 flood, where specific groups of people were adversely affected by policy actions such as, the operation of the floodway or when risk was transferred to other areas of Manitoba from the city of Winnipeg and affected other localized groups (Lake Manitoba and other places). In addition, *group mobilization* also appeared from the execution agencies such as, municipalities who have been the first responders to disasters in Manitoba.

4) Political figures as major policy actors: Political leaders along with the magnitude of the event played a significant role in the evolution of DEM policies. For example, the influence of political leadership, such as that of the Premier of Manitoba (Duff Roblin) and the Prime Minister of Canada (John Diefenbaker), played a vital role in bringing structural intervention for flood protection. A similar role of politicians was also evident in the USA, as Kapucu et al, (2011) noted; several presidents played significant a role in terms of disaster policy making such as, Bill Clinton for FEMA restructuring and bringing an all-hazards approach; and George W. Bush for creating Homeland Security and applying an Incident Command System.

5) Policy development is the interplay between events, collaborative management, and cross-scale learning: Policy development is the interplay between events, collaborative management, and cross-learning (Nohrstedt & Nyberg, 2015). Reactive learning from outside Manitoba entered in the DEM policies of Manitoba as a mechanism of *policy diffusion*. Policy diffusion emanates from the tendency among policy makers to take shortcuts when faced with a complex problem, such as crisis mitigation (Nohrstedt & Nyberg, 2015). Two types of examples are evident in Manitoba: a) learning from or imitating other jurisdictions (inside Canada), and ii) learning from or imitating other countries. An example of the former was the Fraser River formula that was followed hastily to provide financial assistance to the 1950 Red River flood victims. Secondly, discarding flood insurance as a policy option and adopting the FireSmart program were specific examples of Manitoba learning from the USA. Such policy diffusion was caused due to the effect of “geographically proximate systems,” where neighboring states/provinces/countries share similar social, economic and environmental values (Nohrstedt & Nyberg, 2015; Howlett, & Joshi-Koop, 2011; Wilensky, 1974; Dye, 1972) and the demonstration effect of policy change, where one state/locality may be influenced by the previous actions and experiences of other states/localities, and this change can diffuse across state/country borders (Walker, 1969).

It is commonly alleged that Canada is primarily a policy follower of the USA rather than a leader (Hoberg, 1991). Hoberg (1996) in this context noted that where the United States is concerned, Canada is more of a “policy taker” than a policy maker. Litfin (2000) supported this claim and identified the reason as its close ties with the leading economy player (United States). Regarding DEM policy in the USA, the Disaster Relief Act was formulated in 1950, which provided federal-state disaster cost sharing and delineated state and local governments as first

responders; the USA followed more rigorous civil defence after World War II (Clary, 1985; Alexander, 2002), the National Flood Insurance Act, 1968 (FEMA, 2017), an all-hazards approach in 1992 (Bullock, et al., 2017), a business continuity program initiation in the 1970s, internationalization after 2001 (Herbane, 2010), the National Incident Management System (Rowley, 2005) and anti-terrorism after 2001 (Birkland & Waterman, 2008). Canada and the Province of Manitoba as well adopted disaster cost sharing from 1970 onward, determined local authorities as first responders in the 1960s, and embraced an all-hazards approach in the late 1990s, business continuity in 2013, an Incident command system in 2002, and anti-terrorism after 2001. These cases prove the “policy taker” tendency of Canada and the Province of Manitoba. For example, the recommendations from Royal Commission Report, 1958, opined not to adopt flood insurance in Canada because of negative learning from the USA. In addition, the Incident Management System of the USA entered Canada in a modified version (Incident Command System) after careful observation. Canada and its provinces learn from the US policies and adopt similar policies after examining and considering the feasibility of such policies in Canada. Therefore, it can be opined that Canada mostly follows the US DEM policies, usually at a slow pace and after close examination of the demand for such policy change and its applicability. Moreover, there is little evidence of transferring learning in the Manitoba DEM policies from the local level to the provincial level institutions. In this regard, as Kolb (1984) suggested, a systematic learning mechanism that regards learning as a continuous process and grounded in experience should be taken into consideration. The finding also supports the hypothesis of Shipan and Volden (2008) that the likelihood of adopting a policy increases when the same policy is adopted broadly by neighbors. However, this happens after studying the policy

demand, feasibility and applicability of such policy by the receiving country/province/municipality.

5.2 Major contributions of this study

5.2.1 Understanding the history and dynamics of the DEM policy of Manitoba

This research reveals the evolutionary history of Disaster and Emergency Management (DEM) policy of Manitoba. Previous research and intensive studies primarily focused on major events and particular policies. In other Canadian provinces, research focused on disaster management issues broadly, and the opportunity for conducting an in-depth study of DEM policies in Manitoba by and large was ignored. This research is thus filling in this research gap, leading to the way of a holistic understanding of DEM policy of Canada. Previous research on Manitoba DEM did not consider the evolution of policy and the dynamics of policy change. A major contribution of this research is therefore to the advancement of an explanation of the evolution of Manitoba DEM policies and the determination of the underpinnings of the policy change in this area. This study considered the Howlett and Cashore (2009) model to understand the pattern of policy change over time and found the useful applicability of this model.

5.2.2 Rethinking of policy drivers and their mechanism

The question regarding the “how and why” of DEM policy change over time was not known previously except for in relation to some major events or for some specific policies/Acts. This study identified the DEM policy drivers which played a role either directly or indirectly and explained how each driver tended to act. Different theories were formulated by academicians to understand the working mechanism of policy drivers. This study found that one single model/theory is insufficient to explain or capture all the policy drivers. For example, *advocacy*

coalition framework denotes that a coalition of interest groups influence the policy but in some cases, policy is driven by one single factor where such a coalition is absent. In contrast, my study thus proposes that a holistic approach of policy change is necessary to capture all the policy drivers in a complex social, political and economic system like that of the Province of Manitoba.

5.2.3 Incorporating proactive learning in DEM policy

This study explored how learning occurs and influences DEM policy. Therefore, this study contributes to the policy learning arena. This study revealed that *event-driven policy learning* (Birkland, 2009) is frequently evident as experiential learning. Learning in the DEM of Manitoba can broadly be labeled as “top-down” and “reactive”-oriented; however, this study also identified the major barriers to proactive learning. These findings are useful for the Manitoba DEM policies to develop a mechanism to capture and incorporate proactive learning into policies.

5.2.4 Policy implications

This study has significant DEM policy implications: as the dynamics of policy change are revealed, policy drivers are identified along with the mechanism and how learning plays a role is clarified. One respondent in this regard noted that “if the people do not perceive the risk, you cannot do anything with that.” From this perspective, the research findings are indicative of the need for improved risk communication and better preparedness for coping and adapting to future extreme events.

5.3 Limitations of the study

This research, though intensive, had some limitations. First of all, the policy process is not a linear process and it is very difficult to separate the policy ingredients (policy drivers and their interaction) from the policy soup (policy). Several factors can act together and sometimes only one driver is capable of pushing/pulling the policy. The findings therefore are appropriate for the context of Manitoba DEM policies; however, it may not be generalized for application to other jurisdictions that are dissimilar to the Province of Manitoba in characteristics.

The evidence of learning is often recorded and hence easy to procure whereas detecting unlearning could be very difficult. Moreover, there may be learning without evidence, which is very difficult to detect. The collection of information on past and major historical events within a cross-sectional study appeared to be a significant barrier to finding appropriate and additional key informants. Some key informants who had pivotal roles in policy making had passed away, and others had moved to other provinces. The researcher hence faced serious challenges to find appropriate key informants.

Retrieving information from the Archives was another limitation of the study. Most of the information fell under FIPPA and it took months even to obtain one piece of information, and some information could not be retrieved at all. Also, this study considered the local authorities who had experience of at least one disaster in the past 20 years.

5.4 Future research

This research encompassed the broader aspects of policy. It considered all DEM policies, all drivers, and learning at both local and provincial levels to explain macro-level issues. This study suggests that carrying out more intensive research on learning at local, provincial and federal level would be able to bring about more in-depth knowledge of learning processes and

outcomes. Due to time constraints, this study lacked focus group discussions among the local level actors and provincial actors together and thus could not bring out collective perspectives. This is an area where a future study could focus on and put more emphasis on taking more municipalities into account.

5.5 Recommendations

The DEM policy of Manitoba experienced a continuous shift from the dirty thirties and evolved into today's shape primarily by the layering of one policy over another. The mega events played here the most critical role compared to any other policy drivers. The policies were also influenced by the political leadership, by federal government policies, by learning from the other jurisdictions, and by learning from smaller scale events within the province. Perceiving the risk varies widely among policy actors. Politicians often prefer engineering-structural mitigation options, which usually provide them an upper hand to gain political advantages. However, evidence suggests that these structures usually provide a false sense of security among the citizens.

NGOs and other agencies that deal with disasters have had a nominal influence on policy formulation and change. It is also evident that learning merely stems from the public. Also, the transfer of learning from the municipal level to provincial level institutions is generally absent or occurs at an insignificant scale.

Based on the above stated findings and inference, the following recommendations are offered:

- 1) Sensitization of politicians (key decision makers for policy formulation) through interactive training programs in parliamentary committees and sub-committees,

experiential learning by demonstration project and direct exposure to best DEM practices around the world, and exposure to the findings of evidence based DEM research is required.

- 2) A system of deliberate and formalized learning mechanism to capture learning from all levels (individual and institutional) and ensuring a bottom-up and interactive approach should be developed at all levels of government machinery.
- 3) Existing policy amendments and/or modifications to facilitate easy and effective transfer of learning from the local level to provincial level that can be applied to improve decision-making and reduce risk and the disaster impact should be made. For example, there is a provision for post event reporting in the Local Authorities Emergency Planning and Preparedness Regulation, 2016 where Section 13(4) clearly states that “Within 90 days after completing an exercise under this section, a local authority must provide a written report on the exercise to the coordinator, in the form and containing the information required by the coordinator [Executive Director of EMO].” An amendment can be made regarding a mechanism to incorporate local level learning after real events, as follows:

“Within 90 days after completing an exercise under this section, a local authority must provide a written report on the exercise [*or an after-action report of a real event*] to the coordinator, in the form and containing the information required by the coordinator [Executive Director of EMO].”

- 4) A bridge between the public and policy actors is required in the DEM context of the Province of Manitoba. The effective engagement of the public in decision making is therefore recommended.

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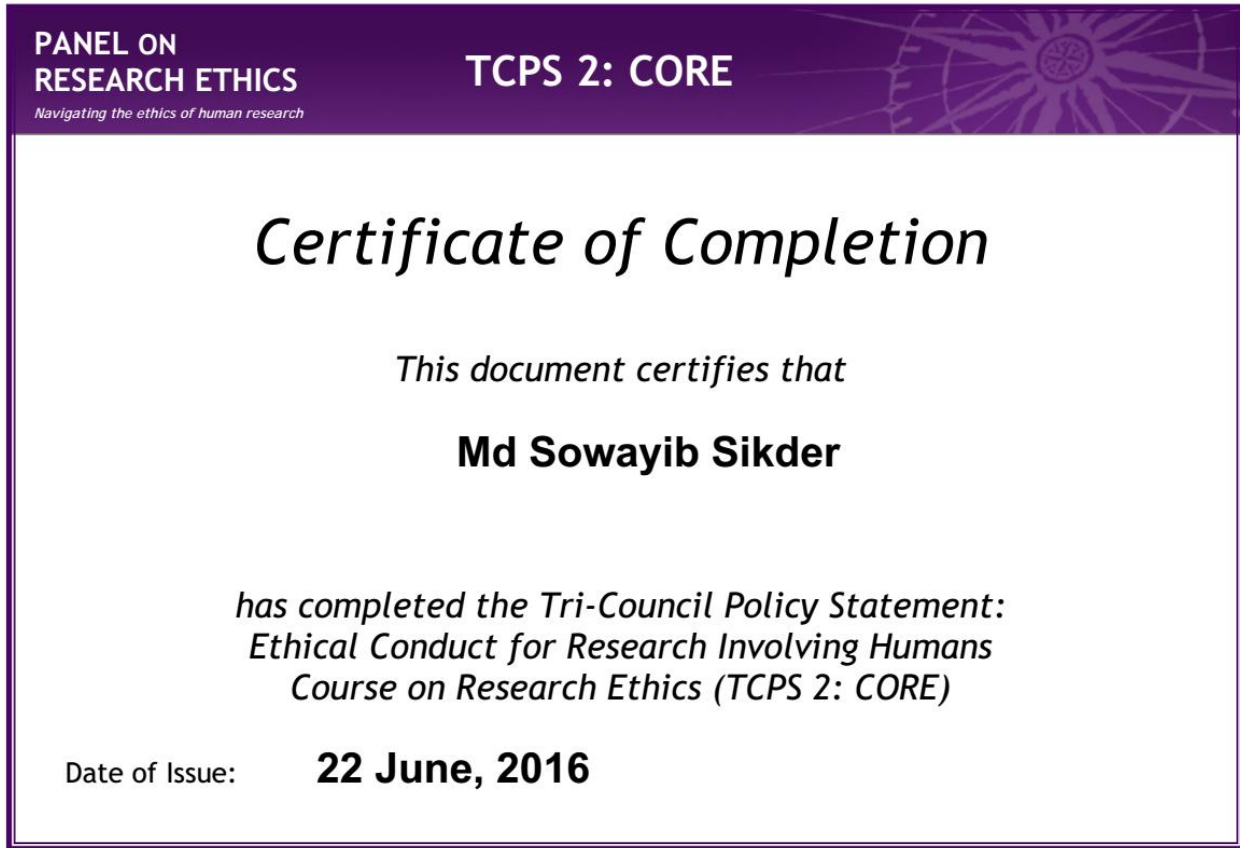
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APPENDICES

Appendix A: Certificate of completion of TCPS 2: CORE





Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
Email: humanethics@umanitoba.ca

PROTOCOL APPROVAL

TO: Md Sawayib Sikder (Advisor: C. Emdad Haque)
Principal Investigator

FROM: Lorna Guse, Chair
Joint-Faculty Research Ethics Board (JFREB)

Re: Protocol #J2016:061 (HS19917)
"Disaster and Emergency Management (DEM) policy shifts: the role of learning in Manitoba"

Effective: January 20, 2017

Expiry: January 20, 2018

Joint-Faculty Research Ethics Board (JFREB) has reviewed and approved the above research. JFREB is constituted and operates in accordance with the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*.

This approval is subject to the following conditions:

1. Approval is granted only for the research and purposes described in the application.
2. Any modification to the research must be submitted to JFREB for approval before implementation.
3. Any deviations to the research or adverse events must be submitted to JFREB as soon as possible.
4. This approval is valid for one year only and a Renewal Request must be submitted and approved by the above expiry date.
5. A Study Closure form must be submitted to JFREB when the research is complete or terminated.
6. The University of Manitoba may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba *Ethics of Research Involving Humans*.

Funded Protocols:

- Please mail/e-mail a copy of this Approval, identifying the related UM Project Number, to the Research Grants Officer in ORS.

Appendix C: Invitation letter for Key informants

Hello

I am Md Sawayib Sikder. I am a graduate student at the Natural Resources Institute, University of Manitoba, Canada. Currently I am doing my master's thesis on "Disaster and Emergency Management (DEM) policy shifts in Manitoba: the role of learning" under the supervision of Dr. C. Emdad Haque. There are three objectives of my research. The first objective deals with identifying the drivers of Manitoba DEM policy where I will gather information on the existing policies and role of the drivers. The second objective deals with the dynamics of DEM policy change in Manitoba. The third objective is to examine the role of learning and linkage between learning and policy change. I have attached one page short proposal and an informed consent form for your consideration.

Please be informed that in Manitoba, there has not been any previous study regarding DEM policy-making and dynamics of policy shifts. This research is therefore, highly significant to fill the research gap; understand the DEM policy in Manitoba which will ultimately lead to knowledge generation and policy learning for the Manitoba provincial government. The research project has been approved by the Joint-Faculty Research Ethics Board at the University of Manitoba, Canada.

In my thesis, I am going to interview a few politicians/bureaucrats who worked with Disaster and Emergency policy of Manitoba. I would like to interview 5 senior bureaucrats/5 senior politicians, preferably from different political parties.

My advisor and I will greatly appreciate if you please contact me directly (sikderms@myumanitoba.ca) to obtain appointments at your convenience so that I can arrange a one-hour interview with you regarding Disaster and Emergency management policy of Manitoba.

This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns, you may contact the Human Ethics Co-coordinator at 204-474-7122 or email at humanethics@umanitoba.ca. Please note that you can also contact with my advisor Professor C. Emdad Haque, Natural Resources Institute, University of Manitoba at 204-474-8375 or email him at cemdad.haque@umanitoba.ca.

Thank you so much.

Kind regards

Md Sawayib Sikder

MNRM student

Student ID: [REDACTED]

Email: sikderms@myumanitoba.ca

Phone: [REDACTED]

Informed Consent



Natural Resources Institute

70 Dysart Rd,
Winnipeg, Manitoba
Canada R3T 2N2

General Office (204) 474-7170
Fax: (204) 261-0038

http://www.umanitoba.ca/academic/institutes/natural_resources

Research Project Title: Disaster and Emergency Management (DEM) policy shifts in Manitoba: the role of learning

Researcher: Md Sawayib Sikder. MNRM student, Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada, R3T2N2. Phone: [REDACTED], e-mail: sikderms@myumanitoba.ca

Research Supervisor: Dr. C. Emdad Haque, Professor, Natural Resources Institute, University of Manitoba, Winnipeg, Manitoba, Canada. Phone: 204-474-8375, e-mail: cemdad.haque@umanitoba.ca

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

I am a graduate student at the University of Manitoba in Canada and currently in the process of conducting my Master's thesis research. The overall purpose of the proposed research is to explore the current DEM policy of Manitoba, how the policy got changed over time and to identify the drivers of this policy change while keeping special focus on learning from disasters and emergency events. The objectives which will fulfill the purpose of my research are as follows:

- a) To identify the drivers of Manitoba DEM policy
- b) To explore the dynamics of DEM policy change in Manitoba
- c) To examine the linkage between learning and policy change

In Manitoba, there has not been any previous study regarding DEM policy-making and dynamics of policy shifts. This research is therefore highly significant to fill the research gap, understand the DEM policy in Manitoba which will ultimately lead to knowledge generation and policy learning for the Manitoba provincial government. The research project has been approved by the Joint-Faculty Research Ethics Board at the University of Manitoba, Canada.

In the course of the research you will be asked a number of questions related to Emergency and Disaster policy, Disaster Financial Assistance (DFA) program, your personal and institutional learning. If you are interested in, I can provide the entire set of questions for you to review. You will be requested participate in an interview session that will last for an hour. If more time is required, a subsequent meeting can be arranged at your convenience. These interviews may be conducted at a place convenient to you and according to your suitable time. After the interview, if need arises, you may be contacted for further clarifications.

The interview will be recorded on a digital recorder and will be documented in a notebook provided that you do not have any objections. The information provided by you will be used to complete my Master's thesis, and will potentially be submitted for publication in an academic journal (by 2017). Please inform the research investigator or advisor of this research if you are not comfortable with some information for public use and if it needs to be confidential. This confidential information will not be recorded. You may also choose not to answer questions you are not comfortable with. All data gathered during the research will remain under the strict supervision of the researcher and stored in encrypted form in a secure location. Please note that my advisor will have the access to data only but not to the identities of participants.

Audio recordings and transcripts of the interviews will be encrypted and stored in the personal computer of the researcher. Your name and contact information will be kept in secure location and will be destroyed within 5 years (December, 2022) following the completion of the study by December, 2017. The researcher intends to complete his thesis by December, 2017 and aims to publish at least a journal article and may present findings in some conferences. Therefore, the researcher will seek permission from all the participants to keep their contact details and data until December, 2022. You will not be identified by name in any such publications. Please remember, although your name and other identifiable attributes will be removed from the data, but you still may be recognizable.

There is no potential risk that might put the participants into risk on the disclosure of information. Any identifying stories or circumstances will be modified to protect confidentiality. There may not be immediate tangible benefits. However, sharing of knowledge is one of the intangible benefits that would be useful for disaster policy making in Manitoba.

There will be a group meeting organized towards the end of the research where I will verify all the information collected during the research process. You will have an option to disagree to any such information, in which case, the information would be suitably modified with your inputs.

Please be advised that the staffs at the University of Manitoba have a right to look at my research records to see that the research is conducted ethically and appropriately. Please remember that you may be contacted for further follow up questions if you do not have any objection. Participation in a second interview is optional.

You are free to decline to participate in this research, withdraw from the study at any time, and/or choose not to answer any questions you may not be comfortable with. If you wish to withdraw, please inform me by e-mail or phone that is convenient for you. If you do decline to participate in the study or answer any questions, you will not face any negative consequences and the data you provided will be destroyed immediately.

If you wish to receive a summary of findings please provide your e-mail address at the end of your consent form.

If I have not explained the study clearly, please feel free to ask for clarifications or additional information at any time throughout your participation.

Thank you for your time

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator at 204-474-7122 or email at humanethics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

Participant's Signature _____ Date _____

Researcher and/or Delegate's Signature _____ Date _____

Participant's email number:

Appendix E: Questionnaires

E.1 Politicians

1. What was the most significant era (active period) in formulating DEM policy in Manitoba? Why?
2. What events or incidents did affect in formulating DEM policy?
3. What were the drivers of the DEM policy processes?
4. What were the interest groups that affected the DEM policy processes? Please explain the mechanism.
5. How did the policy actors interact with politicians?
6. Would you please describe any memorable incidents during DEM policy formulation or change
7. How would you describe Government's action or inaction regarding DEM?
8. Had there been any common platform for all policy actors to learn, share and disseminate, especially after a disaster?
9. How did the organizations as well as politicians learn about new innovations/new policy ideas regarding DEM?
10. What are the barriers of formulating new policies based on learning?

E.2. Bureaucrats

1. What was the most significant era (active period) in formulating DEM policy in Manitoba? Why?
2. What events or incidents did affect in DEM policy formulation as well as change?
3. What were the drivers of the DEM policy processes?
4. What were the interest groups that affected the DEM policy processes? Please explain the mechanism.
5. Would you please describe any memorable incidents during DEM policy formulation or change
6. .How would you describe Government's action or inaction regarding DEM?
7. How do the policy actors interact with bureaucrats?
8. Has there been any common platform for all policy actors to learn, share and disseminate, especially after a disaster?
9. How the organizations as well as public service officials did learn about new innovations/new policy ideas regarding DEM?
10. Do you think learning by organizations influence bureaucrats to modify or change DEM in Manitoba?
11. How would you characterize the relationship between bureaucrats and politicians?
12. What are the barriers to implement new learning for future planning?

E.3. NGOs and interest groups

1. Name of NGO/Interest group -----
2. Type of NGO: (Faith based, independent, Canadian organization of an International NGO, NGO association, other) -----
3. What emergency services cycle phases (preparedness, response, recovery, mitigation) do your organization usually take part?-----
4. Do you think that your organization have a role in DEM policy making of Manitoba?
5. What role did you play earlier that impacted government's course of action?
6. How you interact with policy makers and influence policy? Please explain the mechanism like using media or mass people, protest etc.
7. What was your stake in DEM policy formulation and change? Explain the situations of your success and failure with reasons.
8. Who are other drivers of Manitoba DEM policy, you think?
9. Describe how do the people learn and apply their learning in a disaster event?When do you learn and when not? Give your reasons please.
10. Is there any common platform for all policy actors to learn, share and disseminate, especially after a disaster?
11. Is there any scope for you to deliver the learning of community people and your organization to the policy makers? If yes, how do you do that?
12. Do you find any change in disaster management policy in Manitoba since 1997? If yes What was the impetus?If no, what are the reasons?
13. Whether any "lesson learned document" was being prepared after disaster events (i.e., 1997, 2009) to plan for future?
14. Do you take lessons from community people? If yes, how?
15. Had there been any change in disaster management policy in Manitoba since 1997? If yes, what was the impetus?

E.4 Survey Questionnaire for Manitoba residents

1. Age
 - a. 18-29
 - b. 30-39
 - c. 40-49
 - d. 50-59
 - e. 60 and above
2. Gender
3. Occupation
 - a. Agriculture
 - b. Government job
 - c. Self employed
 - d. Other
4. Yearly income
 - a. Less than \$20000
 - b. \$21000 -\$40000
 - c. \$41000-\$60000
 - d. \$61000-\$80000

- e. \$81000-\$100000
 - f. Above \$100000
5. Formal years of schooling-----
 6. Please describe any problems you faced to avoid physical injuries/property losses while encountering a major natural disaster such as, floods, heat waves, snow storms, for the 1st time?
 7. Please check all boxes that describe the events that you experienced?
 - a) H1N1-2009 (b) Avian Influenza-2011 (c) Flood-1997 (d) Flood 2011
 - (e) Wildfire-1989 (f) Wildfire-2010 (g) Tornado-2007 (h) Ice storm-2012
 - (i) None of the above (j) for others, please write down
 8. What new things did you learn from the above mentioned events? Please explain event-wise.
 - a) H1N1-2009
 - b) Avian Influenza-2011...
 - c) Flood-1997
 - d) Flood 2011
 - (e) Wildfire-1989
 - (f) Wildfire-2010
 - (g) Tornado-2007
 - (h) Ice storm-2012.....
 - (i) Other
 9. Are there any other sources of learning (like newspaper, Television, conversation with other people etc.) beyond your past direct experiences?
 - (a) YES (b) NO
 - (9a) If YES, please list them all.....
 - i.
 - ii.
 - iii.
 10. Did you apply your learning in events that took place later?
 - a. If Yes (please answer 11)
 - b. If No (please explain why?)
 11. How did you apply your learning in the following cases:
 - a. To prepare for the subsequent events
 - b. To avoid physical injuries and property losses in subsequent events
 12. Did you have any opportunity to share your experience/learning with other people in your community?
 - (a) YES (b) NO
 - If YES, where and how?
 13. Did you have any opportunity to share your experience/learning with the local government department like the city authority or rural municipality that deals with disaster management?
 - (a) YES (b) NO
 - If YES, When and how?

14. Can you remember any public venue, such as a public hearing where you discussed your experiences/learning with policy actors (who have influenced disaster policy making like NGOs, bureaucrats and politicians)? If yes, please share your story.
15. Do you think that policy makers (like politicians, bureaucrats) hear from the community after a disaster?
 - (a) If NO, what are the reasons behind it?
 - I.
 - II.
 - (b) If YES, how do they hear from your local community? Would you please explain?
16. Do you think that policy makers take lessons from your community experience/learning? YES or NO?
 - (16a) If YES, did you find any reflection of it in the local level planning by your local government organization? (Please give an example if you can)
17. What would be your advice to
 - (a) Disaster managers like Emergency Management coordinators, Reeves and Mayors, CAOs.
 - (b) Policy makers, such as local, provincial and federal bureaucrats and politicians.

E.5 Questions for Municipality Emergency Practitioners

1. Do you think that learning have a role in Disaster and Emergency Management (DEM)?
2. How would you characterize individual learning, institutional learning and social learning in Disaster and Emergency Management (DEM) context?
3. Can you please state few examples of learning, i.e. learning by individuals, learning by your local community?
4. What are the sources of institutional learning related to Disaster and Emergency Management (DEM)?
5. Can you please describe the process of institutional learning?
6. Has there been any common platform for sharing and disseminating new learning by different stakeholders (e.g., community people, disaster practitioners) after a disaster?
 - (3a) if yes, how do you use that platform?
 - (3b) if NO, please explain the reasons.
7. Do you (the local level practitioners) take ‘learning by the community people’ into account for future disaster management?
 - (4a) if YES, how do you do that?
 - (4b) if NOT, what are the reasons?

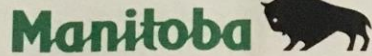
8. Has there been any “lesson learned document” prepared after disaster events (i.e. 1997, 2009, 2011 floods) to plan for future?
 - (6a) if YES, how do you deliver it to the policy makers?
 - (6b) if NO, what are the reasons behind this?
9. How does learning shape disaster management actions of your institution (applying the learning in later events)?
10. Has there been any local level learning that influenced Manitoba provincial DEM policy?
 - (8a) If YES, what was the learning?
 - (8b) if NO, what are the reasons behind it?
11. What is your suggestion to successfully transmit the learning from community level to policy level?
12. In a typical municipality council meeting, there are presentations, hearing of delegations, public hearing, community questions, committee reports and discussion about by-laws regarding disaster and emergency management (DEM). Are the following “evidence of learning” visible in your municipality? Please provide specific examples with details on when, why and by whom that happened.

a	Any presentation made to the council meeting by any groups or delegates regarding DEM issue	
b	Any public hearing focused on DEM issue that was later moved by councilor in council meeting	
c	Any discussion in the council meeting on “lessons learned” after a disaster	
d	Change in procedures, interpretation or implementation of regulations regarding DEM	
e	Issuance of new and proposed regulations, by-laws, imposing tax or levies	

Appendix F: Policy drivers in Canadian Perspective

SL	Canadian Policies	Policy driver/(s)	References
1	Anti-pesticide ordinances	<ul style="list-style-type: none"> • Demonstration effect of USA pesticide policy • Pesticide policy in 1991 by Hudson, Quebec • the Canadian Supreme Court decision in favor of Hudson in 2001 	<p>Pralle (2006a)</p> <p>Pralle (2006b)</p>
2	Bi-lateral free trade arrangement (FTA) with USA	<ul style="list-style-type: none"> • Exogenous shock of recession in 1981-82. • political attention to an issue 	<p>Golob (2003)</p> <p>Wilkinson, (2006)</p>
3	Retreat from the Kyoto protocol	<ul style="list-style-type: none"> • Bi-lateral relation with the leading economy player, United States. • Federal vs. provincial division of environmental authority 	<p>Litfin (2000)</p> <p>Mcilroy & Laghi (1997)</p>
4	BC Forest policy, 1995	Coercive pressure by transnational actors (organizations) and indigenous groups.	Bernstein & Cashore (2000)
5	New framework for equalization health care, 2004	Federal-provincial relation (Nova Scotia provincial protest)	Lecours,& Béland (2010)
6	Introduction of facility fee in health care by Alberta, 1999	Power contest between the provinces and federal government	Rachlis (2000)
7	Neoliberal restoration in between 1985-1995	New Democratic Party and the Business Council on National Issues (BNCI)- political ideology	Nicholas (1997)
8	Ontario housing policy, 2004	Political ideology of Ontario Conservative government	Bryant (2004)
9	Bank Act, 1987	Globalization and international crisis	Williams (2009)
10	Stopping the Merge of Big five banks,	Insurance industry, provincial governments, small financial service providers	Williams (2004)
11	Canada's Transportation of Dangerous Goods Act, 1980	Train Derailment in Mississauga, Ontario (1979) and the spur of stringent American legislation	Rankin, M. (1990), p-213
	DEM policy, Ontario, Canada	Policy driver/(s)	References
1	Civil Defence for nuclear attack (1950-1960)	Nuclear threat After World War II	Henstra (2011)
2	Peacetime Emergency Measures (1960-1975)	Hurricane Hazel and lessons learned from it	Henstra (2011)
3	The Lead Ministry approach (1975-1980)	Economic Recession	Henstra (2011)
4	Technological Emergency Planning (1980-1990)	Derailment in Ontario and Bhopal tragedy in India	Henstra (2011)
5	Integrated All Hazards Emergency Management (1990-2003)	Policy adopted by USA and International conference outcome	Henstra (2011)
6	Emergency Management and civil protection (2006-2010)	SARS virus	Henstra (2011)

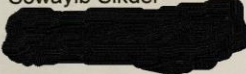
Appendix G: FIPPA Approval



Infrastructure

Corporate Services Division
1710 – 215 Garry Street, Winnipeg MB R3C 3Z1
T 204 945-6831 F 204 945-5115

September 18, 2017

Sowayib Sikder


Dear Mr. Sikder:

Re: Request for Access to Information under Part 2 of *The Freedom of Information and Protection of Privacy Act*: [Our File Number 17-074 to 076]

On August 18, 2017, Manitoba Infrastructure (MI) received your applications for access under *The Freedom of Information and Protection of Privacy Act* (FIPPA) requesting the following:

Archives files - Manitoba Emergency Plan - 1988 to 1996, 1997 to 1999, 2000 to 2009

We are pleased to inform you that access to the information you have requested is being granted in part.

On reviewing the records in the files you requested, we determined that the records relate to the approval of Manitoba government Emergency Plans through Orders in Council. The files contained general correspondence related to preparation of the Order in Council documents for approval by government.

Final approved Manitoba government Orders in Council are available to the public and are online at <http://www2.gov.mb.ca/oic/ordersincouncil.aspxalong>.

As the Orders in Council and associated Manitoba Emergency Plans responsive to your above access requests are not posted online (as prior to 2007), we have enclosed copies of them along with this letter for your convenience.

Accordingly, your requests fall under s. 6(2) of FIPPA.

Part does not apply to publicly available information

6(2) This Part does not apply to information that is available to the public free of charge or for purchase.

Subsection 59(1) of FIPPA provides that you may make a complaint about this decision to the Manitoba Ombudsman. You have 60 days from the receipt of this letter to make a complaint on the prescribed form to:

Manitoba Ombudsman
750 – 500 Portage Avenue
Winnipeg MB R3C 3X1
204-982-9130
1-800-665-0531

If you have any questions or concerns please do not hesitate to contact Karen Iwaszewski (Access and Privacy Coordinator) at the above address, by phone at (204) 801-0757 or e-mail at karen.iwaszewski@gov.mb.ca.

Sincerely,

A black rectangular redaction box covering the signature of Leigh Anne Solmundson Lumbard.

Leigh Anne Solmundson Lumbard
Access and Privacy Officer

Enclosures

Appendix H: List of Manitoba laws related to Disaster and Emergency Management

<i>Acts</i>	<i>Regulations</i>
Emergency Measures Act, 1951	Fire Hose Regulation, 1987
Civil Defence Act, in 1952	The Anhydrous Ammonia Handling and Transport Regulation, 1989
Emergency Measures Act 1970	Designated Floodway Fringe Area Regulation, 1989
The Emergency Measures Act, 1987	Woodland Caribou Protection Regulation, 1991 (Regulation 113/91)
The Dangerous Goods Handling and Transportation Act, 1987	Burning Permit Areas Regulation, 1997
The Dyking Authority Act, 1987	Disaster Financial Assistance Policies and Guidelines (Public Sector) Regulation, 1999
The Emergency 911 Public Safety Answering Point Act, 1997	Disaster Financial Assistance Policies and Guidelines (Private Sector) Regulation, 1999
The Wildfires Act, 1997	Dangerous Goods Handling and Transportation Regulation, 2003
The security management (various acts amended) act, 2002.	Manitoba's Conservation and Recovery Strategy for Boreal Woodland Caribou, 2005
The Floodway Authority Act, 2004	Emergency 911 Public Safety Answering Point Regulation, 2005
The Red River Floodway Act, 2004	Property Insurance Assessment Regulation, 2008
The fires prevention and emergency response Act, 2006	Red River Floodway Regulation, 2009
The fires prevention and emergency response amendment act, 2014	Floodway Compensation Regulation, 2009
The Water Resources Administration Act, 1987	Manitoba Emergency Plan, 2009
The Municipal Act, 1996	Manitoba Fire Code, 2011
	The Local Authorities Emergency Planning and Preparedness Regulation, 2016

Appendix I: Time line of Manitoba DEM policy

Relief based recovery era (1929-1938)

	1929-1936	1937	1939
Events	Droughts		
	Economic recession in North America		
Federal government Actions	Committee for Assessing Crisis, 1934	\$292 million of relief assistance	
Federal Plans			
Learning from others			
Reports and documents			
Organization restructuring at federal level			
Organization restructuring in Manitoba			
Manitoba DEM Policy	Prairie Farm Rehabilitation Act, 1935	Prairie Farm Rehabilitation Act, 1937 Amended	Additional financial allocations and removing the 5year limitation to the PFRA

Civil Defence Era (1939-1966)

	1939	1948	1950	1951	1952	1953	1956	1957	1958	1959	1965	1966
Events	World War II		Korea War									Flood
			Nuclear threat									
			Red River flood									
Federal government actions			Federal-Provincial Advisory Committee				Inter-departmental Working Group on War Measures					
			Fraser River flood formula for Manitoba									
Federal plans	Defence of Canada Regulations				Civil Defence Financial Assistance Program					Civil Defence Order		
Learning from others							US Federal Flood Insurance Act, 1956					
Reports and documents						Carswell-Shaw Commission	Royal Commission	Inter-departmental Working Group on War Measures	Royal Commission report			
Organization restructuring at federal level		Civil Defense Organization established						Emergency Measures Organization established				
Organization restructuring in Manitoba			Civil Defence Control Committee							Manitoba Emergency Measures Organization established		
Manitoba DEM Policy	Additional finance and removing the 5year limitation to PFRA			Emergency Measures Act, 1951	Manitoba Civil Defence Act, 1952						Manitoba Survival Plan	Flood Plan for Manitoba

Peacetime emergencies and collaboration (1967-1990)

	1967	1968	1970	1979	1980	1981	1983	1984	1985	1986	1987	1989	1990
Events	Drought	Drought		Mississauga incident				Bhopal tragedy	California fire in USA			Record fire events	
												International Decade for Natural Disaster Reduction	
Federal government actions	Reducing federal budget for civil emergency								Joint Industry-Government Steering Committee				
Federal Plans			Disaster Financial Assistance Arrangement (DFFA)		Joint Emergency Preparedness Program (JEPP)								
					Transportation of Dangerous Goods Act								
Learning from others										Firewise program in USA			FireSmart program in Alberta
Reports and documents												Manitoba wildfire review	
Organization restructuring at federal level						Canadian Inter Agency Forest Fire Center							
Organization restructuring in Manitoba													Manitoba Inter-Agency Steering Committee on Emergency Social Services
Actions of Interest groups		Provinces protested for EMO budget cut											
Manitoba policy			Emergency Measures Act				Manitoba Emergency Plan	Dangerous Goods Handling and Transportation Act			Emergency Measures Act formulated. Fire Hose Regulation		Initial Attack Response
											Dangerous Goods Handling & Transportation Act Amended		

Integrated all-hazards approach (1991-2000)

Year	1991	1992	1995	1997	1998	1999	2000
Events	Niverville fire			Red River flood			
Federal government Actions							
Federal Plans			Federal Policy for Emergencies		AIDA program		
Learning from others		all-hazards approach adopted in USA					
Reports and documents				International Joint Commission, Red River Floodway Operations Review Committee	IJC interim report		Red River Flooding Final Report by International Red River Basin Task Force
Organization restructuring at federal level							
Organization restructuring in Manitoba							
Actions of Interest groups							
Manitoba DEM Policy				Emergency Measures Act was amended	Manitoba Emergency Plan Amended	Disaster Financial Assistance (DFA) policy guidelines	

Risk based comprehensive emergency management (2001 onwards)

Year	2001	2002	2007	2009	2011	2012	2013
Events	9/11			Manitoba flood	Manitoba flood		
Federal government Actions		Forming Red River Basin Commission					
Federal Plans	Anti-Terrorism Act		Emergency Management Framework for Canada	Federal Policy for Emergency Management, 2009			
Learning from others	National Incident Management System (NIMS) adopted nationally by USA						
Reports and documents						Lake Manitoba/Lake St. Martin Regulation Review Committee, Manitoba 2011 flood review Task Force report	
Organization restructuring at federal level							
Organization restructuring in Manitoba							
Actions of Interest groups				AMM lobbied for new formula of cost sharing	MACO lobbied to the Province		
Manitoba DEM Policy		Designated Flood Area Regulation					
		The Security Management (Various Acts Amended) Act					Emergency Measures Act of Manitoba amended and business continuity inserted