

THE PRECAUTIONARY PRINCIPLE & COMPLEX SOVEREIGNTY: USING THE
PATHWAYS FRAMEWORK TO EXPLAIN DOMESTIC POLICY OUTCOMES

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Abstract

The precautionary principle has emerged as one of the most contentious international norms within international environmental law. Yet, despite the vexing conceptual uncertainties confronting the precautionary principle, it is repeatedly invoked by policy makers and incorporated within international and domestic environmental law and agreements. This thesis explores how the international norm of precaution comes to be translated from the international sphere to domestic public policy. The research utilizes the pathways framework, which suggests that there are three additional pathways in addition to the direct implementation of international rules in national law and policy - international norms and discourse, markets and direct access - through which actors, institutions and interests can influence domestic and firm-level policy change. The findings propose an explanation of why Canada came to adopt a particular version of the precautionary principle, also revealing the complex nature of norm transfer, the significance of multiple causal pathways of influence and the interactions arising along these pathways.

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Dedication

This thesis is dedicated to my wife Sonia who never stopped believing.

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never stop believing, *Carpe diem*.

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Abbreviations

Animals and Plant Health Inspection Service	APHIS
British Columbia	B.C.
Canadian Biotechnology Action Network	CBAN
Canadian Biotechnology Advisory Committee	CBAC
Canadian Biotechnology Strategy	CBS
Canadian Environmental Assessment Act	CEAA
Canadian Environmental Protection Act	CEPA
Canadian Food Inspection Agency	CFIA
Canadian Wheat Board	CWB
Convention on Biological Diversity	CBD
Energy Resources Conservation Board	ERCB
Environment Canada	EC
Environmental Non-Governmental Organization	ENGO
Environmental Protection Agency	EPA
European Union	EU
Flax Council of Canada	FCC
Food and Drug Administration	FDA
Genetically Modified	GM
Genetically Modified Organisms	GMOs
Genetically-Modified Pest Protected Plants	GMPPPs
Greenhouse Gas	GHG

Health Canada	HC
International Court of Justice	ICJ
International Monetary Fund	IMF
Living Modified Organism	LMO
Member of Parliament	MP
Member of parliament	MP
National Farmers Union	NFU
New Democratic Party	NDP
Non-Governmental Organization	NGO
North American Free Trade Agreement	NAFTA
Organisation for Economic Co-operation and Development	OECD
Organic Agriculture Protection Fund	OAPF
Pest Control Products Act	PCPA
Plant Biotechnology Office	PBO
Plants or Products with Novel Traits	PNTs
Research and development	R&D
Roundup Ready	RR
Royal Society of Canada	RSC
Recombinant DNA	rDNA
Sanitary and Phytosanitary Measures	SPS
Species at Risk Act	SARA
Statements of Environmental Values	SEVs
The Food and Agriculture Organization of the United Nations	FAO

The International Tribunal for the Law of the Sea	ITLOS
Union of BC Municipalities	UBCM
United Kingdom	UK
United Nations Conference on Environment and Development	UNCED
United Nations Educational, Scientific and Cultural Organization	UNESCO
United Nations Environment Programme	UNEP
United Nations Framework Convention on Climate Change	UNFCCC
United Nations Industrial Development Organization	UNIDO
United States	US
World Bank	WB
World Health Organization	WHO
World Trade Organization	WTO

CHAPTER 1. INTRODUCTION

Introduction

The precautionary principle has emerged as one of the most contentious international norms within international environmental law. The principle, expressed in multiple formulations, is now enshrined in numerous international environmental agreements, and is arguably gaining status as a customary international norm. One of the most cited formulations of the principle is found in the 1992 Rio Declaration, which states that “[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation” (Rio Declaration 1992).

Significant research and analysis has resulted in a better understanding of the principle (Cameron and Abouchar 1991a; Freestone and Hey 1996; Freestone 1991; Sands 2003; Sunstein 2005). Recent research has focused on its impact on international trade and sustainable development (Perrez 2000; Anderson, Jackson, and Damania 2004). However, Perrez (2000) argues that, while the principle has been vigorously examined, there remains a lack of consensus with regard to its definition and what should trigger its application. According to Freestone & Hey (1996) and Cameron & Abouchar (1991), this level of divergent interpretation fails to provide proper guidance for decision-makers. As a result, Pitschas & Priess (2000) and Milloy (2000) both conclude that precaution should not be considered part of a growing corpus of binding, enforceable world trade law.

Yet, despite the ambiguity of its wording and the difficulty of precisely ascertaining its legal implications, it is clear that the precautionary principle has been frequently used with both practical and normative effects (Cameron and Abouchar 1991a; Hickey and Walker 1995; Sands 2003). It is repeatedly invoked by policy makers and found in international law and

agreements (Phillips 2001), a symbol of its acceptance as a cornerstone of the sustainable development approach and of its importance in environmental law and policy (O’Riordan and Jordan 1995; Sands 1995; Sands 2003; Stoett and Gore 2009).

The Food and Agriculture Organization of the United Nations (FAO) (2009) has noted an important implication of the struggle over the meaning of the principle, suggesting that how this international norm comes to be translated into domestic law and how it influences policy will have a critical impact on the ability of innovative biotechnologies to expand world food supplies. The suggestion of the FAO has severe implications for developing and underdeveloped countries, especially when we examine the effects of climate change on the food security of these countries. Developing and underdeveloped countries can ill afford to adopt a formulation of the precautionary principle that would stifle innovation and further exacerbate the north-south divide, benefiting the wealthier and innovative genetically modified (GM) exporting countries.

This thesis does not examine the large question of the impact of the principle on food security in vulnerable countries, nor does it seek to examine the implications of a strong formulation of the principle in developing and underdeveloped countries. Rather, the research seeks to understand why a particular interpretation of the principle comes to be adopted and to identify the causal pathways through which international norms travel and its ability to shape the formulation of the norm at the domestic sphere. The thesis tests whether the traditional international relations assumption which suggests that international norms become embedded into domestic law though international law will withstand careful scrutiny, and in its place, present an alternative explanation for norm diffusion.

Problem Statement

Within the contemporary history of international environmental law and policy, precaution has emerged as a fundamentally new general principle to challenge the business as usual approaches to decision making in the face of uncertainty. However, a major problem with the precautionary principle is that it remains ill-defined, with some authors contending that its strict application will negatively affect innovation and the adoption of new technologies (Sunstein 2005; Pittinger and Bishop 1999; Hufbauer, Kotschwar, and Wilson 2001).

A consequence of the lack of definition results is that several variants of the principle are in circulation, creating the possibility of policy diffusion by emulation (Jordana, Levi-Faur, and Marín 2011) without a clear obligation on countries to enact specific laws that conform to a standard interpretation of the principle. In particular, the recent literature tends suggests a range of formulations, including weak, moderate and strong versions of the principle, with each formulation engendering a particular policy response.

The lack of definition and the presence of multiple formulations has the potential for decision makers taking inconsistent regulatory and environmental management decisions, which according to Harding and Fisher (1999), hinders business development and elevates costs. The ambiguity associated with the principle and the presence of multiple formulations also opens the door to legal disputes through the courts, which can allow the judicial system to shape the formulation of the principle, interpreting it differently from the original conception of the decision makers. Lack of predictability both in terms of the interpretation that is adopted in any particular jurisdiction and the subsequent clarification of the scope and application of the principle create high levels of uncertainty and increase transaction costs for industry.

As a contribution to reducing uncertainty, this thesis sets out to examine why Canada came to adopt what is arguably a weak formulation of the precautionary principle and what are the causal

pathways that influenced the adoption of this weak formulation. More generally, this thesis aims to contribute to our understanding of the different pathways that allow for an international norm such as the precautionary principle to travel from the international sphere to domestic policy and what effect this has on the formulation of the precautionary principle that is adopted.

Background

The precautionary principle, derived from the German word *vorsorgeprinzip*, emerged during the 1980s as a pillar of German environmental policy. It was not until the late 1980s (Gundling 1990) that international legal regimes incorporated the principle in a number of international treaties (Perrez 2000). The inclusion of the principle in the 1992 Rio Declaration on Environment and Development, the 1997 Montreal Protocol, and the 2000 Cartagena Protocol on Biosafety, are evidence that this principle has quietly emerged as an international norm within international treaty law concerning the environment (Perrez 2000). The fact that the precautionary principle has been invoked by policy makers in various countries is an indication that it is now widely regarded as an essential consideration when formulating domestic policy (Goldstein & Carruth, 2003; Goklany, 2001).

The literature on how international norms become embedded in domestic laws for the most part is narrowly focused on international regimes and international treaty law (Rosenau 1995; Bernstein and Cashore 2012). This is particularly true of international environmental norms such as the precautionary principle and sustainability, where the literature, while acknowledging the globalized nature of the international political economy, fails to account for other pathways of influence outside of legal instruments and the role of domestic politics. To remedy this narrow focus, this thesis adopts Bernstein and Cashore's framework of multiple pathways from

international to domestic policy making and traces the pathways that led to the adoption of a particular version of the precautionary principle in Canada.

CHAPTER 2. KEY TERMS AND CONCEPTS

How do norms travel?

There are several theories posited by international relations and political scientists on the mechanisms through which international norms influence and become embedded into domestic policy. The traditional approach to understanding norm transfer is found in the diffusion and convergence literature, where the term diffusion refers to processes where national governments and decision makers voluntarily, agree to adopt and implement a particular policy innovation, by drawing on a particular policy model from the international arena (Howlett 2000; Rogers 2003). Elkins and Simmons (2005) conceptualize diffusion as a set of mechanisms “characterized by interdependent, but uncoordinated, decision making’ where ‘governments are independent in the sense that they make their own decisions without cooperation or coercion but interdependent in the sense that they factor in the choices of other governments” (p. 35). This understanding gives rise to the notion that an examination of policy diffusion should be considered as a specified set of mechanisms as opposed to an all-inclusive notion of spread (Levi-Faur 2005; Elkins and Simmons 2005).

The diffusion literature suggests that there are multiple mechanisms which may result in policy change. These include, but are not limited to such varied processes as “independent but similar domestic responses to similar policy problems, negotiation of and compliance with multilateral agreements, supranational law-making, hegemonic coercion, intergovernmental reinforcement, regulatory competition, persuasion, peer-pressure, learning or imitation, to name just a few” (Busch and Jörgens 2005, 862). A narrower typology, proposed by Busch and Jörgens (2005) suggests that these can be subdivided into three broad categories of mechanisms: “(1) the

co-operative harmonization of domestic practices by means of international legal agreements or supranational law; (2) the coercive imposition of political practices by means of economic, political or even military threat, intervention or conditionality; and (3) the interdependent, but un-coordinated diffusion of practices by means of cross-national imitation, emulation or learning” (p. 862). These categories offer distinctive modes of operation, but all aim to explain why national decision makers adopt a particular policy developed outside of the jurisdiction of the adopting State.

Nevertheless, policy diffusion is not without its critics. Howlett and Rayner (2008) suggests “that the development of diffusion studies continues to be seriously hindered by a lack of clarity about the dependent variable; “what” is being diffused is sometimes lost in the concern for “how” diffusion takes place” (p. 386). However, the most convincing criticism of the policy diffusion and convergence literature is that once a norm is adopted in the domestic realm, the domestic version should be similar to the original formulation found at the international level. In the case of the precautionary principle, this is not the case. When compared to the traditional approaches such as norm diffusion and emulation, the work of Bernstein and Cashore (2012) offers a more sophisticated approach to the translation of policy from the international to the domestic levels that can explain different formulations.

This approach, referred to as the pathways framework and originally designed to explain the influence of global forest governance arrangements at the domestic level, suggests four causal pathways of influence, (Chapter 3 presents the framework in greater detail). Although a relatively novel approach, the pathways framework has already been applied in a number of case studies. Hudson (2012) explores the “mechanisms for establishing “Fail-safe Federalism” for forest management in the United States and Canada (p. 925). Hudson expands on the usefulness of the

pathways framework proposed by Bernstein and Cashore (2012) suggesting that the pathways framework is a useful tool for explaining the divergent forest policies between Canada and the US, further suggesting that the “pathways arise from increasing international pressures on domestic policies that have global implications” (p. 993).

Kasa (2013) adopted the pathways framework to examine the factors which led to the Brazilian government voluntarily committing to reduce its emissions. Emphasis is placed on the role and effect of international actors, but domestic interests are also considered. Finally, the work of Gomar, Stringer, and Paavola (2013), examines the co-evolution of regime complexities and public policy coherence in the context of international biodiversity governance. These authors focus their research on the cluster of biodiversity-related conventions and their implementation in countries of Latin America and the Caribbean countries. Gomar, Stringer, and Paavola (2013) draw a similar observation to that of Kasa (2013) and Hudson (2012). All three of these authors conceptualize the pathways as traveling in a top-down manner.

Gomar, Stringer, and Paavola (2013) contrast this top-down orientation with the work of Goodwin (2013), who proposes a different set of variables that allow for bottom-up pathways of influence. The bottom-up approach proposed by Goodwin (2013), and adopted by Gomar, Stringer, and Paavola (2013) entail what are referred to as “internal modalities”. These modalities consist of the suite of norms and routines governing the manner in which national delegations prepare for meetings and how they will participate in the actual working sessions of international agreements. Whether top-down or bottom-up all, these approaches suggest a uni-directional path, a concept that is examined and challenged in this thesis.

Defining Biotechnology

The Organisation for Economic Co-operation and Development (OECD) (2005) defines biotechnology as “the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services” (p. 9). This definition is purposely broad, since it covers all modern biotechnology as well as conventional or peripheral undertakings.

The Convention on Biological Diversity (CBD) agrees with this broad definition by defining biotechnology as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products for specific use” (Secretariat of the Convention on Biological Diversity 2005, 89). This definition does however embrace medical and industrial applications, along with many of the tools and techniques that are conventional in agriculture and food production. It is consistent with the definition offered by the FAO’s *Glossary of biotechnology*, which defines biotechnology both broadly as in the CBD and narrowly as “a range of different molecular technologies such as gene manipulation and gene transfer, DNA typing and cloning of plants and animals” (FAO 2001).

The Government of Canada, through Canadian Environmental Protection Act (CEPA), broadly defines biotechnology as "the application of science and engineering in the direct or indirect use of living organisms or parts or products of living organisms in their natural or modified forms" (Environment Canada 2000). Thus, within the context of the definitions posited by the FAO (2001) and CEPA, Agricultural biotechnology is best understood as “a range of tools that scientists employ to understand and manipulate the genetic make-up of organisms for use in the production or processing of agricultural products” (FAO 2004).

History of the Precautionary Principle and its Status in International Law

The precautionary principle had its genesis in German law (Cameron and O’Riordan 1994). As the *Vorsorgeprinzip*, the precautionary principle claims significant status in German environmental policy (Cameron and Abouchar 1991b). It was first legally recognized internationally in the Preamble to the 1985 Vienna Convention for the Protection of the Ozone Layer, in which the Parties to the treaty recognized the necessity of precautionary measures.

States subsequently recognized the need for a precautionary approach in the series of conferences on the North Sea (Sands 2003). During the Second North Sea Conference Ministerial Declaration (the London Declaration) in 1987, the principle was referenced three times in Articles VII, XV(i) and XVI (i). Since then, the precautionary principle has emerged in several international environmental agreements [See table 1], which represents a “complex framework of treaty law and custom from which the precautionary principle draws its strength as a mechanism for environmental protection and ultimately validates its position as genuine international law”(Cameron and Abouchar 1996, 34).

Table 1- International Environmental Agreements which Incorporate the Precautionary Principle

Treaty	Subject	Article
Vienna Convention (1985)	Ozone depletion	Preamble
Montreal Protocol (1987)	Ozone depletion	Preamble
Climate Change Convention (1992)	Climate Change	Article 3, § 3
Biodiversity Convention (1992)	Biodiversity	Preamble
LRTAP Sulphur Protocol (1994)	Air Pollution	Preamble

Agreement for the Conservation of Africa-Eurasian Migratory Waterbirds	Migratory Birds	Article 2
Straddling Stocks Agreement (1995)	Fish Stocks	Article 5(c); Article 6
SADC Water Protocol (1995)	Water	Preamble
Mediterranean Hazardous Waste Protocol (1996)	Pollution of Sea	Preamble; Article 8.3
Protocol to the London Convention (1996)	Marine Pollution	Article 3
ACCOBAMS	Cetaceans conservation	Article 2, § 4
Convention on the Law of Non-Navigational uses of International Watercourses (1996)	Watercourses	Preamble
Protocol to MARPOL 73/78 (1997)	Pollution from Ships	Preamble
Kyoto Protocol (1997)	Climate Change	Preamble
LRTAP POPs Protocol (1998)	Air Pollution	Preamble
LRTAP Heavy Metals Protocol (1998)	Air Pollution	Preamble; Annex VII.3
Chemicals Convention (1998)	Hazardous Chemicals and Pesticides	Article 14, §3(d); Annex 5, 1(e)

Agreement Concerning the Creation of a Marine Mammal Sanctuary in the Mediterranean (1999)	Marine Mammals	Final Declaration
Convention on the Protection of the Rhine (1999)	Rhine Protection	Article 4
Health Protocol (1999)	Water and Health	Article 5(a)
LRTAP Acidification Protocol (1999)	Air Pollution	Preamble
Biosafety Protocol (2000)	Biological Diversity	Preamble; Article 1
Galapagos Agreement (2000)	Living Marine Resources	Article 5(b)
Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (2000)	Migratory Fish Stocks	Preamble; Article 5(c); Article 6
International Convention on the Control of Harmful Anti-Fouling Systems on Ships (2001)	Pollution from Ships	Preamble
POPs Convention (2001)	Persistent Organic Pollution	Preamble; Article 1; Article 8 §9
Agreement on the Conservation of Albatrosses and Petrels (2001)	Birds Protection	Preamble; Article II § 3

North-East Pacific Convention (2002)	Marine and Coastal Protection	Article 5 § 6 (a)
International Convention for the Control and Management of Ships Ballast Water and Sediments (2004)	Pollution from Ships	Preamble

Defining the Precautionary Principle

Differing formulations of the precautionary principle abound (Hickey and Walker 1995; Cameron and Abouchar 1991a; Cameron and O’Riordan 1994; Perrez 2000). In general terms, the precautionary principle is taken to mean that evidence of harm need not be conclusively demonstrated to justify a response to a perceived risk, if necessary, taking immediate measures to prevent harm. Scott (2005) notes the precautionary principle is primarily concerned about the population at large rather than narrow economic or political groups, although he also notes that just what constitutes the ‘public interest’ can be disputed. And yet, underlying such a broad brush description is a complex diversity of interpretations centring on “stronger” and “weaker” versions of the principle (Sandin et al. 2002; Soule 2000).

The most commonly cited version of the principle dates from the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Here, the idea of a “precautionary approach” was unambiguously documented in Principle 15:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Rio Declaration 1992).

The precautionary approach reappears in the international regime which regulates genetically modified organisms (GMOs) the 2000 Cartagena Protocol on Biosafety. The objective of the protocol, as articulated under Article 3, is “to contribute to ensuring an adequate level of protection in the safe transfer, handling and use of living modified organisms (LMOs)” (Secretariat of the Convention on Biological Diversity 2000, 3). However, while the Cartagena Protocol affirms the precautionary approach in its preamble, the preamble has no binding obligation on the signatories of the protocol.

While several authors (Sands 2003; Cameron and Abouchar 1996; Goklany 2009) use the concepts ‘precautionary principle’ and a ‘precautionary approach’ interchangeably, the distinction between these two phrases was critical to the success of the approval of the final text of the 1992 Rio Declaration, as evidenced in the 4th session of the UNCED preparatory committee. The US Government had threatened to withdraw its support if the term, the ‘precautionary principle’ remained within the text of the declaration. Thus, Principle 15 of the (Rio Declaration 1992) speaks of the ‘precautionary approach’. Meyer (2007) states that the US Government specifically adopted the term ‘approach’ since it was “a reflection of the changes in the environmental policy of the US under the Reagan administration in the 1980s” (p. 470). Thus, introducing a distinction between a stronger ‘principle’ and a weaker ‘approach’ suggests an attempt to cover over this disagreement (Iverson and Perrings 2009).

For example, the publication on the precautionary principle by United Nations Educational, Scientific and Cultural Organization (UNESCO) (2005) claims that in most instances, the two terms, principle and approach, are closely related. This document notes that in the English version of the Rio Declaration, for instance, the word ‘approach’ is used, while the Spanish translation contains the word ‘principio’ (p. 23). Mace and Gabriel (1999) suggest that the “the precautionary

approach was created as a somewhat more flexible alternative that incorporates socio-economic considerations along with the essential requirement of promoting the long-term sustainability of natural resources” (p. 65). On the other hand, the precautionary principle places an obligation on decision makers to prohibit a particular activity, which is potentially harmful to humans and the environment, even if there is uncertainty vis-à-vis the extent of the impacts or causality. This suggests that the term ‘precautionary approach’ is merely a diluted version of the principle.

With stronger and weaker versions of the precautionary principle and the precautionary approach now in circulation, classifications have been introduced for different types. Sandin et al. (2002) offer a distinction between argumentative and prescriptive formulations. Argumentative forms shape the terms of debates by creating a guiding principle for what arguments are deemed legitimate (as in the 1992 Rio Declaration). On the other hand, prescriptive formulations of the principle stipulate that if certain preconditions are satisfied vis-à-vis the types of hazard and the level of evidence, regulators are duty-bound to follow a specific prescription. These two categorization represents another version of the weak/strong approach/principle distinction.

Morris & Morris (2000) suggest distinguishing between a strong formulation of the principle and a weak formulation. They suggest that the strong formulation requires the cessation of activities until there is proof that the activity will not result in harm, while the weak formulation states that lack of full certainty is not justification for preventing action that might be harmful. McLean & Patterson, (2006) also propose that a convenient way of examining the concept is to categorize it into weak and strong versions.

Soule (2000) supports the strong/weak distinction put forward by Morris & Morris (2000) and McLean & Patterson (2006). Soule (2000) advances the notion that the weak formulation of the precautionary principle is premised on two core pillars. Firstly, the weak formulation does not

“seriously restrict the factors that decision makers can legitimately take into account” (p. 313). Secondly, the relative importance of different factors themselves is open, in the sense that “regulators do not receive any specific guidance on the relative weighting of any given factor” (Soule 2000, p. 313). These distinctions, according to Soule (2000), situates the weak formulation of the precautionary principle as a pragmatic principle, since it enables decisions makers to contemplate a wide gamut of risk factors (including, but not limited to, economic efficiency) and to assess them alongside each other on a case-by-case basis. Soule (2000) expands on the notion of divergent formulations of the principle, differentiating the strong formulation as having two main features. First, it is exclusive in scope; in the sense that its only consideration is the environmental risks that can result from the policy under consideration. The second criterion is based on what Soule (2000) refers to as the ‘determinative’ factor. The strong formulation argues that environmental risk is the authoritative factor on which decision making pivots and regulators are compelled to act on it to the exclusion of other considerations such as socio-economic factors (Soule 2000, p. 318).

However, Soule (2000) is critical of the strong formulation, arguing that it is obsessively narrow and fails to take into account the full range of costs and benefits when calculating risk. He refers to the example of genetically-modified pest protected plants (GMPPPs). Soule (2000) suggests that the strong formulation would reject GMPPPs, ignoring the fact that current environmental practices involving the pervasive use of agrochemicals such as pesticides incur substantial environmental costs. Further, Soule (2000) asserts that non-environmental factors - such as food supply – should also be considered (p. 324).

Sunstein (2005) dismisses the weak versions of the principle as “unobjectionable, even banal” (p. 24), while labeling the strong formulations as “incoherent” (p. 14), arguing that the

“principle threatened to be paralyzing, forbidding regulation, inaction, and every step in between” (p. 14). Sunstein rejects regulation of risks that is premised on either a weak or strong formulations of the precautionary principle. Instead, Sunstein (2005) argues for the sensible management of risks through education and information, but reserves a place for the precautionary principle only in instances where “people face a potentially catastrophic risk to which probabilities cannot be assigned” (p. 225).

In response to the debate about strong and weak formulations of the principle, this thesis adopts the categories proposed by Peterson (2006), who builds on the work of Cooney (2004) and Wiener (2002). Peterson (2006) proposes an additional category, pointing to the presence of a moderate version of the principle, in addition to the strong and weak formulations. Patterson (2006) develops these distinctions by referencing the language in several international agreements [See Box 1].

Box 1- Key international formulations of the precautionary principle

Weak formulations

Rio Declaration on Environment and Development, 1992 (Principle 15): In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

UN Framework Convention on Climate Change, 1992: The Parties should take precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty

should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.

Bergen Ministerial Declaration on Sustainable Development in the Economic Commission for Europe Region, 1990: In order to achieve sustainable development, policies must be based on the precautionary principle. ... Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

UN Convention on Biological Diversity, 1992: Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat.

Moderate formulations

Third International Conference on the Protection of the North Sea, Ministerial Declaration, 1990: The participants ... will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic, and liable to bioaccumulate even where there is no scientific evidence to prove a causal link between emissions and effects.

UK Biodiversity Action Plan, Department of the Environment, 1994 (para. 6.8): In line with the precautionary principle, where interactions are complex and where the available evidence suggests that there is a significant chance of damage to our biodiversity heritage occurring, conservation measures are appropriate, even in the absence of conclusive scientific evidence that the damage will occur.

Strong formulations

Wingspread Statement on the Precautionary Principle, 1998: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.

Earth Charter, 2000 (article 6): Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach. Take action to avoid the possibility of serious or irreversible environmental harm even when scientific knowledge is incomplete or inconclusive. Place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm.

Adapted:(Peterson 2006b)

Peterson (2006) argues that the weak version is the least prescriptive, allowing preventive measures to be taken in the face of uncertainty but not requiring them (e.g Rio Declaration 1992; United Nations Framework Convention on Climate Change (UNFCCC) (1992). The threshold of harm is satisfied when the evidence presented suggests the probability of the occurrence and the gravity of consequences. Some, but not all, weak versions require consideration of the costs of precautionary measures. These weak formulations do not preclude balancing of economic benefits against the costs. Factors including economic considerations are taken into account and these may provide legitimate justifications for delaying action. Under weak formulations, the requirement to justify the need for action (the burden of proof) generally falls on those advocating precautionary action. No reference is made to liability for future environmental damage (Peterson 2006a).

Peterson (2006) suggests that, in moderate versions of the principle, the existence of an uncertain threat represents a clear mandate for action, provided that all available evidence suggests that a sufficiently serious threat is present. For example, the United Kingdom (UK) Biodiversity Action Plan states:

In line with the precautionary principle, where interactions are complex and where the available evidence suggests that there is a significant chance of damage to our biodiversity heritage occurring, conservation measures are appropriate, even in the absence of conclusive scientific evidence that damage will occur. (Department of the Environment (UK) 1994, 92)

Usually, there is no requirement for proposed precautionary measures to be assessed against other factors such as economic or social costs. The trigger for action may be less rigorously defined, for example, as “potential damage”, rather than as “serious or irreversible” damage as in the weak version (Peterson 2006a). Liability is not mentioned and the burden of proof generally remains with those advocating precautionary action (Cooney 2004; Peterson 2006a).

In a strong formulation, there is usually no requirement for proposed precautionary measures to be assessed against other factors such as economic or social costs. The trigger for action may well be less rigorously defined than in other formulations, for example, as “potential damage”, rather than as “serious or irreversible” damage as in the weak version. Liability is not stated and the burden of proof generally remains with those advocating precautionary action. Thus, strong versions of the principle differ from the weak and moderate versions principally in reversing the burden of proof. However, strong versions also tend to compel precautionary measures if potential harm cannot be ruled out and some strong versions also establish liability for environmental harm, which is effectively a strong form of the “polluter pays” principle. For example, the Earth Charter (2000) states: “When knowledge is limited apply a precautionary

approach Place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm” (The Earth Charter Initiative 2000)

Reversal of the burden of proof requires those proposing an activity to prove that the product, procedure or technology is sufficiently “safe” before consent is granted. Necessitating proof of “no environmental harm” before any action proceeds presumes public unwillingness to accept any environmental risk, even if there are economic or social benefits present (Peterson, 2006). At the extreme, such a requirement could involve bans and prohibitions on entire classes of potentially threatening activities or substances (Cooney, 2005).

Peterson (2006) sets out a spectrum for the strength of versions by assessing what responses they present to the following questions:

1. What level (threshold) of threat or potential for harm is sufficient to trigger application of the principle?
2. Are the potential threats balanced against other considerations, such as costs or non-economic factors, in deciding what precautionary measures to implement?
3. Does the principle impose a positive obligation to act or simply permit action?
4. Where does the burden of proof rest to show the existence or absence of risk of harm?
5. Is liability for environmental harm assigned and if so, who bears liability? (Peterson 2006, p. 471)

Table 2 - Formulations of the Precautionary Principle

	Weak	Moderate	Strong
What level (threshold) of threat or potential for harm is sufficient to trigger application of the principle?	Serious, irreversible or significant	The trigger for action may be defined less rigorously, for example, as ‘potential damage’, rather than ‘serious or irreversible’ damage	The threshold for action varies, sometimes expressed simply as ‘harm’.
Are the potential threats balanced against other considerations, such as costs or non-economic factors, in deciding what precautionary measures to implement?	Economic considerations (among others) may provide legitimate grounds for postponing action.	Usually, there are no explicit qualifications requiring proposed precautionary measures to be assessed against factors such as economic or social costs.	No risk is acceptable
Does the principle impose a positive obligation to act or simply permit action?	Scientific uncertainty alone or the possibility of environmental damage below the threshold level will not satisfy the threshold test for precautionary measures.	The threat of environmental damage justifies or requires action to address the threat. Action may not be as different from weak versions as they may first appear; because precautionary measures (action) may include ‘wait and see’ approaches. However, the language is certainly stronger and may be suggestive of stronger forms of action	Strong versions justify or require precautionary measures. Immediate action is required where there is uncertainty
Where does the burden of proof rest to show the existence or absence of risk of harm?	Liability falls on those advocating precautionary action.	Liability falls on those advocating precautionary action.	Proponents of an activity with potential for harm – whether serious or minor – are required to prove that the product, process or technology is

			sufficiently 'safe' before approval is granted
Is liability for environmental harm assigned and if so, who bears liability?	No mention is made of assignment of liability for environmental harm.	Liability is not mentioned.	Proponents of the activity, rather than the public bears the burden of proof

Adapted from Peterson (2006)

In the Canadian debate, the Royal Society of Canada Expert Panel's report: *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* recommended the application of a strong formulation of the precautionary principle as it relates to the application of biotechnology and GMOs (The Royal Society of Canada 2001, 204). This report was commissioned by Health Canada (HC), the Canadian Food Inspection Agency (CFIA), and Environment Canada (EC). Specifically referencing the relationship between the precautionary principle and GM products, the report states that:

“In general, new technologies should not be presumed safe unless there is a reliable scientific basis for considering them safe ... [further] the Panel rejects the use of “substantial equivalence” as a decision threshold to exempt new GM products from rigorous safety assessments on the basis of superficial similarities because such a regulatory procedure is not a precautionary assignment of the burden of proof” (The Royal Society of Canada 2001, 206).

While the literature provides an exhaustive analysis of the various formulations of the precautionary principle (Cooney 2004; Goklany 2009; Morris and Morris 2000; Peterson 2006a;

Sandin et al. 2002; Wiener, 2002) and establishes that there are at least two and possibly three main variants of the precautionary principle in circulation, what is missing is a better understanding of why particular countries adopt distinctive versions of the principle. In spite of the Royal Society's recommendations, for example, the Canadian government actually adopted a weak version of the principle. Goklany (2009) suggests that the European Union (EU) embraces a "strong" formulation of the precautionary principle in biotechnology policies, while the United States (US) approach incorporates a moderate version. What is noticeably absent from the literature is how to account for these various formulations of the principle, the implications of various formulations on commercialization and the enabling environments that give rise to these formulations. Chapter 3 presents a framework for understanding the decision to adopt a particular version of the precautionary principle and Chapter 4 will use the framework to explain the Canadian decision to adopt a weak version.

CHAPTER 3. RESEARCH FRAMEWORK AND RESEARCH METHODOLOGY

Introduction

The pathways framework represents a unique way of analyzing complex global environmental governance arrangements; with specific focus on distinguishing multiple causal logics and pathways of influence in order to give explanation to the domestic outcomes of global environmental governance. At present, as its creators acknowledge, the pathways constitute a *framework*, in the sense of “the most general set of variables that an institutional analyst may want to use to examine a diversity of institutional settings” (Ostrom 2010, 6). In order to use the pathways framework to analyze a particular case, it is necessary to transform it into a theory which sets out to “explain diverse outcomes and how they relate to one another” (ibid.) by clearly specifying independent and dependent variables. Ostrom (2010) notes that the “terms frameworks, theories, and models are used interchangeably by many scholars” (p. 6). Nonetheless, we follow Ostrom in distinguishing between these concepts, allowing this research to “use these concepts in a nested manner to range from the most general to the most precise set of assumptions made by a scholar” (p. 6).

This chapter argues that, in the case of an international norm such as the precautionary principle, a pathways theory provides a superior way of explaining how and why that norm becomes part of domestic law and policy than the more usual appeal to “regime effectiveness” theory. In particular, a pathways theory can explain not just whether a norm will be incorporated into domestic law but also what version of the norm gets incorporated. As shown in the previous chapter, this part of the explanation will be critical in understanding the role of the precautionary principle in domestic law and policy.

Analytical Framework: Pathways Framework

Hickey & Walker (1995) and Sands (2003) observe that since the 1997 Montreal protocol and the 1992 Rio Declaration, several countries have chosen to adopt and incorporate the precautionary principle, an international norm, into their domestic environmental policies. As a result, this norm has become an essential component of environmental law and risk regulation, in several jurisdictions, such as the US (Kannan 2007), Canada (The Royal Society of Canada 2001), Australia (Harding and Fisher 1999), Germany (O’Riordan 1994), France (Rochere Dutheil de la 1999), and the EC (Harding and Fisher 1999).

Bernstein (2000) defines norms as patterns of actions or behavior that are appropriate and accepted. Alldén (2009), building on the work of Farrell (2001), suggests that norms are “inter-subjective beliefs about the social and natural world which define actors, their situations and the possibilities of action” (p. 17). Finnemore & Sikkink (2002) offer a narrower view by defining norms as “standard of appropriate behavior for actors with a given identity” (p. 251).

Drawing on the international relations perspective, Khagram, Riker, & Sikkink (2002) define a norm as the “shared expectations or standards of appropriate behavior accepted by states and intergovernmental organizations that can be applied to states, intergovernmental organizations, and/or non-state actors of various kinds” (p. 14). The definition offered by Khagram, Riker, & Sikkink (2002) represents a global framing of norms and represents how this concept is to be understood throughout this thesis. This research acknowledges that “there is a tendency to narrow non-state actors’ functions by limiting their activity to a single level of governance, by confining certain roles to the realm of traditional state and institutional actors, by pre-assigning normative labels to them” (Cowles 2003, 103). Other critics, such as Rayner and McNutt (2012) note that the term non-state actors is broadly used to describe actors such as large

and small international organizations, transnational corporations, and a variety of non-governmental organizations.

How does an international norm become domestic law? Traditionally, the route has been described as following a pathway that passes first through the incorporation of the norm into international law and, from there, into domestic law through enabling legislation and court judgments. Our discussion of the precautionary principle suggests two problems with the traditional account. First, if the account is taken to mean that there has to be a single agreed upon interpretation of the principle that is then embodied in an international treaty, ratified by signatories and implemented in a uniform way around the world, the precautionary principle does not fit the description. However, as critics of this narrow, formal-legal version of an international regime have pointed out, hardly any other international norm or principle fits the description either.

Consequently, critics of the formal-legal versions of regime theory, e.g. Sands (2003), have proposed more informal ways that international norms become domestic law and policy. Sands suggests that under international law, norms such as the precautionary principle can amount to customary international law if they are enshrined in international treaties and are part of the decisions of international courts and tribunals and the International Court of Justice (ICJ). Sands (2003) argues that norms crystallize into customs when there is a consistent acceptance of a norm by states, either through its incorporation into treaties, ratifications, its application in domestic courts or by official statements by government officials. Further Sands (2003) states that an additional way of discerning custom is *opinio juris*, which is revealed through the actions of States that adhere to a norm as though they are bound to it. These actions must however be consistent over an extended period of time.

Thus, in the case of the precautionary principle, several commentators (Goklany 2001; Goldstein and Carruth 2003; Cameron, Jordan, and O’Riordan 2001; O’Riordan and Jordan 1995; Perrez 2000; The Royal Society of Canada 2001) suggests that owing to the consistency with which the precautionary principle has been invoked in international agreements and numerous court cases, the precautionary principle can be considered as amounting to customary international law (Tollefson and Thornback 2007). According to Sands (2003) international customs are binding on States, even if they are not signatories to international treaties and agreements that contain the norm.

This more informal route from norm to policy is a distinct improvement over the narrow, formal-legal version. It explains how precaution could become an accepted feature of law and policy in a variety of different countries and underlines the role of interpretation in creating different versions of the principle. However, this more informal approach raises the second problem of trying to follow a norm through international law and into domestic policy. If there is not a single, legally accepted version of the principle, what is to stop a country from adopting a markedly different version from other countries, perhaps to gain an unfair advantage in trade or security, and continuing to claim that they are in compliance with their international obligations? The identity of the principle itself now seems to be in question, a problem that arose in connection with the international relations and globalization literature that primarily accounts for norm transfer through the “policy diffusion” mechanisms (Alldén 2009; Checkel 1997; Covadonga and Gilardi 2009; Fabrizio and Fuglister 2008; Levi-Faur 2005; Skogstad 2000). As critics pointed out (Howlett and Rayner 2008) “what” is being diffused is rarely clearly stated and in the case of the precautionary principle, the literature clearly shows that there are (Cameron, Jordan, and

O’Riordan 2001; Sandin et al. 2002; Sunstein 2005), multiple formulations of the principle at work (Freestone and Hey 1996; Freestone 1991; Sands 2003; Sunstein 2005).

Bernstein and Cashore note that, in response to this criticism, proponents of a broader or more informal process of incorporating international norms into domestic policy generally shifted their focus from the identity of the norm to the effectiveness of the policies that are carried out in its name. In other words, what matters about an international regime is not whether countries have signed up to and ratified a treaty but, whether they were able to solve the problems for which the regime was established.

This is not to claim that the traditional activities of treaty negotiation and regime creation are irrelevant to effectiveness. Skjærseth, Stokke, & Wettestad (2006), using regime effectiveness theory, examine the interplay between international institutions based on soft and hard law and note that “hard law instruments are subject to more thorough negotiation and preparation which is likely to improve the quality of implementation and compliance”. However, they caution that this does not necessarily result in more effective governance. The danger, as Stokke and Vidas (1996) suggest is that, within the study of international law, ‘effectiveness’ is still conceived as referring to “the legal status of a rule meaning that it is legally binding upon those addressed by it; or, when linked to implementing the rule, to the impact on the relevant factual situation” (Stokke and Vidas 1996, 14), incorporating an assumption that hard law instruments are capable of transmitting a particular international norm and constraining the behavior of the parties to that particular regime generating that norm.

Avoiding this assumption about effectiveness while attempting to preserve the idea of an identifiable norm or value moving from international to domestic law forms the point of departure for the pathways framework, whose fundamental innovation is the idea of multiple additional

pathways beyond international law itself. Specifically, as noted by Bernstein & Cashore, the work of Skjærseth, Stokke, & Wettestad (2006) suggests that international norms are effective if they “strengthen hard law rules and/or encourage states to sign up to hard law treaties” (Bernstein and Cashore 2012, 588). However, Bernstein & Cashore suggest that this assumption “truncates the possible influence of norms via other pathways, which remain poorly understood” (p. 588). Consequently, Bernstein & Cashore observe that “domestic influences cannot be studied simply by looking at the international rules pathway” (p. 587), especially since the failure of regime compliance and effectiveness arguments results from the single pathway argument that is built on “hard law treaty provisions” (Bernstein and Cashore 2012, 586). This thesis uses the term ‘pathway’ as a metaphor to explain how a norm travels from point A to point B.

Bernstein & Cashore’s (2012) innovative suggestion of additional causal pathways rests on the assumption that we live in a world where the neo-realist paradigm, which contends that the state is the central actor, is no longer credible (Keohane 1986). There are now a growing number of non-state actors, who are critical to global governance, many of whom have the ability to influence the policy agenda of international and domestic politics.

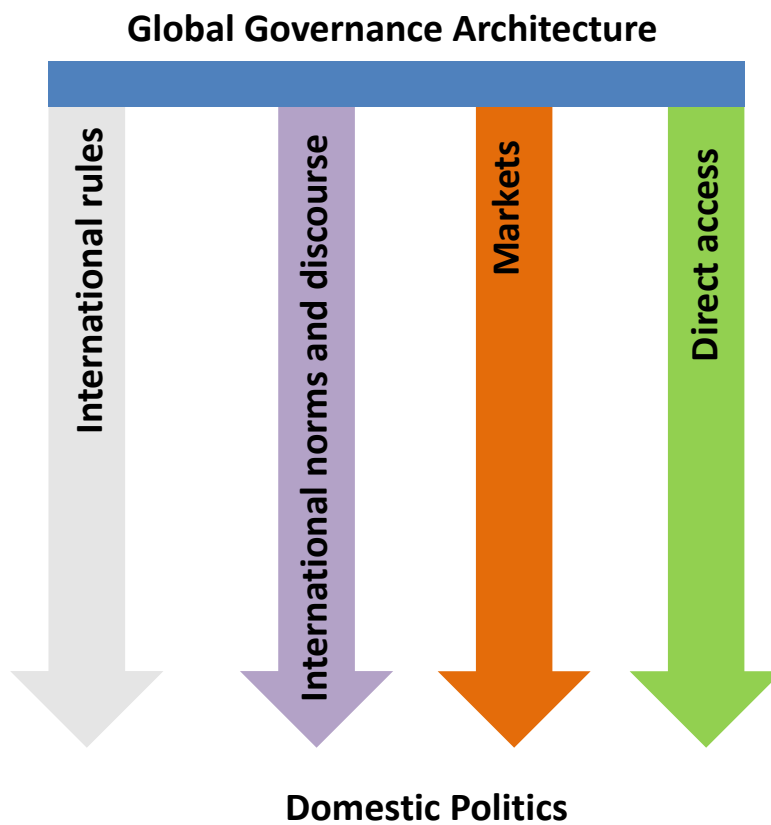
Bernstein & Cashore (2012) observe that these actors are able to influence domestic politics through “legal, non-legal, governmental and non-governmental arrangements” (p. 586).

Bernstein & Cashore (2012) remark that the framework “distinguishes the actors and institutions involved in governance arrangements that attempt to influence domestic policy from the pathways of influence themselves” (p. 589). The framework also allows for meticulous analysis by distinguish “transnational actors ... as agents of change” from “the rules and norms that institutions embody, in order to illustrate how agents interact with rules and norms to influence

domestic policy” (p. 589). Hudson (2012) suggests that the “pathways arise from increasing international pressures on domestic policies that have global implications” (p. 993).

By focusing on transnational actors and their efforts to move international norms into domestic law and policy, Bernstein and Cashore reveal that there are three additional pathways in addition to the international rules path, through which actors, institutions and interests influence domestic and firm-level policy change. Specifically, they observe that “transnational actors and international institutions influence policies by bringing norms generated or promoted in the international sphere into the domestic political arena” (Bernstein and Cashore 2000, 71). The pathways framework identifies four causal pathways through which transnational pressures shape and transforms national policy. In addition to international rules, these consist of international norms and discourse, markets and direct access.

Figure 1 - Pathways Framework



International Norms and Discourse

The first pathway, international norms and discourse, “effectively involves transnational actors engaging in symbolic or information campaigns at the international level for the sole purpose of changing domestic governance” (Bernstein and Cashore 2000, 323). Bernstein & Cashore (2012) observe that norms and discourses are able to “define and regulate appropriate domestic behavior” (p. 591). They suggest that this pathway operate through both logic of appropriateness (norm-guided without regard to consequences) and a logic of consequences (which rests on utilitarian calculations). Bernstein & Cashore (2012) make a distinction between these two concepts by noting that in instances where norms are viewed as regulatory rules with repercussions, when violated, actors weigh the cost of compliance or noncompliance with these “prescribed or proscribed behavior” (Bernstein and Cashore 2012, 519).

Importantly, Bernstein & Cashore (2000) suggest that “agents of change along this path, whether activists, scientists or coalitions of business leaders, often explicitly aim to reframe or change the discourse around a problem or to create or reinforce new normative commitments” (p. 82). An example of this change, as noted by Bernstein & Cashore (2012) is the inclusion of aboriginal rights in domestic policy, which resulted in policy change in countries such as Canada and Brazil. Bernstein & Cashore (2000) observe that although these norms are not binding on States, they can “alter state identities and interests” (p. 324).

Further, Bernstein & Cashore (2012) observe that these norms can have a “powerful normative role . . . primarily through moral suasion and communicative action rather than coercion or enforcement” (p. 324), but success is hinged on the “moral vulnerability” of the target state (p. 325). The authors suggests that “the importance of learning networks suggests success along this pathway is more probable when the fourth pathway (direct access) is also travelled” (p. 592) and

this “path is more dependent on a country's concern for reputation than on its place in the international political economy (globalization)” (Bernstein and Cashore 2000, 82).

Like Bernstein & Cashore (2012), this thesis is interested in the purposeful actions by international actors, whose primary objective is the transfer and subsequent adoption of norms. As such, Bernstein & Cashore (2012) reference the work Keck & Sikkink (1998), who suggest that transnational actors follow a sequence of tactics when encouraging States to heed a particular international norm. Keck & Sikkink note that transnational actors “carry and re-frame ideas, insert them in policy debates, pressure for regime formation, and enforce existing international norms”. Keck & Sikkink propose that their typology of tactics that transnational actors utilize in their attempts at “persuasion, socialization, and pressure” includes: information, symbolic, leverage and accountability politics (p. 16). Additionally, the authors suggest that “persuasion and socialization often involve not just reasoning with opponents, but bringing pressure, arm-twisting, encouraging sanctions, and shaming” (p. 16).

Keck and Sikkink (1998) draw attention to the “boomerang effect, which curves around local state indifference and repression to put foreign pressure on local elites” (p. 200). However, Bernstein & Cashore suggest that this argument limits the impact of domestic policy-making structures and networks. As a consequence, Bernstein & Cashore cite the work of Acharya (2004) to show that global norms, [such as the precautionary principle] can be facilitated by domestic structures. Acharya (2004) proposes a “theory of localization in which norm-takers perform acts of selection, borrowing, and modification in accordance with a preexisting normative framework to build congruence between that and emerging global norms” (p. 269).

Finally, Bernstein & Cashore offer the following hypotheses:

(1) “Strategies for change based on International Norms and Discourse depend on the moral vulnerability of the target state or firm”,

(2) “Success depends on resonance with domestic ideology, culture and broader policy goals, not on targeting particular actors or domestic policy networks” and “The importance of learning networks suggests success along this pathway is more probable when the fourth pathway (direct access) is also travelled” (p. 592)

International rules

The logic of the second pathway, international rules, rests on the assumption that since international rules are binding on States, rules create what Franck (1990) refers to as a downward pull. These binding treaties include international trade agreements, international law and policies designed by the international organizations such as the International Monetary Fund (IMF) and the WB - which often times impose conditionalities upon the signatories of loan agreements such as environmental protection and good governance. Bernstein and Cashore (2012) suggest that although international rules often times do not result in compliance by States, this pathway still impacts the shape and form of domestic policies. They suggest that international agreements are only able to influence policy at the domestic level when the party in question is bound to a particular international agreement.

Bernstein & Cashore (2000) allude to the work of Zürn (1998), who indicate that the international rules pathway is constructed by the collective action of transnational agents through the mechanisms of treaty diplomacy and by directly engaging in the construction of international rules. Further, Bernstein & Cashore (2012) posits that non-state actors at both the domestic and international level can activate this pathway in instances of noncompliance. Actors can apply significant pressure on governments by publically acknowledging instances of noncompliance or

“press governments to launch disputes against other countries that do not fulfill their obligations” (p. 591). Bernstein & Cashore (2012) hypothesize that “agreements on international rules with strong compliance mechanisms are more likely when such agreements reflect rules or processes already under way domestically owing to interaction with other pathways” (p. 591)

The market

According to Bernstein & Cashore (2012) this path “encompasses processes or tactics that attempt to manipulate, work with or leverage markets to create domestic policy change” (p. 593). These actions can range from boycott campaigns, conducted with the aim of affecting consumers, producers, suppliers and government to using the media to create negative publicity. Hudson (2012) mentions that “this pathway may directly bypass domestic politics since consumers drive the government’s choice to change its policies”.

For agents choosing to employ this pathway, an important pillar of success rests on the ability of actors to convince and influence the behavior of consumers. That is, success will depend on whether “transnational actors to convince consumers of the need to change the target’s detrimental policies” (Bernstein and Cashore 2000, 77). The strategies employed along this pathway can range from education, mass media coverage, moral and/or normative arguments, and can also include the intentional targeting of suppliers and distributors who operate in the local sphere (Bernstein and Cashore 2000). Also, Bernstein & Cashore (2000) suggest that suppliers and distributors are disposed to supporting these “boycotts or risk being boycotted themselves” (p. 77)

The authors suggest that an example of the pathway can be seen in the forestry sector, where forest certification systems serve as ‘carrots and sticks’, where adherence to international standards results in market access, firm recognition and price premiums, while failure to implement results in negative attention. The ability to influence domestic outputs along this

pathway pivots on the target State's dependence on foreign markets and the ability to successfully influence consumer behavior. Moral suasion is not employed along this path, instead, coercion is used or threatened. As a result, while the use of boycotts can have short-term success, Bernstein & Cashore (2000) observe that "long-term efforts require more enduring forms of non-state authority" and "normative change is unlikely as a result solely of direct market pressure" (p. 593).

An important consideration is that the use "of market mechanisms is more likely to produce policy change when combined with elements of other pathways, especially when institutions are able to generate their own legitimate authority, as in the case of some third-party certification systems" (Bernstein and Cashore 2012, 593).

Direct access to domestic policy-making processes pathway

The fourth and final pathway: direct access, involves the deliberate efforts by international and domestic non-state actors to participate in the domestic policy creation process. Bernstein & Cashore (2000) suggest that this is an attempt to internalize an external influence but these attempts must not be viewed as an effort to interfere in the sovereign affairs of a State. The direct access pathway results in transnational agents engaging in international learning and training on how to bring about environmental, social and economic change.

Financial and human resources are also leveraged to assist local actors, non-governmental organizations (NGOs), grassroots organizations and environmental non-governmental organization (ENGOs) or aid in their creation. The focus of this capacity enhancement outreach is to "shift the balance of power in domestic policy processes and provide access to often marginalized or disempowered organizations" (Bernstein and Cashore 2012, 594).

Bernstein & Cashore argue that "direct access through enforcement/implementation strategies can yield swift and immediate results, as long as international actors and organizations

do not make additional requirements to which the domestic government does not agree” (p. 594). They also suggest that this tactic is potentially a significant driver of policy change since, unlike other methods of influence, it strengthens the policy objective of the domestic government, “which, owing to a lack of capacity and resources, it is unable to enforce or implement” (p. 594). Bernstein & Cashore (2000) suggest that transnational groups are required to have in depth knowledge of domestic policy networks if they are to succeed along this path.

Research methodology

This research proposes to utilize a case study approach of Canada. According to Yin (2003), a case study can be defined as “an empirical investigation of a contemporary phenomenon that includes its everyday context, particularly when the boundaries between the phenomenon and context are not clear” (p. 23). Case studies are often utilized when an investigation of contextual factors is required to fully understand the phenomenon. Yin (2003) expands on the usefulness of case studies by contending that case studies are inherently valuable when studying phenomena where there will be more variables of interest than data points.

Data Sources

Yin (2003) suggests that the characteristic of a good thesis that employs a case study research is the use of multiple data sources. These sources may consist of, but are not limited to: documentation, archival records, interviews, physical artifacts, direct observations, and participant-observation (Yin 2003). No particular source has an absolute advantage over the others; rather, the employment of multiple sources complements each other when used in tandem, each offering strengths and weaknesses (Yin 1994).

As such, and in order to augment data credibility (Yin 2003), the sources utilized by this thesis are documentation and archival records. Specifically, this thesis examined peer reviewed journals, scholarly articles, academic publications; online news media, international and Canadian reports, parliamentary records, federal government records and reports, and archived documents.

Further, since the pathways framework had not previously offered an outcome, the findings and analysis of this thesis will provide an opportunity to advance the framework and test it within a unique policy space.

Measuring Policy Change

This thesis measures policy change by focusing “mainly on policy decisions (statutes, regulations and policy statements that carry the force of the state)” (Bernstein and Cashore 2000, 70). As note by Bernstein and Cashore (2000), actors operating in the domestic and international sphere transport norms generated in the international sphere into the domestic political economy.

Evidence of this proposition is exemplified in the transmission of international norms such as the trade in endangered species or hazardous substances, international human rights and international labor standards. Within the context of this thesis, changes are not limited to form of “new policy structures or new laws, or attempts to de-legitimize former practices” (p, 71), they also manifest themselves in the decisions by firms faced with internal and external pressure to change.

As such, this research suggest that while activity along all four paths can result in change, “the conditions of successful change differ along each path, indicating different logics of influence” (Bernstein and Cashore 2000, 71)

Chapter 4. SITUATING THE CANADIAN FORMULATION OF THE PRECAUTIONARY PRINCIPLE

As noted in Chapter 2, this thesis adopts the criteria outlined by Peterson (2006), who sets out a spectrum for the strength of versions by assessing what responses to questions outlined in Table 2. Based on the criteria, the following represents the various formulations of the principle found within the Canadian environmental landscape. These include the formulations found at federal (national legislations) and provincial levels, including agreements among provinces and the Canadian Discussion Document on the precautionary approach/principle.

The Precautionary Principle and Canadian Provinces

The Canadian province of Nova Scotia is the only Canadian jurisdiction to include the words precautionary principle within its environmental protection legislation. The Nova Scotia Environment Act 1994-95 states that “the precautionary principle will be used in decision-making so that where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation”¹.

A second province, New Brunswick, while not including the words ‘precautionary principle’, does include elements of the principle in its legislation. Specifically, section 2 of the New Brunswick *Clean Air Act* states that “scientific information should be a fundamental part of the decision-making process in the administration of this Act and the regulations, but lack of full scientific certainty should not delay or deter the implementation of measures to prevent the release

¹ Nova Scotia *Environment Act*, 1994-95, c. C.1

of contaminants or the spread of contamination where there are threats of serious or irreversible damage to the environment”².

The province of Ontario, while not including the principle in its environmental legislation, does include it at a departmental level. In particular, it is incorporated in its Statements of Environmental Values (SEVs). The Ministry of Environment’s SEV states that the ministry is committed to “exercising a precautionary approach in its decision making” (Government of Ontario 2013a). However, it is important to note that the Ministry of Natural Resources does not include the word ‘precaution,’ opting instead for an “exercise caution and special concern for natural values in the face of uncertainty” (Government of Ontario 2013b).

Environmental Harmonization Accord

In January 1998, Canadian Council of Ministers of the Environment (not including Quebec), adopted the Canada-wide Accord on Environmental Harmonization. The Accord was developed with the intention of crafting consistent environmental measures and to apply shared environmental management principles, one of which is the precautionary principle. Specifically, Principle 2 of the Accord states that “where there are threats of serious or irreversible environmental damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (precautionary principle)” (Canadian Council of Ministers of the Environment 1998a).

Further, the Accord provides for sub-agreements to be developed in the area of environmental management. These sub-agreements included the Canada-wide Environmental Standards Sub-agreement and the Sub-agreement on Environmental Assessment. However, while

² New Brunswick *Clean Air Act*, S.N.B. 1997, c. C-52

the Accord supports the precautionary principle, Principle 3.1.2 of the Canada-wide Environmental Standards Sub-agreement weakens the commitment to the principle by utilizing prerequisites for the application of the standards, such as “Canada-wide standards will be based on sound science and the evaluation of risk to human health and the environment” and “Measures developed to attain agreed-upon standards will recognize environmental and socio-economic considerations”(Canadian Council of Ministers of the Environment 1998a).

Additionally, the Sub-agreement on Environmental Assessment fails to mention the precautionary principle; instead it chooses to support other principles such as transparency and public accountability, effectiveness, efficiency and certainty (Canadian Council of Ministers of the Environment 1998b).

Government of Canada Discussion Document Discussion Document on the Precautionary Approach/Principle

In 2001, the Government of Canada published a discussion document on the precautionary approach/principle. Participating in the discussion document process were Agriculture and Agri-Food Canada, Canadian Environmental Assessment Agency, Canadian Food Inspection Agency, Department of Fisheries and Oceans, Department of Foreign Affairs and International Trade, Environment Canada, Finance Canada, Health Canada, Industry Canada, Justice Canada, Natural Resources Canada, Privy Council Office, Transport Canada and Treasury Board Secretariat (Environment Canada 2001).

The discussion document was designed with the intention of “inform and raise awareness among stakeholder groups about the precautionary approach/principle and the draft framework ... gauge the reaction of stakeholders...[and] test the guiding principles” (Environment Canada

2001). The document outlined five principles which focused on the precautionary principle and suggested that precautionary measures should be:

- “Subject to reconsiderations based on the evolution of science, technology and society’s chosen level of protection;
- Proportional to the potential severity of the risk being addressed and to society’s chosen level of protection
- Non-discriminatory and consistent with measures taken in similar circumstances;
- Cost-effective, with the goal of generating an overall net benefit for society at least cost and efficiency in the choice of measures; and
- Least trade restrictive” (Fuller, Myers, and Vanderzwaag 2002; Environment Canada 2001).

The discussion document, while acknowledging the importance and role of the principle, supports a weak formulation of the principle. First the document fails to clearly address and appropriate the burden of proof in the decision making process. Second, concerning the burden of proof, the document states that “the responsibility for producing the information base (burden of proof) may be assigned ...[and] the scientific information base and responsibility for producing it may shift as the knowledge evolves” (Environment Canada 2001, emphasis added). Third, the discussion document notes that “Sound scientific information and its evaluation must be the basis for applying the precautionary approach, particularly with regard to (i) the decision to act or not to act” (Environment Canada 2001, sec. 3.3). This criterion weakens the principle as the determination of what constitutes a sound science approach is determining by government.

Finally, the discussion document emphasizes the importance of decision makers adopting cost-benefit approach in determining acceptability of risks. In particular, the document notes that in

cases where decision makers are required to take urgent action, at some level “ decision making should identify potential costs and benefits as explicitly and as soon as possible, and distinguish what risk the public is prepared to accept on the basis of sound and reasonable, albeit incomplete, scientific evidence” (Environment Canada 2001, sec. 2.3). Critically, the document makes the assumption that precautionary principle acts as a barrier to innovation or technological change. The document states that using the use of cost effect measures “can ensure that society receives net benefits from decision making, and that the precautionary approach is not used as an unnecessary or unintentional barrier to innovation or technological change” (Environment Canada 2001, sec. 3.10)

In addition, the document also notes that when whatever instrument is used in addressing risks or the potential for risks, the least trade restrictive measure should be applied. The inclusion of the least trade restrictive criteria subordinates environmental and societal concerns to the least common denominator of trade arrangements.

Canadian Environmental Legislation

References to versions of the precautionary principle are contained within several key pieces of Canadian legislation. These include the *Canadian Environmental Protection Act*³ (*CEPA*), the *Oceans Act*⁴, the *Species at Risk Act*⁵ (*SARA*), the *Pest Control Products Act*⁶ (*PCPA*) and the *Canadian Environmental Assessment Act*⁷ (*CEAA*). The principle is articulated in the preambles to *CEPA*, *SARA* and the *Oceans Act*. It is also included in the purpose section of *CEAA* and as a

³ S.C. 1999 c.33

⁴ S.C. 1996, c.31

⁵ S.C. 2002 c.29

⁶ S.C. 2002, c. 28

⁷ S.C. 2012, c. 19, s. 52

mandatory strategic principle in the *Oceans Act*. The manner in which the precautionary principle is expressed in these legislations varies and is an indication that there is no uniformed definition of the principle (Table 3).

Table 3 - Canadian Legislation utilizing the precautionary principle

Legislation	Formulation
CEPA	“Whereas the Government of Canada is committed to implementing the precautionary principle that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”
SARA	“the Government of Canada is committed to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to a wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty”
PCPA	“Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent adverse health impact or environmental degradation”
CEAA	Whereas the Government of Canada is committed to implementing the precautionary principle that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”
Oceans Act	“WHEREAS Canada promotes the wide application of the precautionary approach to the conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment”

Sources: *Oceans Act* (1996), CEPA (1999), SARA (2002), PCPA (2002), CEAA (2012)

In addition to the general observation that the principle appears in the preamble of most of the statutes rather than the body, using the criteria set out by Peterson (2006) allow us to determine whether a particular formulation is weak, strong or moderate. As outlined in Table 2 (p. 22), the criteria used to ranks the various formulations are as follows:

- the level of harm needed to trigger the principle,
- whether the principle is balanced against other considerations e.g. cost,

- whether the formulation imposes an obligation to act,
- where the burden of proof resides and
- whether liability is assigned when there is environmental harm.

Using these criteria, the various expressions of the principle included in Canadian environmental legislation were examined in order to determine whether they could be classified as weak, moderate or strong.

Table 4 – Situating the Precautionary Principle in Canadian Legislation

		CEPA	SARA	PCPA	CEAA	Oceans Act
What level (threshold) of threat or potential for harm is sufficient to trigger application of the principle?	Weak- Serious, irreversible or significant	✓	✓	✓	✓	✓
	Moderate - Trigger for action may be defined less rigorously, for example, as ‘potential damage’, rather than ‘serious or irreversible’ damage					
	Strong The threshold for action varies, sometimes expressed simply as ‘harm’					
Are the potential threats balanced against other considerations, such as costs or non-economic factors, in deciding what precautionary measures to implement?	Weak - Economic considerations (among others) may provide legitimate grounds for postponing action	✓	✓	✓	✓	✓
	Moderate - Usually, there are no explicit qualifications requiring proposed precautionary measures to be assessed against factors such as economic or social costs					
	Strong -No risk is acceptable					
Does the principle	Weak - Scientific uncertainty alone or the possibility of	✓	✓	✓	✓	✓

impose a positive obligation to act or simply permit action?	environmental damage below the threshold level will not satisfy the threshold test for precautionary measures					
	Moderate - The threat of environmental damage justifies or requires action to address the threat. Action may not be as different from weak versions as they may first appear; because precautionary measures (action) may include 'wait and see' approaches. However, the language is certainly stronger and may be suggestive of stronger forms of action					
	Strong - Strong versions justify or require precautionary measures. Immediate action is required where there is uncertainty					
Where does the burden of proof rest to show the existence or absence of risk of harm?	Weak Burden of proof falls on those advocating precautionary action or not mentioned	✓	✓	✓	✓	✓
	Moderate - Liability falls on those advocating precautionary action.					
	Strong - Proponents of an activity with potential for harm – whether serious or minor – are required to prove that the product, process or technology is sufficiently 'safe' before approval is granted					
Is liability for environmental harm assigned and if so, who bears liability?	Weak - Liability is not assigned	✓	✓	✓	✓	✓
	Moderate - Liability is not assigned					
	Strong – Liability is assigned on those responsible for environmental harm					

First, all of the Canadian environmental legislations listed in Table 5 (p. 76), requires that threshold needed to trigger the principle falls within the weak category. Similarly, none of the legislation reverses the burden of proof on the proponents of an activity nor does it assign liability for environmental harm on those responsible. With the exception of the *Oceans Act*, all of the other legislation requires precautionary measures to be assessed against factors such as economic and non-economic factors. In the case of the *Oceans Act*, while this piece of legislation does not state that potentially harmful actions are balanced against other considerations, the balancing of interests can be implied in the phrase “wide application”.

Additionally, within all of the legislation under consideration, the level of threat or potential threat that must exist in order to trigger the application of the principle is captured under the heading of ‘serious or irreversible damage’ and none of the legislation requires a clear commitment to act or to permit action in the absence of certainty about such damage.

In conclusion, the legislative and regulatory approach embraced by Canada embodies a weak version of the precautionary principle:

1. The threshold of threat or potential for harm is used to sufficiently trigger the principle is “serious or irreversible harm” (Privy Council Office 2003).
2. Potential threats are balanced against Canadians’ social, environmental and economic values and priorities (Privy Council Office 2003; CEPA 1999; PCPA 2006).

3. The principle requires the need for a decision, but does not impose a positive obligation to act; it simply permits action but does not indicate what actions should be taken (Privy Council Office 2003).
4. Assignment of the burden of proof is not mentioned in the Privy Council Office framework document. CEPA is also unclear, stating under ‘burden of proof’ that “The offence alleged in an environmental protection action and the resulting significant harm is to be proved on a balance of probabilities” (CEPA 1999, 29).
5. There is no federal legislation where liability for environmental harm is clearly and unambiguously assigned. Liability issues are to be determined by the relevant judicial instrument.

The next chapter explores how Canada came to adopt this weak version of precautionary principle by exploring the pathway[s] that the principle used as it travelled from the international to the Canadian domestic level.

Chapter 5. PATHWAYS TO PRECAUTION

The International Norms and Discourse Pathway

Introduction

The international norms and discourse pathway involves “explicit efforts at dialogue and/or participation in formal and informal international gatherings or conferences” (Bernstein and Cashore 2012, 592), as well as efforts by local actors and international actors at reframing and reconstructing “international norms to fit with local norms or to reinforce local beliefs or institutions” (Bernstein and Cashore 2012, 592). Lacking a legally binding international agreement that commits states to action, transnational actors use the international norms and discourse pathway by “engaging in symbolic or information campaigns at the international level for the sole purpose of changing domestic governance” (Bernstein and Cashore 2000, 323). To achieve their goal, “agents of change along this path, whether activists, scientists or coalitions of business leaders, often explicitly aim to reframe or change the discourse around a problem or to create or reinforce new normative commitments” (Bernstein and Cashore 2000 p. 82).

Accordingly, this section of the thesis examines the attempts by various international actors to mobilize action around the discourse on the precautionary principle, and their attempts to promote their ideas during the negotiations and deliberations of the Cartagena Protocol on Biosafety. It focuses particularly on the deliberate efforts by domestic and international actors to frame and reframe the discourse on precaution, by influencing consumer’s perception of risks and biotechnology.

The Cartagena Protocol on Biosafety

Under international law, there are only two key complementary international agreements that were specifically designed to regulate the international import, export, handling, and use of

any LMOs that may have adverse consequences on biological diversity, taking into consideration risks to human health. The two international agreements are the 1992 CBD and the 2000 Cartagena Protocol on Biosafety, both of which give prominence to the precautionary principle vis-à-vis biotechnology. Further, the Cartagena Protocol represents the most significant case of domestic and international actors' attempts to influence Canadian policy by seeking to incorporate the precautionary principle into an international agreement with the specific intent of establishing the principle as part of the corpus of international environment law. While it may appear that the Cartagena Protocol is an example of the international rules pathway, Canada has yet to ratify the protocol so its relevance for Canada lies in the evolution and clarification of the different ways of thinking about precaution that emerged during the negotiations and the connection between ideas and interests that they revealed. The disputes around the protocol and their discursive effects show how an international norm can have consequences for domestic policy even if it fails to be embodied in an international rule in a way that is binding for the state concerned. Thus, this section reflects the interplay of ideas, institutions, and interests during the negotiation process of the Cartagena Protocol. Specifically, it brings to light the fact that the discourse, concerning the proposed adoption of the precautionary principle hinged on economic and trade interests. This thesis contends that economic and trade interests were the primary and prevailing motive as to why the actors involved in the negotiation process argued and negotiated in the manner in which they did. Additionally, while the opposing States would fall under specific labels e.g. "Miami Group" or "Like Minded Group", the truth of the matter is that the dispute was essentially between countries that exported and imported genetically modified products, each possessing unique regulatory frameworks. Each country appealed to the discourse that most effectively secured its

interests at the negotiations, underlining the possibility of different formulations of the principle or the sidelining of the principle altogether,

Changing the discourse and reassessing the norm

The Cartagena Protocol was negotiated from 1996–2000, under the auspices of the CBD, and implemented in 2003. Canada, while party to the CBD, has yet to ratify the Cartagena Protocol, but continues to host CBD meetings on relevant issues covered under the protocol (Falkner and Gupta 2006; UNEP 2010). The Cartagena Protocol was commissioned under Article 19.3 of the CBD, which encourages parties of the convention to consider the need for an international agreement, specifically one that would provide the legal regulatory framework on the first transboundary transfer of LMOs (Depledge 2000; Falkner and Gupta 2006). The framework requires LMO-exporting States to consult and solicit advance informed agreements (AIA), based on a comprehensive risk assessment. This obligation was negotiated for and adopted by the protocol, based on the request of developing countries, which feared the introduction of LMOs within their States without their knowledge and without any prior risk assessment (Falkner and Gupta 2006). These countries insisted that the protocol makes “biosafety information-sharing mandatory on GMO exporting countries and would legitimize an importing country’s right to restrict GMO trade in the face of scientific uncertainty about risk or potential adverse socioeconomic impacts” (Falkner and Gupta 2006, 23).

On its face, the Cartagena Protocol adopts a regulatory framework which is premised on the precautionary principle, as first proposed by the African Group (CBD 1997). This group argued that “biotech products could result in social and economic dislocations in the global south, and that a Biosafety Protocol should help mitigate these disruptions” (Andrée 2005, 30). The position endorsed by the African group was adopted by the G-77 nations and China, a negotiating block

referred to as the “Like Minded Group” (Andrée 2005; CBD 1997; Falkner and Gupta 2006). The “Like Minded Group” argued that the precautionary principle was an essential concept in the decision making process vis-à-vis biosafety risk assessment (Andrée 2005).

The member nations of the EU were initially divided during the negotiations. At the outset, countries such as Germany, France and Britain favored the position of Canada and other EU LMO-exporting states, while Denmark and Austria were supportive of the African Group. Eventually a consensus position was reached and the EU delegation supported a strong formulation of the precautionary principle, arguing during the final stages of negotiations that the precautionary principle should act as a “legitimate basis for taking restrictive decisions on LMO imports without any of the caveats presented in earlier formations, including “cost-effectiveness” (Rio Declaration) and the “reasonable period of time” required for the provision of additional scientific evidence under the SPS” (Andrée 2005, 33).

The US, “an imminent exporter of LMOs and a proponent of the idea that biotechnologies represented a boon for sustainable development with no documented risks to the environment, fought against all efforts to develop a new international instrument in the field of biosafety” (Andrée 2005, 30). This position and “framing” of the precautionary principle, as a viable and sustainable solution to food security, was supported by other LMO exporting countries. These countries organized as the “Miami Group” (Andrée 2005; Depledge 2000), which included Canada, Australia, Chile, Uruguay and Argentina. The “Miami Group” rejected the notion of a regulatory framework premised on the precautionary principle, instead proposing a framework premised on scientific assessment of risks or one that reflected their national interests, and would not cause an adverse effect on international trade (Levidow et al. 1996).

The “Miami Group” rejected the precautionary principle; instead, they argued for a weaker precautionary approach. Andrée (2005) argues that the rationale for the Miami Group’s proposition was grounded on the group’s unwillingness to lend credibility to the principle, fearing that recognition of it would lead to its crystallization in international law. This resulted in no further mention of the precautionary principle in the operational portions of the Cartagena Protocol (Andrée 2005; Chasek et al. 1999).

During the late stages of the negotiation process, a group of States, referring to themselves as the “Compromise Group,” proposed a formulation of the precautionary principle consistent with the World Trade Organisation’s (WTO) Agreement on Sanitary and Phytosanitary Measures (SPS) (Akasaka 2002; Andrée 2005). This proposal, emerging from the “Compromise Group,” was proposed by Japan and supported by Korea, Mexico, Norway and Switzerland. Singapore and New Zealand joined in the later stages. Andrée (2005) argues that the recommendation “met key Miami Group concerns in a way that Miami Group members had not been able to achieve amongst themselves” (p. 32).

The Compromise Group’s proposed formulation of the precautionary principle was hinged on Article 5.7 of the SPS agreement, which outlines criteria for the formation of provisional regulatory procedures in cases where scientific uncertainty is present. Article 5.7 of the WTO SPS Agreement argues for precautionary measures “in cases where relevant scientific evidence is insufficient,” provided that states “seek to obtain the additional information necessary for a more objective assessment of risk and review the measure accordingly, within a reasonable period of time”. Green & Epps (2007) and Mercurio & Shao (2010) suggest that Article 5.7 acts as “a shield” preventing countries from being obliged to adopt a particular version of the principle as a result of WTO policy making.

Andrée (2005) notes that while some argue that the EU “won the debate,” the final text of the Protocol reflected a compromise by the EU. To begin with, “the operational articles of the Protocol would not actually mention the word “precaution” let alone “principle” (p. 37). Additionally, the final text of the protocol “reflected the Miami Group’s view that precaution is not an international legal principle, per se ... [and] the EU had accepted that the invocation of precaution must occur within the risk analysis framework” (p. 37). Specifically, the final text of the Cartagena Protocol (2000), article 10.6, states that “Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biodiversity ... shall not prevent [a] party from taking a decision, as appropriate, with regard to the import of living modified organism” (Secretariat of the Convention on Biological Diversity 2000).

Stoett and Gore (2008) suggest that while the text allows states to reject the import of GM products on the grounds of possible human and environmental harm, the statement is restricted by the preamble. In effect, the protocol contains three deliberately conflicting provisions: “that trade and environment agreements should be mutually supportive with a view to achieving sustainable development,” that the agreement “shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements” and that the agreement “is not intended to subordinate this Protocol to other international agreements” (Secretariat of the Convention on Biological Diversity 2000). While the protocol thus leaves a great deal of room for signatories to adjust the relative priority of these three provisions to resolve conflicts in particular cases, another feature of the negotiations has also been observed. In arguing their positions during the negotiations, actors began to develop alternative frames, not just for understanding the specific

challenges of regulating trade in GMOs, but for understanding the key terms in the precautionary principle, such as “risk”, “harm”, “damage” and “benefit” as applied to biotechnologies in ways that support or attack key interests in the dispute. This idea of problem framing as a “discursive weapon” and the special role of framing as an effect of the discourse around an international norm is discussed in the next section.

The Frankenfood and the Killing Fields Framing

Ryan (forthcoming), reflects the work of Maesele (2008), who suggests that NGOs and ENGOs “eagerly employed the discursive weapon and have communicated many alternative frames for people to interpret this technology” (160). Candland et al. (2008) make a similar observation and concludes that “framing necessarily involves condensation symbols and simplification, especially of issues involving scientific complexity” (140), and that “effective framing through necessary for dramaturgical purposes of activism, frequently use metaphors or scenarios that create or raise anxiety,” as is the case with “Frankenfood” (p. 140).

The term “Frankenfood” was first used by Paul Lewis of Boston College in direct response to the decision of the United States Department of Agriculture (USDA) to allow companies to market genetically modified food in the United States. Specifically, Paul Lewis, in a letter to the *New York Times* declared that “if they want to sell us Frankenfood, perhaps it's time to gather the villagers, light some torches and head to the castle” (The New York Times 2000). The term is employed in a variety of formulations: Frankenfruit, Frankenair, Frankenwater, and Frankenfarmers, and has had a tremendous impact on the public perception of GM products. Ryan (forthcoming) suggests Frankenfood “provides the basis for provocative and emotive story-making.”

Ever since the term “Frankenfood” was coined in 1992, “the term has been a pervasive (and quite effective) slogan of the anti-GM movement to vilify GM crops and biotechnology” Ryan (Forthcoming). This description has altered the discourse on biotechnology significantly and, more importantly, has been successful in shaping the consumer’s perception of biotechnology.

In the REDES-Friends of the Earth (Uruguay) and Food and Water Watch video documentary “*Killing Fields: The True Cost of Cheap Meat*”, emotive storytelling includes images of burning fields, police beating protestors, bloodied faces of young indigenous protestors, and ravaged forest areas. These images link GM crops with poverty, land rights of indigenous populations, and forest degradation- all powerful framings that changes the discourse on GM products and engenders widespread, worldwide support (REDES-Friends of the Earth (Uruguay) and Food and Water Watch 2013).

Bernstein and Cashore (2012) acknowledge that these framings tend to have “resonance with domestic ideology, culture and broader policy goals”. As a consequence, strategic framing can potentially translate into the successful linking of issues, like the commercialization of GM products, with established international norms, such as Sustainable Forest Management (SFM), Human Rights, and poverty alleviation.

Within the Canadian context, this attempt to change the discourse is perpetuated by wide spread media coverage, allowing anti-GM actors and organizations to not only succeed in promoting particular framings of GM products, but also to influence public confidence in the regulatory framework. The authors suggest that “strategies for change based on International Norms and Discourse depend on the moral vulnerability of the target state or firm” (p. 592). In other words, influencing the target is contingent on how susceptible and sensitive it is to challenges.

Adjusting perceptions: Pro-GM Discourse

In response to a perception that the anti-GM framing was gaining ground unopposed, several companies in biotechnology industries launched a major initiative in 2000 aimed at communicating “science-based information about the benefits and safety of agricultural biotechnology and its contributions to sustainable development” (Council for Biotechnology Information 2013). This collaboration was funded by the BASF, Bayer CropScience, Dow, DuPont, Monsanto, and Syngenta (along with two trade associations - the Biotechnology Industry Organization and CropLife America), and resulted in the creation of an organization called the Council for Biotechnology Information (CBI). Ryan notes that the “the mission of the Council for Biotechnology Information (CBI) is to improve understanding and acceptance of biotechnology by collecting balanced, science-based information and communicating it through a variety of channels.” Further, Ryan notes that the CBI utilizes videos, Twitter, Facebook, blogs and Internet website to accomplish its mandate.

Additionally, BIOTECCanada, a national industry association with nearly 250 members, is also intended to “lead an ongoing dialogue to create science-based policy and increase awareness of biotechnology” (BIOTECCanada 2011). This group is a reflection of the “diverse nature of Canada’s health, industrial and agricultural biotechnology sectors,” and actively seeks to support the interest of the biotech industry by informing Canadian decision-makers of the bio-economy (BIOTECCanada 2011).

CBI and BIOTECCanada’s strategies appear to be in direct response to the framings employed by opponents of biotechnology. In so doing, they buttress the science-based approach to regulation and standard setting, concurrently rejecting the strong version of the precautionary principle and its role in the regulatory systems.

International Rules Pathway

Introduction

McMahon & Young (2007) suggest that while international norms are contested, they are also resolvable through treaty interpretation and rules of international law. Bernstein and Cashore (2012) propose that the international rules pathway allows for the analysis and identifications of “conditions under which rules will produce policy and behavioral change, while also highlighting that the logic of rules may differ from other logics at play in complex governance arrangements” (p. 590). To be effective, this pathway requires states to accept that they should adopt environmental regulations where substantial scientific evidence of risk exists, and that, in those cases, preventative action must be taken. Sands (2003) suggests that the ability of international lawyers to construct cases for international regulations “will often turn upon the ability to show that the lack of action by the international community is likely to result in significant adverse effects” (Sands 2003, 6). International law notwithstanding, the previous section suggests that whether states will actually respond to claims that innovation may result in significant adverse effects depends on a complex interplay of ideas, interests and institutions.

As noted by McMahon & Young (2007), UNCED represented a commitment on the part of states to “prioritize environmental issues and consolidate a vast and unwieldy patchwork of international legal commitments” (p. 4).

The UNCED recognized the presence of several “products and by-products of human technological and industrial innovation which are considered to be particularly harmful to the environment, and which therefore require international regulation” (Sands 2003, 5). Falkner (2000) notes that international biosafety standards were “raised at the diplomatic level in the

1980s” (p. 302), and have since garnered significant traction. Biotechnology and agricultural practices were identified as product and/or activity which required the attention of the UNCED (Falkner 2000; Sands 2003).

Presently, there are several international environmental agreements and conventions relating to biotechnology, some of which are legally binding and others which amount to international norms. These treaties (also called accords, conventions, agreements and protocols) (Sands 2003) include: *inter alia*, the 1992 Convention on Biological Diversity (CBD), the 2000 Cartagena Protocol on Biosafety, the 2003 United Nations Educational Scientific and Cultural Organization (UNESCO) International Declaration on Human Genetic Data, the 1985 Vienna Convention (including its 1987 Montreal Protocol), the 2005 UNESCO Universal Declaration on Bioethics and Human Rights, the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement, 1994), the WTO Agreement on Technical Barriers to Trade (TBT Agreement, 1994), and the 1997 International Plant Protection Convention. All of these agreements and conventions reveal the need for established international obligations in the face of scientific uncertainty (Cameron and Abouchar 1996; O’Riordan and Jordan 1995; Sands 2003).

However, in spite of several international attempts at creating a legally binding regulatory framework for biotechnology, such as the OECD Safety Considerations for Biotechnology, United Nations Environment Programme (UNEP), United Nations Industrial Development Organization (UNIDO), the International Plant Protection Convention, and the Codex Alimentarius Commission (Falkner 2000), research conducted by the CBD Secretariat concluded that:

While there is a plethora of guidelines, regional and international instruments that either directly (as in the case of the EC Directives) or obliquely address the subject of

transboundary movement of LMOs, none of these instruments may substitute for a Biosafety Protocol ... further, the vast majority of existing instruments are merely guidelines and accordingly not legally binding. (CBD Secretariat 1997, 8)

The international rules pathway suggests that once the precautionary principle has been enshrined in international treaty agreements, it will eventually be reflected in the domestic policy of the signatories. However, as already noted, there are few international agreements where any formulations of the precautionary principle appear, the Cartagena Protocol on Biosafety being the only international agreement governing biotechnology where the principle is found. Specifically, the Cartagena Protocol on Biosafety states that “Lack of scientific certainty due to insufficient relevant scientific information . . . shall not prevent the Party of import, in order to avoid or minimize such potential adverse effects, from taking a decision, as appropriate, with regard to the import of the living modified organism in question”. Nevertheless, there are other international and multinational trade-related instruments that refer to the principle and which could be the starting point for movement down the international rules pathway, notably the Codex Alimentarius and, in the Canadian case, the North American Free Trade Agreement, and these will now be considered in turn.

The Codex Alimentarius Commission and the Precautionary Principle

The Codex Alimentarius, as a joint food standards program by the WHO and the FAO, was implemented in 1963, and it was originally a voluntary agreement. The Codex aims to “protecting the health of consumers and ensuring fair practices in the food trade” (Joint FAO/WHO Codex Alimentarius Commission and Joint FAO/WHO Food Standards Programme 2001, 1B:IV) and is recognized by the SPS Agreement as the international agency organization responsible for

establishing standard associated to food safety and the harmonization of food safety measures affecting international trade. The Codex requires members to establish their food safety measures based on the standards, guidelines, or recommendations of the Commission.

In an attempt to enshrine the precautionary principle into the agreement, the French negotiator suggested that “the precautionary principle should be regarded as an appropriate tool of risk management provided that it was not used as an excuse to establish unwarranted and arbitrary trade barriers” (Codex Alimentarius Commission 2000, para. 3). Further, the representative of France suggested that “legitimate factors other than strictly scientific data could not be ignored by governments and that the development of world trade could not take place without having regard to the legitimate rights of consumers” (Codex Alimentarius Commission 2000, para. 3).

Inclusion of the precautionary principle in this form was strongly rejected by several members, suggesting that the precautionary principle “was not generally recognized or defined in relation to food safety” (Codex Alimentarius Commission 2000, para. 47). Recalling the provisions of SPS Article 5.7, the representative of WTO noted that “guidelines on the application of precaution could facilitate common understanding of risk analysis, but should not contradict the rights and obligations of member countries under the SPS Agreement” (Codex Alimentarius Commission 2000, para. 56). This prompted discussion during the Commission’s meeting in Geneva in July 2001. During this meeting, “several delegations expressed the view that the “precautionary principle” was not a principle of international law and should not be mentioned as such in the framework of Codex” (FAO/WHO Codex Alimentarius Commission 2001).

The Codex Alimentarius is therefore unclear about its view of the precautionary principle. The Codex Alimentarius adopts a weak version both with respect to the trigger and the remedy. Specifically, it argues that “when there is evidence that a risk to human health exists but scientific

data are insufficient or incomplete, the Commission should not proceed to elaborate a standard but should consider elaborating a related text, such as a code of practice, provided that such a text would be supported by the available scientific evidence” (FAO/WHO Codex Alimentarius Commission 2001).

NAFTA and the Precautionary Principle

Canada is signatory to the North American Free Trade Agreement (NAFTA), a regional free trade agreement which also includes the US and Mexico. This agreement, which came into effect in 1994, has the objective of eliminating tariffs and duties on trade between the signatories of the treaty. The governance arrangements that oversee the agreement include the NAFTA Secretariat (pursuant to NAFTA, Article 2002) and a trilateral Free Trade Commission. The Canadian Federal Agency, Foreign Affairs, Trade and Development Canada, notes that “Since 1994, trade has blossomed, investment has increased, and all three countries have become more competitive. From 1993 to 2009, trade among the NAFTA countries has more than doubled, from \$288 billion to \$701 billion” (Foreign Affairs, Trade and Development Canada 2011).

On its face, the text NAFTA agreement seems to allude to the precautionary principle as evidenced in the wording of Articles 907.3 of the SRM text, and 715.4 of the SPS text; however, a closer examination would reveal a weak precautionary approach, instead of a precautionary principle. This argument is further substantiated by the text of the Risk Assessment section, which states that SPS measures must be: “based on scientific principles, taking into account other factors including geographic conditions; not maintained where there is no longer a scientific basis; and based on a risk assessment appropriate to the circumstances” (NAFTA Article 712.3). In addition, NAFTA, Article 907.3 states that

“In the absence of scientific information sufficient to complete a risk assessment, Parties may adopt provisional regulations on the basis of available information. Once sufficient information becomes available, the Party shall complete its assessment within a reasonable period and where appropriate revise its regulation” (Foreign Affairs, Trade and Development Canada 2011).

It appears that any attempt to challenge the present domestic regime would invariably necessitate a challenge along this pathway, in combination with additional pathways. The pathways framework suggests that when a pathway, such as the international rules pathway, is activated, it also becomes accessible, but only to state actors. Non-state are however able to attempt to pressure governments by pointing to international agreements to which the state is a signatory, and as such, bound to the text of the agreement.

The failure to include a strong version of the precautionary principle in key international environmental and trade agreements ensures that the version of the precautionary principle adopted in Canada would be strongly influenced by the international rules pathway. It produces losers as well as winners. The losers invariably seek creative means of reintroducing their agenda. As will be shown, this creativity is usually expressed in attempts to combine different pathways. Efforts to use the international rules pathway itself to revisit Canada’s approach to precaution have been largely unsuccessful as the following examples demonstrate.

The Emergence of the Precautionary Principle in Canadian Domestic Legislation

Tollefson and Thornback (2007), citing the work of Preston (2005), suggest that there are two divergent legal avenues by which the precautionary principle may enter domestic law at the other end of the international rules pathway: “through the application of international law or

through its application as a principle of domestic law” (p. 40) . These two categories can be further subdivided into direct application, where it creates a binding obligation on its own merit, or by indirect application, where it is applied as an interpretative aid. Additionally, domestic law can also be derived from common law or statutory sources such as Pest Control Products Act (PCPA), Species at Risk Act (SARA) or CEPA. This thesis examines the role of indirect application, domestic law and statutory sources.

Indirect Application

Tollefson and Thornback (2007) suggest that domestic courts are generally not keen on employing the precautionary principle as an interpretative aid, especially when it is “inconsistent with applicable domestic law” (p. 41). Further, Tollefson and Thornback (2007) note that in cases where the precautionary principle is vague, this vagueness opens the door for domestic courts to give it “some specific work to do” (Stein 2000, 2).

The decision of the Supreme Court of Canada in the *Spraytech*⁸ case represents the most significant recognition of the precautionary principle by the Canadian judiciary, and illustrates an indirect application of the principle.

The case involved the small town of Hudson, Quebec that enacted By-law 270, which limited the application of pesticides within its boundary to specified locations and for enumerated activities. This represented one of the first municipal bans on the use of cosmetic pesticides in Canada after years of lobbying. This By-law was subsequently challenged by a lawn care company, which requested that the Supreme Court of Canada declare the by-law to be inoperative and ultra vires the Town’s authority.

⁸ 114957 *Canada Ltée (Spraytech, Société d’arrosage) v. Hudson (Town)*, [2001] 2 S.C.R. 241, 2001 SCC 40

The court upheld the bylaw and addressed the legal status of the precautionary principle. The court reasoned that despite the vexing conceptual uncertainties confronting the precautionary principle (Sunstein 2005; Sands 2003; Cameron, Jordan, and O’Riordan 2001), that a good argument could be made that the precautionary principle had gained the status of customary international law. The dictum of Justice L’Heureux-Dube J. relied upon the principle as an emerging norm of international law to support a domestic interpretive undertaking, essentially reasoning that principles of law can constrain the actions of a sovereign state (Tollefson and Thornback 2007). The court reasoned that municipal law could regulate harm in a manner consistent with international law and policy, but also that the precautionary principle “is a mandatory rule of statutory construction that must be considered by the courts or in administrative decision making” (Kazaz 2013, 9).

Significantly in the *Spraytech* case, the Supreme Court of Canada defined the precautionary principle according to para. 7 of the Bergen Ministerial Declaration on Sustainable Development (1990):

“In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation” (UNECE 1990).

Following the *Spraytech* case, there has been several attempts at giving the precautionary principle a mandatory rule of statutory interpretations (Kazaz 2013, 23). The *Wier* case is one such example. Josette Wier, appealed a decision to issue a permit to control the Spruce Bark and Mountain Pine beetles in British Columbia’s Morice Forest District and Tweedsmuir Provincial

Park using Monosodium Methane Arsenate (“MSMA”), sold under the trade name Glowon. Wier requested the court to rule in her favor based on the precautionary principle and the decision of the Supreme Court of Canada in the *Spraytech* case. The court upheld the analysis of the *Spraytech* case and “applied [the] principle to the extent that it should help inform the contextual approach to judicial review and statutory interpretation” (Kazaz 2013, 10).

In the cases of *Western Canada Wilderness Committee v. British Columbia (Minister of Forests)*⁹ and *R. v. Kingston (Corporation of the City)*¹⁰, the court refused to attach significance to the precautionary principle outside of its dictum in the *Spraytech* case, and further refused to interpret domestic legislations pertaining to risk outside of the Government of Canada’s prescribed frameworks.

Additionally, in the *Sage Grouse*¹¹ and *Nooksack Dace*¹² cases, the courts observed that the precautionary principle could aid in statutory interpretation of section 41 of SARA. It also noted that while “s. 38 of SARA is a codification of the precautionary principle which, as stated in the Preamble, in part, meets Canada’s commitments” under international law, both cases reinforce the particular formulation and status of the precaution principle, as adopted by the Government of Canada.

Both the Supreme Court of Canada and provincial courts have been consistent in their interpretation of the precautionary principle. A possible explanation for this consistency is explored by Benvenisti (1993), who suggests that “national courts tend to interpret international

⁹ *Western Canada Wilderness Committee v. British Columbia (Minister of Environment and Parks)*, [1988] B.C.J. No. 436 (S.C.)

¹⁰ *R. v. Kingston (Corporation of the City)*, [2004], 187 O.C.A. 143.

¹¹ *Alberta Wilderness Association v. Canada (Environment)*, 2009 FC 710, 45 C.E.L.R. (3d) 48

¹² *Nooksack Dace: Environmental Defence Canada v. Canada (Fisheries and Oceans)*, 2009 FC 878, 45 C.E.L.R. (3d) 161.

rules so as not to upset their governments' interests, sometimes actually seeking guidance from the executive for interpreting treaties” (p. 161). In essence, this would suggest that the judicial arm of government, with respect to the Government of Canada’s position on the precautionary principle, works in tandem with government, and in so doing, is “careful not to impinge with their decisions on their governments' international policies and interests” (Benvenisti 1993, 161).

International Judicial Decisions and the Precautionary Principle

Jennings and Watts (1997) define international law as “the body of rules which are legally binding on states in their intercourse with each other” (p. 4). Under international law, these rules derive their authority in conformity with Article 38 of the Statute of the International Court of Justice (ICJ). The ICJ identifies five sources of international law: (a) Treaties between States; (b) Customary international law derived from the practice of States; (c) General principles of law recognized by civilized nations; and, as subsidiary means for the determination of rules of international law: (d) Judicial decisions and the writings of “the most highly qualified publicists”. This list is no longer considered to be exhaustive.

Sands et al. (2012) suggest that under international environmental law, the list outlined in Article 38 of the ICJ “does not wholly reflect the sources of obligation, broadly understood, which have arisen in international environmental law” (p. 94). The list proposed by the International Law Commission (ILC) in 1989, suggests that decisions of international organizations, and judgments of international courts or tribunals” as well as those identified in Article 38 (1) is a more established source of international environmental law. This section examines the jurisprudence of international courts and tribunals. It also addresses State parties appearing before them, in order shed some light on the meaning and effect of the precautionary principle, specifically, the 1997 *Gabcikovo*

*Nagymaros*¹³ Project case, the 1974 *Nuclear Tests Case*¹⁴, *Southern Bluefin Tuna Cases*¹⁵, the *MOX case*¹⁶, and the *EC - Beef Growth Hormones case*.

The Case Concerning the Gabčíkovo Nagymaros Project

The case concerning the Gabčíkovo Nagymaros Project was the first contentious case before the ICJ. More specifically, this case concerned a 1977 Treaty between Hungary and Czechoslovakia and involved the construction of a ‘System of Locks’ on the Danube River. Additionally, this was to be managed by both parties and intended for the production of hydroelectricity, flood protection, and improved navigation. Opposition to the project arose, as domestic environmental groups argued that the project threatened the ecological diversity of Hungary.

Facing growing opposition to the project, the government of Hungary suspended its work on the project in 1989, eventually terminating the Treaty in 1992. The Government of Hungary argued that “the ecological risks of the Project, including reduction in water flows, damage to water quality, and the consequential loss of ‘fluvial fauna and flora’, were unacceptable”. Further, Hungary argued that new norms of international environmental law precluded Treaty performance.

The precautionary principle was one of a number of emerging environmental norms cited by the government of Hungary in its effort to evidence the lawfulness of its Treaty termination. Further, Hungary relied on the Bergen Declaration’s formulation of the precautionary principle, arguing that international law necessitates : [...] tak[ing] precautionary measures to anticipate,

¹³ *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* [1997] ICJ Rep. 7.

¹⁴ *Nuclear Tests Case (Australia v. France)*, International Court of Justice (ICJ), 20 December 1974.

¹⁵ *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan)*, ITLOS Cases No 3/4, 117 I.L.R. 148 (Aug. 27, 1999)

¹⁶ *MOX Plant case (Ireland v. United Kingdom)* (Request for Provisional Measures) (ITLOS) [126 ILR 259] 643, 1015 n24

prevent or minimize damage to their transboundary resources and mitigate adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures (UNECE 1990).

The court rejected this argument, with the majority not mentioning the principle in its dictum, and failed to address the status or possible application of the principle. Howley (2009) observed that “the very failure of the majority to adequately articulate the status of the precautionary principle has, in an instance of judicial deference to perceived institutional hierarchies, caused uncertainty and obstructed the development of the principle at the international level” (p. 12), concluding that the reluctance of the majority in *Gabcikovo* “has had had a negative impact on the willingness of other international tribunals and bodies to use and develop the precautionary principle, and by extension, international environmental law generally” (Howley 2009, 12).

The Nuclear Tests Dispute (Australia, New Zealand et al. v. France)

The ICJ case, regarding nuclear testing, involved France and, in opposition, a number of South Pacific States, principally New Zealand and Australia. The disagreement is evidenced by a succession of judgments by the ICJ, the first in 1973-1974, and the second in 1995. This thesis is primarily concerned with the second phase of the case, whereby French President Jacques Chirac declared *urbi et orbi* that France would be conducting a series of underground nuclear explosions, beginning in September 1995. As a result, the immediate reaction was one of outrage, with several individuals and NGOs moving to the European Commission of Human Rights, the Human Rights Committee, and the Court of Justice of the European Communities for redress (Romano 2000). As well, the leaders of the South Pacific Forum States voiced their “extreme outrage” at the proposed resumption of nuclear testing and demanded that France desist from any further testing in the

region (Richardson 1995). In August 1995, the New Zealand Government returned to the ICJ to request a decision based on the French government's decision to resume nuclear testing.

The Government of New Zealand relied extensively on the precautionary principle, contending that it was “a very widely accepted and operative principle of international law” and as such, “shifted the burden onto France to prove that the proposed tests would not give rise to environmental damage”. France responded that the status of the precautionary principle, concerning international law, was still contentious and that State practice indicated that it had not yet amounted to customary international law. Interestingly, the ICJ followed the precedents established in the *Gabcikovo* case, and did not address the status of the principle, although Judge Weeramantry's dissent noted that the principle was “gaining increasing support as part of the international law of the environment”.

The Southern Bluefin Tuna cases

The International Tribunal for the Law of the Sea (ITLOS) has been more willing to examine the status of the precautionary principle. In the 1999 Southern Bluefin Tuna cases, Australia and New Zealand presented arguments before the tribunals invoking the precautionary principle. Specifically, Australia and New Zealand requested “the parties act consistently with the precautionary principle in fishing for Southern Bluefin Tuna pending a final settlement of the dispute.” Japan, the respondent State decided not to address the status or effect of the principle in its response, lest this be viewed as an acknowledgment of the principle. In its decision, the tribunal requested that the parties should “act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna” (para. 77). It further noted that, although the Tribunal cannot conclusively assess the scientific evidence presented by the parties, it finds that measures should be taken as a matter of urgency to

preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock (para. 80). Sands (2003) suggests that “in ordering the parties to refrain from conducting experimental fishing programmes, the Tribunal was plainly taking a precautionary approach, as Judge Treves recognised in his Separate Opinion” (p. 276). However, both the tribunal and the Separate Opinion of Judge Treves did not rule on or expand on the status of the precautionary principle.

The MOX Plant Case

The MOX Plant case stems from the United Kingdom’s governmental authorization to commission a new MOX facility in Sellafield. The facility was designed to reprocess spent nuclear fuel into a new fuel known as mixed oxide fuel or MOX. In response, the Irish government argued that the plan threatened the Irish Sea by exposing it to pollution and possible risks of radioactive spills during transport of hazardous materials to and from the plant. In this way, the United Kingdom government had failed to apply a precautionary approach to the protection of the Irish Sea and in so doing placed the Sea at risk. Further, Ireland invoked the principle to buttress its claim that the burden of proof was with UK, requiring UK to demonstrate that no harm would arise from discharges and other consequences of the operation of the MOX plant.

Sands (2003) states that the Tribunal did not order the suspension of the plant’s operation but rather “ordered the parties to co-operate and enter into consultations to exchange further information on possible consequences for the Irish Sea arising out of the commissioning of the MOX plant” (225). The Order of the Tribunal contains a precautionary character (Sands 2003) but falls short of providing the precautionary principle with status and content.

EC - Beef Growth Hormones Case

On January 26, 1996, the United States called for discussions with the EC, alleging that measures taken by the EC, under the Council Directive, prohibit the use of certain substances, which have a hormonal action, in livestock farming. This restricted or prohibited imports of meat and meat products from the United States, and is thereby inconsistent with Articles 2, 3 and 5 of the SPS Agreement, Articles III or XI of the GATT 1994, Article 2 of the TBT and Article 4 of the Agreement on Agriculture. Australia, Canada, New Zealand and Norway were third parties to the dispute. In the submission [the respondent], EC argued that the precautionary principle is, or has become “a general customary rule of international law” or at least “a general principle of law” (Bernasconi-Osterwalder 2005, 272). However, the government of the US does not embrace the arguments and advancements of the EU. Instead, in the case of *EC Hormones*¹⁷, American officials argued that the precautionary principle does not amount to a general principle or norm of international law since the concept has several permutations. Rather, it is best classified as an “approach,” instead of a principle under international law (EC Biotech 2006).

Canada, stating its position in the *EC Hormones*¹⁸ case [para. 91], employed a different tactic. On one hand, Canada acknowledged that the precautionary principle can be viewed as an emerging principle of law, which may crystallize into one of the “general principles of law recognized by civilized nations,” within the meaning of Article 38(1)(c) of the Statute of the International Court of Justice (ICJ). On the other hand, Canada argued that the precautionary

¹⁷ Panel Report, *EC Measures Concerning Meat and Meat Products (Hormones) – Complaint by the United States*, WT/DS26/R/USA, adopted 13 February 1998, as modified by the Appellate Body Report, WT/DS26/AB/R, WT/DS48/AB/R, DSR 1998:III, 699

¹⁸ Panel Report, *EC Measures Concerning Meat and Meat Products (Hormones) – Complaint by the United States*, WT/DS26/R/USA, adopted 13 February 1998, as modified by the Appellate Body Report, WT/DS26/AB/R, WT/DS48/AB/R, DSR 1998:III, 699

principle has not been absorbed into the corpus of public international law [Canada's appellee's submission in case EC hormones, para. 34].

The ruling in the *EC Hormones* case reaffirms the notion that international trade agreements, and their governing instruments, prefer to adopt a science-based regime for “disciplining health regulations which may affect international trade in agricultural products and foodstuffs” (Majone 2002, 91) and attempts to “promote the principle to the status of a “central plank” ... [and] more ambitiously to the status of a general principle of international economic and environmental law” (Majone 2002, 91).

The international norms and discourse pathway illustrated the extent to which a variety of actors could use that pathway to elaborate on the meaning and significance of the precautionary principle. They struggled to frame the debate in ways that would eventually reappear in domestic politics. State and non-state actors alike took part in this struggle over meaning. The international rules pathway, by contrast, is largely confined to governments and their legal representatives. As the cases just analyzed suggest, governments have been extremely cautious in appealing to the precautionary principle, even where it might provide them with some temporary advantage in a particular case. The sole area where the principle might have gained some purchase remains international trade law and here the use of the principle runs into the clash of interests between food importing countries, who have reason to adopt a strong version as a form of protection for their own farmers, and food exporting countries, who favour weak versions or no version at all to keep markets open. As a major exporter of food and food products, it is no surprise to see the Canadian government using this pathway to block adoption of anything but a weak version of the principle. Are other pathways open and how did the precautionary principle fare on them?

Markets pathway

Introduction

Bernstein and Cashore (2012) suggest that “the markets pathway encompasses processes or tactics that attempt to manipulate, work with or leverage markets to create domestic policy change” (p. 593). Use of this pathway is premised on the notion that it is in the interest of firms and the governments that support them to maintain their access to international markets and ensure greater leverage in pricing their products. Thus, within the context of this thesis, both domestic and international actors travel this pathway in order to secure policy change, targeting both government and industry in the process.

Opponents of GM technology found it difficult to mobilize support against the first generation of GM maize, canola, and soy released in Canada. This is primarily because farmers openly support herbicide-tolerant and Bt crops because of the time and cost-saving nature of the technology. This endorsement made it much more difficult for opponents to utilize the tactics employed in Europe, where the bovine spongiform encephalopathy (BSE) outbreak allowed for risk factors to be exaggerated (Levidow et al. 1996). Nevertheless, groups including the Council of Canadians (a multi-issue anti-globalization actor), the Sierra Club of Canada and Greenpeace Canada (both considered ENGOs with significant national memberships), The Canadian Health Coalition, The Saskatchewan Organic Directorate, among others, have actively resisted the biotechnology industry and the commercialization of biotechnology in Canada. Instead, they lobby for implementation of a strong formulation of the precautionary principle to govern the regulatory regime.

This section of the thesis details the efforts by domestic and foreign actors, utilizing the markets pathway, to bring about policy change with respect to precaution. Specifically, this section

addresses issues related to the commercialization and subsequent withdrawal of RR Wheat, GE Flax seed, and GM potatoes.

Roundup Ready (RR) Wheat

In May 2004, Monsanto publically verified that it was withdrawing its application for the commercialization of its genetically engineered Roundup Ready (RR) wheat (Monsanto 2004). According to Eaton (2011a), Monsanto's announcement surprised many, especially because they had already begun the technical development stage of the RR wheat in 1997, and had conducted six years of field testing in-order to establish the economic potential of the technology and alleviate safety concerns. Monsanto had also estimated that the new technology could potentially result in a 5–10% increase in yields (Monsanto 2004). In all accounts, this announcement was surprising and contradictory announcement, especially because Monsanto had already advanced this technology through both the Canadian and US regulatory systems, spending at least \$5 million in the 2004 fiscal year.

Monsanto had envisioned a wide buy-in by Canadian farmers, as a result the economic potential of the crop; however, in 2001, a coalition of farm, rural, consumer, NGOs, and ENGOS organized and engaged in a public campaign against the commercialization of RR wheat in Canada (Eaton 2011a). The coalition was comprised of a diverse group of actors (Table 5). Six of the nine organizations were farm/rural organizations (Eaton 2009), many of whom had significant economic interest in the commercialization of the RR wheat technology. It could be argued that Prairie producers, in particular, would have gained considerably from the GM wheat technology, especially considering the average wheat yield and production of these farmers.

As noted earlier, six of the nine organizations were hostile to the commercialization of RR wheat and originated from rural and farm communities.

Table 5 - Organizations involved in the 2001 coalition to stop the introduction of RR Wheat

Name of organization/date of founding	Type of lobby	Main complaint(s) about RR wheat	Proposed action
National Farmers Union (NFU)/1969	Left-wing farm organization formed to unite provincial Farmers Unions that led radical farm organizing since WWI	Loss of control of the food/seed system to multinationals, threat to profitability and autonomy of family farm	Moratorium on all GMOs. All GMOs must be subject to democratic control, collective ownership and not-for-profit distribution
Saskatchewan Association of Rural Municipalities (SARM)/1905	Advocate of rural municipalities to senior levels of government	Loss of markets, secrecy of field trial locations	Ban GM wheat until segregation and detection systems, tolerance levels, markets and changes to regulatory system are established

Saskatchewan Organic Directorate (SOD)/1998	Producer controlled umbrella org. for producers, processors, buyers, traders, certifiers and consumer	Liability in cases of contamination and loss of ability to farm org	Complete ban on all GMOs since contamination is inevitable
Agricultural Producers Association of Saskatchewan (APAS)/1999	Saskatchewan general farm• organization with representation from all rural municipalities	Market impact, agronomic issues-- effects on zero till	All GM wheat must be approved based on merit (markets, agronomy)
Keystone Agricultural Producers (KAP)/1984	Manitoba general farm organization	Market impact, agronomic issues, segregation	Prevent registration until consumer acceptance
Canadian Wheat Board (CWB)/1935	Western Canadian single-desk marketing organization jointly governed by producers and the federal government	Loss of markets (80+% of customers are concerned about GM wheat)	Add cost/benefit analysis to regulations. Do not release RR wheat at this time
Canadian Health Coalition (CHC)/1979	NGO primarily concerned with public health care	GMOs may have negative health impacts. Regulatory system is anti-democratic and serves life-science industry	Regulatory system must be overhauled and serve the public
Greenpeace Canada/1971	International environmental NGO founded in Canada	GMOs will harm the environment and may have negative health impacts. Life should not be patented	Stop all GMOs, reform the regulatory system
Council of Canadians (CoC)/1985	Multi-issue nationalist NGO	Consumers don't want GM wheat. Long-term impacts on health and the environment are unknown	Stop all GMOs until labelling, long-term studies and regulatory reform

Adapted from Eaton (2009)

In effect, Eaton (2011) notes that “two of the three general farm organisations on the prairies (that of Saskatchewan – the Agricultural Producers Association of Saskatchewan and that of Manitoba – the Keystone Agricultural Producers) participated in the coalition based on mandates from their memberships” (Eaton 2011b, 507).

While all members of the coalition opposed the commercialization of RR wheat, Eaton (2011b) notes that there was discontent by several members, specifically rural/farm organizations. Feelings of discontent arose from the farmers and rural organizations’ unease of working with more radical groups. Eaton (2011b) notes that farm organizations and the Saskatchewan Association of Rural Municipalities did not oppose all GM products, but they were specifically against the commercialization of RR wheat. Consequently, the coalition decided that each “each group [should speak] from its particular area of expertise about the specific threats that RR wheat posed for its membership” (p. 507), allowing the coalition to propose several framings of the issue and proposing varying demands and recommendations.

The logic of the markets pathway suggests that the resistance, which eventually led to Monsanto’s withdrawal of the GM technology, was orchestrated on two fronts: Firstly, as an ENGO, with access to significant resources and an established network of international supporters and allies, Greenpeace Canada was able to strategically argue market non-acceptance at the focal point of the controversy, allowing for a wide cross-section of consumers, both at the domestic and international level, to become aware of their campaign against GM wheat. Secondly, Eaton (2009) notes that the primary concern of farm/rural organizations was “access to markets, and more longstanding questions about how to keep profit and control on the farm)[which] became articulated with and through issues and discourses that are often characterized as consumer-driven”

(p. 270). The coalition remained convinced that the commercialization of RR wheat would threaten existing export wheat markets. Eaton (2009) notes that “the refusal of Europe and Japan to accept GM material in their food imports became the strongest argument ... one that farmers advanced by reciting claims about the supremacy of the consumer” (p. 260).

The efforts and influence of Canadian Wheat Board (CWB) was also critical to the success of the coalition efforts. Threats to export markets by the federal agency, the CWB, Western Canada’s single desk marketing agency for wheat and barley, establish the legitimacy of the claim, as they were able to “gather information from its buyers and early on in the debate” (Eaton 2009, 267) to support their position. Further, the CWB commissioned studies by weed scientists which suggested that genetic make-up of the wheat’s RR trait would result in farmers abandoning reduced tillage practices, resulting in soil erosion (Van Acker, Brule-Babel, and Friesen 2003). To date, the CBAN successfully mobilized 233 farmer and consumer groups, from 26 countries, to support its call to stop the commercialization of GM Wheat, 47 of which are from Canada [See table 6].

Table 6 - Canadian groups who signed petition re: Rejection of Genetically Modified Wheat

Avenue Bio de l'Est, St-Mathieu-de-Rioux, Canada	Les Ensachages Bio-Org, Québec
Beyond Factory Farming, Canada	Les Jardins de la Mingaie, Québec
Burin Peninsula Environmental Reform Committee, Canada	Local Organic Fair Trade Co-operative (Cambridge, ON), Canada
Canadian Biotechnology Action Network, Canada	Make the Desert Blossom, Alberta, Canada
Canadian Organic Growers, Canada	National Farmers Union, Canada
Centre interdisciplinaire de recherche sur la biologie, la santé, la société et l'environnement (CINBIOSE), Québec	National Farmers Union, Local 1, Ontario, Canada
Club Plein-Champs, Québec	National Union of Public and General Employees, Canada

Club Volksmarche La Foulée, Québec	Nature Québec, Canada
Coalition des citoyens de Mékinac, Trois-Rives, Québec	New Westminster Environmental Partners, B.C., Canada
Comité d'environnement Univert du Cégep de Lévis-Lauzon, Québec	OJM (Organisme Jeunéthiquement Modifié), Canada
Coopérative de solidarité d'alimentation saine La Manne, Victoriaville, Québec	One Straw Society, Canada, www.onestraw.ca
Eco-Cell at St. John's, Canada	Ordre canadien des praticiens de naturopathie et des naturothérapies, Canada
Énergie Citoyenne, Québec	Parti vert du Québec, Canada
Équiterre, Canada	Regroupement des conseils régionaux de l'environnement du Québec, Canada
FEASt (Food Education Action St. John's), NFLD, Canada	Réseau Québécois contre les OGM, Canada
Food Action Committe, Ecology Action Centre, Halifax	Saskatchewan Network for Alternatives to Pesticides, Canada
Furby Street Urban Farmers, Canada	Saskatchewan Organic Directorate, Canada
Greenpeace Canada	St. John's United Church, Chesley, Ontario
(GRAME) Groupe de recherche appliquée en macroécologie, Québec	Syndicat Canadien des Télécommunications Transmarines
Guiding Hands Recreation Society, B.C.	Union Biologique Paysanne, Canada
Hobrum Team West Coast, B.C.	Union Paysanne, Canada
L' ACEF (Association Coopérative d'Économie Familiale) de Québec	Vieux Palais de Justice de L'Assomption, Québec
L' avis bio / magazine Bio-bulle, Québec	Wascana Federal Green Party Electoral District Association, Regina, SK, Canada
L'Agora recherches et communications, Québec	

Source: (CBAN 2010)

GM potato

NatureMark, a subsidiary of Monsanto, first introduced GM potatoes to the US and Canadian market. The GM potato was “engineered to resist the Colorado beetle (*Leptinotarsa decemlineata*) and was made commercially available in 1995” (Mullins et al. 2006, 258). The GM

potatoes were “both insect resistant (by expressing *Bacillus thuringiensis* toxins) and viral resistant” (Phillips and Corkindale, 2002).

Phillips (2007), commenting on the regulatory process, observed that “GM potato necessitated Monsanto to undertake a three year regulatory review, beginning with confined field trials simultaneously in Canada and the US”. Further, Phillips (2007) noted that the approval process in Canada involved regulatory agencies, the CFIA and HC, while in the US, the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA) and the Department of Agriculture Animals and Plant Health Inspection Service (APHIS) would be mandated to assess the trait for “human safety, safety as an animal feed and environmental impacts”. It is worth noting that the regulatory process, employed by the regulatory agencies of the US and Canada, are currently based on international conventions such as the Codex Alimentarius, the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement, 1994) and the 1997 International Plant Protection Convention, all of which reject the precautionary principle. Instead they adopt a scientific framework of risk assessment. Doern and Prince (2012) observe that the EU approved GM potato for cultivation, a shift from its traditional posture, in spite of strong opposition from multiple domestic actors.

The evidence of these cases clearly suggests that the markets pathway, though a potentially powerful tool for moving relatively strong versions of the precautionary principle into domestic law and policy, is subject to a number of conditions for success. Most important, action along the markets pathway has to be supported by strong coalitions of domestic political actors, including producers, and this support has to persist over time in order to maintain the salience of the issue in the domestic political arena. Even here, as the EU decision on the GM potato illustrates, the support of a domestic political coalition can be thought of as a necessary but not sufficient condition. For

these reasons, the markets pathway is usually combined with the fourth pathway, direct intervention by international, transnational or foreign actors in the domestic politics of the target country.

Direct Access Pathway

Introduction

Bernstein and Cashore (2012) suggest that the direct access pathway “captures those processes by which non-domestic financial resources, technical knowledge, expertise, training and learning can dramatically shape domestic politics” (p. 600). Success along this pathway is achieved when actors work at creating new coalitions or confront established ones, and “provid[e] resources for effective and enduring impacts on domestic governance and policy networks (p. 600). Skogstad (2000) confirms this assumption by suggesting that “Canadian case studies reveal evidence of a widening and deepening of policy networks as new non-state actors are drawn more fully into the policy process, often sharing power with state officials” (p. 819). Further, Skogstad (2000) suggests that as a result of following this pathway, “non-state actors may be able to forge coalitions that enable them to exercise influence commensurate with that of state officials and well-entrenched economic interests” (p. 820). While Skogstad (2000) notes that actors, representing non-economic interests, are able to penetrate established networks and alter domestic policies discourse and outcomes, Bernstein and Cashore (2000) caution that actors can be successful at using this pathway, but only if their efforts to penetrate established networks “[do] not directly raise domestic concerns over violations of popular sovereignty” (p. 83)

Evolution of the Canadian Biotechnology Strategy

Doern and Prince (2012) suggest that biotechnology policy emerged in the 1980s as a result of its “explicit recognition as an important field and industry by the Ministry of State for Science and Technology (1980)” and then in response to international advancements, particularly in the US and to the “development of bio-food products” (p. 58).

Additionally, some aspects of the biotechnology policy were shaped by the creation of the 1989 Royal Commission on New Reproductive Technologies and further by the 1983 Trudeau era National Biotechnology Strategy. The rationale for this strategy was the “support and promotion of R&D, investments, and private market acceptance of this new technology, accompanied by the establishment of any National Agricultural Biotechnology Council (NABC), whose earlier work helped pave the way for latter work of the Canadian Biotechnology Advisory Committee (CBAC)” (Doern & Prince 2012, pg. 58). It is observed that although the NBAC initially adopted a strong pro-biotech policy position, its publications on the work included criticisms regarding citizens consultation, health, and structured values in an attempt to create a more balanced approach to biotechnology (Doern and Sheehy 1999).

The groundwork established in the 1980s biotechnology policies was restructured by the 1993 Federal Regulatory Framework for Biotechnology. The development of this framework based on consultations with various stakeholders of diverse interests and inter-departmental federal agencies. It provided the guiding principles for functioning of the federal biotechnology regulatory regime (Doern and Sheehy 1999; Industry Canada 1998)

The 1993 Federal Regulatory Framework for Biotechnology was replaced by the 1998 Canadian Biotechnology Strategy (CBS), which was tasked with the responsibility to create support for responsible development, application, and export of biotechnology products and services balanced within the context of ‘social and ethical considerations’ (Doern & Prince, 2012; Industry Canada 1998, pg. 1). In 1999 CBS was modified. The amendments incorporated into its strategy three strategic policy directions: stewardship, benefits/innovation and citizen engagement; the strategies were referred to as pillars. The pillar: stewardship was a reflection of the

government's efforts to include concepts such as safety, health and the environment (Canadian Biotechnology Secretariat 2002)

The Canadian government implemented a 2003-2004 internal discussion with an emphasis on situating Canada as a leader in biotechnology and its application. The blueprint, as envisioned by the government, detailed a framework, with a mandate to “accelerate the commercialization of Canadian biotechnology research for the social, environmental, and economic benefit of Canadians” (Doern & Prince 2012, pg. 71). By 2005, the discourse surrounding biotechnology had evolved to include a broader understanding of ‘stewardship’, “anchoring it to a life-cycle approach, beginning with research and development and leading through distribution, processing, manufacturing sale and use, and to its eventual disposal or recycling back into further research” (Doern & Prince 2012, pg. 72; Industry Canada, 2005).

Consequently, this thesis examines the work of the CBAC, as it represents the clearest indication by the federal government to “provide comprehensive, independent expert advice on policy issues related to the ethical, social, regulatory, economic, scientific, environmental and health aspects of biotechnology” (Ag-West Biotech Inc. 2000) and promoted awareness by involving the Canadian public through public consultations.

Canadian Biotechnology Advisory Committee (CBAC)

As previously discussed, CBAC, an arm's length advisory body was formed in 1999 based on the advice of the Canadian Biotechnology Strategy. CBAC was charged with the mandate of raising awareness and engaging the Canadian public in a discourse on biotechnology and related issues. CBAC was also responsible for providing expert and independent advice “on the broad policy issues associated with the ethical, social, regulatory, economic, scientific, environmental and health aspects of biotechnology” (Canadian Biotechnology Advisory Committee 2000, 9).

Specifically, CBAC was responsible for advising the federal government on ways to: “(a) optimize the economic, health, safety and environmental benefits of biotechnology in a sustainable way in Canada through the CBS, (b) ensure that the science base that supports the government’s regulatory role is maintained and is internationally competitive (c) incorporate social and ethical considerations into policy making, and (d) enhance public awareness and facilitate an open, transparent national conversation on key issues concerning the development and application of biotechnology in Canada” (Canadian Biotechnology Advisory Committee 2000, 9). CBAC organized itself into three standing committees to consider the three main themes of the CBS. These consisted of the Stewardship Committee, Economic and Social Development Committee and the Citizen Engagement Committee (Canadian Biotechnology Advisory Committee 2000).

Direct Access and the CBAC Consultations

One of the tasks undertaken by CBAC One of the task undertaken by CBAC was the Canadian wide dialogue regarding biotechnology. This thesis is particularly interested in the five multi-stakeholder workshops held in Vancouver, Saskatoon, Toronto, Montreal and Halifax – April 2nd – 10th, 2001. This interest is premised on the assumption that the dialogue was a clear indication by the Canadian government that they were interested in ‘opening the direct access pathway’ in order to gain support and insight for the biotechnology industry in Canada and establish legitimacy to the regulatory framework.

However, NGOs decided to boycott the public consultation process, citing that the work of the discussions were not democratic, inputs from NGOs were largely ignored and that the consultations were designed to supplant, possibly even replace much needed debate in the House of Commons on issues of Biotechnology (MacRae and Abergel 2012). This is not to say that the NGO community was unhappy with the mandate of CBAC or what it was attempting to achieve.

The dissatisfaction by the NGO community primarily rested on the fact that did not want CBAC being the instrument through which the discourse and particularly their views on biotechnology were filtered to government. They wanted to be able to talk to parliament, primarily because they thought parliament was where the debate should be held and they were unwilling to provide a sense of legitimacy to process, and in so doing, jeopardize any future opportunity for meaningful dialogue. Additionally, some authors criticized the visible influence of Industry Canada on the consultation process, also contending that participants representing Industry outnumbered those of NGOs and civil society as a whole, even contending that this was a deliberate plan to alter the nature of the discourse (Hartley and Skogstad 2005; MacRae and Abergel 2012; Abergel and Barrett 2002).

In addition to the activities carried out by CBAC, the Royal Society of Canada (RSC) was tasked with the responsibility to provide expert advice on the Canadian regulatory system and the scientific capacity the federal government to ensure food safety as it relates to innovative technologies such as biotechnology. The RSC is discussed here because, in part, it focused on the precautionary principle and its place in the Canadian regulatory structure. The RSC considered the principle to have “both scientific and regulatory validity” (The Royal Society of Canada 2001, 14). The RSC rejected the use of substantial equivalence “as a decision threshold to exempt new GM products from rigorous safety assessments on the basis of superficial similarities” (The Royal Society of Canada 2001, 226). Instead, it proposed that fundamental tenets of the “Precautionary Principle should be respected in the management of the risks associated with food biotechnology” (225).

As it relates to this thesis, while the RSC did not address a particular formulation, it is a reasoned conclusion that the RSC preferred the implementation of a strong formulation of the

principle. The RSC suggested that the burden of proof be primarily shifted to the proponents and developers of food biotechnology, a key indication of a strong formulation. In addition to a suggestion that the burden of proof be shifted, the RSC also argued that the potential trigger for the application of the principle be “serious risk” (226) as opposed to the phrase ‘serious or irreversible damage’, which is contained in several key Canadian environmental legislations (See Chapter 5).

The activities of CBAC and the fact that the Government of Canada has failed to implement the recommendation of the RSC on the issue of the precautionary principle is a reflection that the Government of Canada acts within the role of a gatekeeper. The term gatekeeper is used to describe the ability of the state to control the agenda of the state and decide which actors are allowed to partake in the policy process. It also points to the notion that the government is the chief policy maker and is solely responsible for the economic development of the state. The gate keeper function also the governments to pursue a particular policy direction so as to ensure a particular state interest or ensure the interest of a particular group, since they also control the level of influence each actor can assert on the process.

Bill C-474

An example of an attempt to use the direct access pathway to incite policy change is found in efforts to legislate Bill C-474. This private member bill, introduced by Alex Atamanenko, New Democratic Party (NDP) Agriculture Critic and Member of Parliament (MP) for British Columbia (B.C.) Southern Interior would necessitate “an analysis of potential harm to export markets be conducted before the sale of any new genetically engineered seed is permitted” (Parliament of Canada 2010) While this initiative may seem like a purely domestic matter, it will be demonstrated

below that non-domestic interests were involved in funding interventions in support of C-474. Further, in a classic case of combining the market and direct access pathways, the framing of Bill C-474 highlights the attempt to use the threat of market access and restriction as a reason for changing the governance framework of biotechnology in Canada.

The market pathways framing is found in the testimony of Lucy Sharrat, coordinator of the Canadian Biotechnology Action Network (CBAN), a former employee of the Sierra Club Canada, and a vocal supporter of Bill C-474. Lucy Sharrat states that “that there are fundamental problems with genetic engineering and fundamental problems with the Canadian government's approach to this technology, including our regulation” (Reschke, 2001). Additionally, Sharrat suggests that failure to change the existing regime can result in “cause chaos in the domestic and international market” (Reschke, 2001).

Another critical observation is that on the surface, it appears that Bill C-474 was being championed by the NDP MP, Alex Atamanenko, garnering support from the Bloc Quebecois, in addition to several domestic actors [including some with global connections], Manitoba Forage Seed Association, the National Farmers Union, Inter Pares and USC Canada and Greenpeace Canada. The interests of organic producers and farmers were represented by the “Saskatchewan Organic Directorate, the Ecological Farmers' Association of Ontario, and Union Paysanne. It also includes coalitions of grassroots groups like the Society for a G.E. Free B.C., and the Prince Edward Island Coalition for a GMO-Free Province” (Reschke, 2001).

On the question of non-domestic funding, Bernstein and Cashore (2012) warn that “any attempts at influence along this pathway must navigate concerns about sovereignty and the risk of being viewed as foreign or international intrusion” (p. 593). Lucy Sharrat’s organization, CBAN, is a project of Tides Canada Initiatives, one of the organizations considered by the government as

receiving foreign funding, working to undermine Canadian interests and a candidate to lose its charitable tax status.

This is evidenced in the exchange between Mr. Blake Richards, Conservative member from Wild Rose, Alberta and Ms. Lucy Sharratt during meeting number 71 of the Standing Committee on Agriculture and Agri-Food. The committee, pursuant to Standing Order 108(2), was engaged in discussing the agricultural and agri-food products supply chain in regards to grains and oilseeds (Parliament of Canada 2013)

Richards contended that CBAN, along with the National Farmers Union and the Council of Canadians, had campaigned against free trade talks between Canada and Europe. In addition to questioning the motives of anti-GM groups such as CBAN, the National Farmers Union and the Council of Canadians, Richards questions “whether that's a proper use of charitable donations” (Parliament of Canada 2013)., stating that “[he’s] sure that most people are quite aware of Tides Canada and their history, but think[s] it's important to point out that according to media reports out there, Tides Canada has taken about \$62 million from U.S. sources over the last decade” (Parliament of Canada 2013).

Nonetheless, the failure of the attempt to legislate Bill C-474 and CBANs activities must be seen in the broader context of the evolution of the Canadian Biotechnology Strategy. Set in this context, the outcomes confirms the notion that economic, social, and political pressures constrain the decision making process of governments, and that changes in domestic policy cannot only be explained by international rules and globalization. It also supports the contention that international institutions, transnational actors, international norms, and market forces all combined, oftentimes with the assistance of domestic actors, shape and constrain domestic policy and decision makers.

CHAPTER 6. ANALYTICAL DISCUSSION, RECOMMENDATIONS, CONCLUSION AND POLICY IMPLICATIONS

In this chapter, I present an analytical discussion of activities occurring along the four distinct pathways of international and domestic influence on public policy: international norms and discourse, international rules, markets and direct access. These activities and the paths used by State and non-State actors help to shape the formulation of the precautionary principle adopted. The chapter also includes a discussion on recommendations as to how the precautionary principle can be better utilized by the government of Canada as an environmental norm. A conclusion summarizes the key findings, which is followed by a discussion of the policy implications.

Analytical Discussion

This research suggests that there are a number of actors, institutions and economic forces, operating both within and without the State. Further, these forces are able to constrain the ability of governments to make independent policy decisions. The pathways framework presents an alternative way of examining policy outcomes, by distinguishing the causal pathways through which domestic policy can be impacted and changed. This section of the research expands on the key findings observed and offers an analysis of these findings.

1. Once a pathway is activated, the power dynamics dictate which actors are allowed to traverse it in either direction

In theory, activities along a pathway are not restricted to one type of actor, for once a pathway is activated; multiple actors attempt to influence the outcome. This is however not true of the international norms and discourse pathway and the international rules pathway, since the international architecture only recognizes the state as the legitimate representative of its population. Different pathways and combinations of pathways create advantages and disadvantages for state and non-state actors. In the case of the precautionary principle and Canada, the Government of Canada accessed the international norms pathway during the negotiation stages of the Rio Declaration, the CBD, and the Cartagena protocol. This access has allowed non-State actors to lobby governments and promote competing ideas, indirectly challenging the role of the State as the only legitimate actor in the international sphere. The activities of non-state actors lose their effectiveness as they are not seen as equal with states or as representatives of the state.

Further, these activities transpire outside of the formal legal process and take the form of protests at the locations where treaties and international agreements are being discussed and formulated.

The major difference between State and non-State actors is that while non-State actors are able to promote a particular norm in the international arena and they are capable of conveying the norm from the international to the domestic arena in the form of discourse, they cannot ensure that the norm will be embodied in domestic law and policy. This inability to make the norm effective in domestic policy is because non-State actors are not only significantly disadvantaged along the international rules pathway, but also lack the institutional framework necessary to convey a norm from the international sphere to the domestic sphere.

On the other hand, states possess a privileged status, which enables them to promote a particular discourse at the international level and return to the domestic sphere with a formulation of the norm that is consistent with their national interests, as in the case of the precautionary principle adopted by Canada. This is so because the international governance architecture allows States to have privileged access, while relegating non-State actors to observer status, giving them access, but making their efforts ineffective (as reflected in Table 7).

Table 7 – Power dynamics operating along the pathways

	International Rules	International Norms & Discourse	Markets	Direct Access
State Actors	Privileged Access	Privileged Access	Gatekeepers, but vulnerable	Gatekeepers
Non-State Actors	Access, but ineffective, because one-directional from national to international level	Access, but ineffective, because no guarantee that the norm will become law	Access, effective if able to achieve consumer buy in and in combination with direct access	Access, effective if domestic concerns over sovereignty is dispelled

During the negotiations of the Cartagena protocol, Canada aligned itself with other major GM exporting countries. In this way, Canada promoted a particular formulation of the principle in order to guarantee and maintain its competitive advantage as a major exporter of GM products, arguing that an adoption of the precautionary principle, instead of a scientific approach, would jeopardize its biotech industry and negatively affect its export potential. Not surprisingly, the discourse and the manner in which the Government conceived the precautionary principle is now reflected in several key domestic legislations (as discussed in Chapter 5) and is also reflected in the Government of Canada Discussion Document on the Precautionary Approach/Principle.

With the international rules pathway now activated by the state through participation and signature of the Rio Declaration, the CBD, and the Cartagena protocol (though not ratified), Non-State actors are now capable of leveraging this fact in an attempt to influence policy, but are unable to convey norms along the pathway. Instead, this thesis found that attempts at challenging or influencing policy outcomes are channeled through the judicial system. This was observed by the numerous instances within Canada's domestic courts where actors desirous of the adoption of a strong formulation of the principle and those seeking to give it the status of customary international law, repeatedly referenced Canadian international obligations, oftentimes targeting the international reputation of Canada. This was particularly evident in the *Spraytech case*, the *Sage Grouse case* and the *EC Hormones case*. However, there is no evidence to suggest that this strategy is able to bring about the adoption of a strong formulation of the principle. Essentially, the international rules and the international norms and discourse pathways deny access to non-state actors.

The evidence of multiple activities by various actors along the various pathways is significant but what is more important is the fact that activity along a pathway can occur in a multi-directional manner, as in the case of the state and the international rules and the international norms and discourse pathways. The state is able to promote a particular norm at the international level and subsequently convey the formulation of that norm to domestic policies and law. This is an especially significant finding when we consider that Bernstein and Cashore (2012), Gomar, Stringer, and Paavola (2013), Hudson (2012) and Kasa (2013), all referencing the pathways framework, conceived that each individual pathway would allow for influence traveling in a unidirectional manner only. Gomar, Stringer, and Paavola (2013) posited that the pathways amount to a top-down approach, while Hudson (2012) and Kasa (2013) implicitly support this

argument. Thus, this thesis advances the notion that State-actors are able to traverse the International pathways in a multi-directional manner, while non-State actors are only able to promote ideas at the international sphere, but are unable to transmit that norm to the domestic level.

2. The International Rules and the international norms and discourse pathway do not guarantee the adoption of a strong formulation of the precautionary principle in domestic law

The international norms and discourse pathways represent the first logical step that international and domestic actors take in order to bring international norms into the domestic political arena. The findings of this thesis reveal that actors use discourse, especially during the deliberations and negotiation stages of international agreements, with the expressed intent of promoting and advancing a particular norm. Specifically, it is observed that the international rules and international norms and discourse pathways privilege state actors and restrict access to non-State actors, and in instances where access is granted, their access is ineffective.

Non-state actors are not allowed to negotiate international agreements; this privilege is only given to state actors who legitimately represent their citizens. The issue of sovereignty is critical here, as non-state actors cannot be seen as attempting to interfere in the internal affairs of a state. As such, the rules of international institutions, such as the WTO and the UN, privilege state actors, and relegate non-state actors to the status of observer. Therefore, once the precautionary principle is articulated and internationally established, the ability of non-state actors to influence the principle becomes less effective. Consequently, this leaves those desirous of policy change with

no other alternative but to adopt additional pathways of influence, particularly at the domestic level.

As noted earlier, non-State actors are disadvantaged along this pathway, which means that States have unrestricted access, and more specifically, it States possess the status of privileged actors. This privileged status allows the State to promote a unique formulation of a norm in the international arena, subsequently returning to the domestic sphere with a formulation that is aligned with the economic and national interests of the State.

In the case of Canada, in instances where an international agreement contains a strong formulation of the precautionary principle, the guiding instrument governing treaty law, the Vienna Convention on the Law of Treaties, ensures that States cannot be constrained to abide by the provisions of a treaty or agreement if they have not signed and ratified said agreement. Bernstein & Cashore (2012) supports this analysis and suggesting that indeed “international agreements influence domestic policy to the extent that they create binding obligations on states through international law” (p. 589). This means that non-state actors are disadvantaged along this pathway since they cannot pressure governments to comply with certain international agreements, which the state in question has not signed or ratified, since non-state are unable to utilize what Franck (1990) refers to as a ‘pull towards compliance’.

Further, in cases where disputes were initiated at the international level, such as the ICJ and the WTO, in order to ensure compliance, this pathway has proven to be unhelpful to proponents of the precautionary principle. This conclusion is confirmed in the cases before the ICJ, WTO and national courts, and can be based on the following rationales. Firstly, the vexing conceptual uncertainties, and the fact that there no generally accepted definition of the precautionary principle, has relegated the principle to a norm, but not a norm amounting to

customary international law. This, then, has allowed States to promote and subsequently adopt varying formulations of the principle within domestic legislation, without fear of legal sanction. Secondly, international and domestic tribunals have been reluctant to give effect to the precautionary principle because of two legal maxims: *res judicata* and *onus probandi incumbit actori*.

The principle of *res judicata* is the legal principle which states that a case may not, generally, be re-litigated once it has been adjudicated on the merits (Hans 1962; Shell 1987). Consequently, both international and domestic judges have been reluctant to provide a broader scope for the precautionary principle outside of what is entailed in the *Nuclear Tests Case*.

Under the well-established principle of *onus probandi incumbit actori*, “it is for the claimant to prove his claim” (Amerasinghe 2004, 281). Evidence of this principle is demonstrated in the consistent rulings of the WTO, where disputes are based on the need to demonstrate where the burden of proof rests. The decision of the WTO Appellate Body in *United States - Measure Affecting Imports of Woven Wool Shirts and Blouses from India*¹⁹ stated that:

“we find it difficult, indeed, to see how any system of judicial settlement could work if it incorporated the proposition that the mere assertion of a claim might amount to proof. It is, thus, hardly surprising that various international tribunals, including the International Court of Justice, have generally and consistently accepted and applied the rule that the party who asserts a fact, whether the claimant or the respondent, is responsible for providing proof thereof. Also, it is a generally accepted canon of evidence in civil law, common law and, in fact, most jurisdictions, that the burden of proof rests upon the party, whether complaining or defending, who asserts the affirmative of a particular claim or

¹⁹ B.3.1.1 US — *Wool Shirts and Blouses*, p. 14, DSR 1997:I, p. 323 at 335

defense. If that party adduces evidence sufficient to raise a presumption that what is claimed is true, the burden then shifts to the other party, who will fail unless it adduces sufficient evidence to rebut the presumption”

Further, in the *EC Hormones* case, para 98, the WTO ruled that:

“The initial burden lies on the complaining party, which must establish a prima facie case of inconsistency with a particular provision of the SPS Agreement on the part of the defending party, or more precisely, of its SPS measure or measures complained about. When that prima facie case is made, the burden of proof moves to the defending party, which must in turn counter or refute the claimed inconsistency”

These rulings have significant implications for the precautionary principle, and have severely hindered the promotion of a strong formulation of the principle along the international rules pathway. The strong formulation gains its status and significance based on the reversal of the burden of proof. Therefore, both weak and moderately weak formulations of the principle can be easily promoted along this pathway, since they do not require a shifting of the burden of proof, essentially impeding proponents of the strong formulation.

Finally, decisions made by the world’s influential and authoritative international judicial bodies do much to shed light on the barriers facing actors desirous of promoting a strong formulation of the precautionary principle. They also account for why the international rules pathway can only produce a weak or moderately weak formulation of the precautionary principle. It clarifies the nature of the relationship between international and domestic courts, specifically accounting for why international and domestic have been reluctant to provide the precautionary principle with a more significant role in environmental regulations. Within the context of this

thesis, it is now clear that the very makeup of the international rules pathway and the international norms and discourse pathway significantly disadvantage non-state actors and does not guarantee a strong formulation of the precautionary principle in domestic policy, while concurrently allowing the privileged access of State actors.

3. Actors reinforce their positions by traversing multiple pathways

Another significant observation posited by this thesis is that actors can concurrently access multiple pathways, attempting to influence a particular outcome. In the case of the Cartagena protocol and the EC - Beef Growth Hormones Case, the government of Canada was able to promote a particular discourse along the international norms and discourse pathway, while concurrently accessing the international rules pathway. As such, the government of Canada effectively guaranteed the adoption of a weak formulation of the precautionary principle by refusing to include the words “precautionary principle” in key international instruments such as the Cartagena Protocol and the Codex agreement.

On the part of non-state actors, evidence of the use of multiple pathways is also observed during the GM wheat debate. Coalition actors were able to rally the support of likeminded groups by working along the direct access pathway in order to change policy, or in this case, negatively affect GM producers. They were also able to garner public support for their cause, giving them a greater degree of influence than they would normally enjoy. They also argued that the commercialization would negatively affect exports, pressuring the Canadian government, GM producers, GM companies and importing States. This evidence suggests that while the State acts as the gatekeeper for the markets pathway, states remain vulnerable,. This vulnerability is evident when the economic interest of organized local actors and the State is threatened and when there is widespread local support by consumers for policy change. As discussed in Chapter 5, the

gatekeeper function allows the government to decide what is best for the state and to act in a manner that ensures its survival. Further, as also previously noted in Chapter 5, the gatekeeper determines which actors are allowed into the policy process.

Also, as observed along the international norms and discourse pathway, actors such as ENGOs, anti-GM activists, and biotechnology corporations can concurrently promote various framings of a discourse, in-order to shift public perceptions and ultimately public policy. In the case of Council for Biotechnology Information and BIOTECanada, proponents of biotechnology, along the international norms and discourse, deliberately attempted to buttress their interests and diminish the influence of rival actors traversing this pathway.

4. In the case of Canadian GM products, non-State actors have more success combining the Markets and the Direct Access pathways

The findings of this thesis suggest that non-state actors have had the most success when the markets and direct access pathways are engaged simultaneously. Dissenting opinions, emerging from unsuccessful attempts to change and/or challenge the strong formulation along the international rules and international norms and discourse pathways, take on a legal after life and encourage the ‘losers’ to engage additional pathways.

In the case of Canada’s, biotechnology, it is clear that the markets and direct access pathways have been vigorously traversed by anti-GM activists, and with varied levels of success. The combination of these pathways has forced several large firms to de-commercialize several GM crops and, destroy the technology, as in the case of CDC triffid. However, in instances where actors have tried to influence policy change along the direct access Pathway, without concurrently accessing the markets pathway, there are few successful cases. Both this example and the case of

the Government of Canada simultaneously using the international norms and discourse and the international rules pathways, suggest that there are interactions occurring between various pathways and a successful strategy will involve multiple pathways from the international to the domestic policy levels.

A possible explanation of how these interaction influences work can be found in the failed attempt to legislate Bill C-474. Firstly, within the Canadian political system, opposition MPs and backbencher MPs exercise little influence, resulting in their inability to leverage the requisite power mechanisms to promote policy change. A further disadvantage, evident in this case, is the reality that the locus of power rests with the ruling party and the Cabinet, and in case of Bill C-474, there was no support from the Conservative government.

The findings along this pathway shed light on the importance of power dynamics at play within the Canadian political system. Specifically, it exposes a key variable that must be considered when analyzing policy outcomes: power. In the case of biotechnology and Canada, the interests of the biotech industry are supported by the government at relevant international forums, evidenced by the insistence of the Canadian government during the Cartagena protocol, Codex meetings, international, multi-lateral trade agreements, and during international disputes. At the domestic level, the Canadian government's declaration, which identifies biotechnology as a valued and strategically important industry (Doern and Prince 2012), suggests that any attempt to influence domestic policy outcomes by appealing to decisions and agreements at the international level will necessitate a multiple path approach.

As such, non-State actors are unlikely to successfully influence policy change through conventional institutional channels, where their recommendations and presence goes unnoticed, rendering them incapable of challenging the status quo. Regarding agricultural biotechnology and

Canada, it seems that policy changes have a higher probability of occurring when there are widespread threats of boycotts or information campaigns that are designed to sway public perceptions and pressure key international importers, such as the EU and Japan. These maneuvers seem to change the power dynamics, buttressing the notion that, in the Canadian context, success is better guaranteed when multiple pathways of influence are engaged, but in cases where there is a lack of support from the ‘power structures, success is largely symbolic.

The markets pathway sees the state acting as a gatekeeper, which means that the state possesses the necessary institutional support to regulate and control access to decision making. The GM cases illustrate particularly clearly the synergies between the markets and direct access pathways. For the direct access pathway, the state remains a significant gatekeeper, as the recent actions of the Canadian Government to identify “foreign” environmental organizations working in Canada and its policy of revoking the charitable taxation status of NGOs it deems “primarily political” illustrate. As globalization strengthens international trading links, governments find themselves less able to act as gatekeepers along the markets pathway, for example by retaliating against trading partners whom they deem to be interpreting international norms or international law in ways that provide them with an unfair trading advantage. Governments will attempt to make life increasingly difficult for campaigners in order to compensate for their diminished power along the markets pathway.

5. The outcomes of the political conflict over the precautionary principle in Canada can be explained, in part, by the pathways used by the actors

As noted under the International Rules section of Chapter 5, various formulations of the precautionary principle can be found in several federal government policies. These include CEPA, SARA, CEAA, and the PCPA. Additional expressions of the precautionary principle can be found

in the federal government discussion document: *A Canadian Perspective on the Precautionary Approach/Principle Proposed Guiding Principles* and the Privy Council Office document “*A Framework for the Application of Precaution in Science-based Decision Making about Risk*,” Remarkably, neither of these documents endorse the precautionary principle as a rule of customary international law (Privy Council Office 2003). The government of Canada, through its laws and guiding documents, ensures that the application of precaution is undertaken within a science-based risk management approach.

The language and policy approaches present in these documents are consistent with the government of Canada’s practice in the field of environmental protection, food safety, and standards and international tribunals such as the WTO settlement mechanism. Further, this language and policy approach is also reflected in Canadian environmental regulations such as CEPA, SARA, CEAA, and the PCPA. Thus, the practical conclusion is that the particular version of the precautionary principle that is adopted by Canada traveled through the international rules and the international norms and discourse pathways, as it is a reflection of Canadian’s position during the negotiations of the Cartagena Protocol and Canada’s position at the WTO.

The nature of the international rules and the international norms and discourse pathways has shaped the formulation found in Canadian legislation. This is particularly true of the international norms pathway, since the pathway allows for the weakest form of the norm to be transmitted. Canada sought to promote and subsequently transmit a weak formulation of the principle because failing to do so would jeopardize its status as a GM exporting economy. Further, the formulations found in various Canadian environmental regulations are a reflection of the fact that there are multiple formulations of the precautionary principle within the international sphere. These formulations range from weak to strong as shown in Table 2 (pg. 22).

Finally, the analysis of where the precautionary principle is located on the strong to weak spectrum has the potential to benefit actors desirous of seeing a stronger formulation of the principle implemented. It opens the door to actors desirous of seeing a stronger formulation by identifying the weakness of a proposed or existing formulation and in so doing, allows them to make appropriate suggestions, with the intent of moving the formulation into a stronger category.

6. Within the Canadian context, the adoption of a weak formulation of the precautionary principle does not guarantee increased innovation and commercialization.

A prominent criticism of the precautionary principle is that the adoption of a strong formulation acts as a barrier to innovation (Pittinger and Bishop 1999). As such, we could assume that the adoption of a weak or moderate formulation would act as a catalyst for innovation, providing firms with the ideal regulatory environment where innovation and commercialization of new technology would thrive. The Conference Board of Canada noted that Canada was the “first country to grow biotech crop, with full commercial products of canola, corn and soybeans” (p. 3). However, despite having adopted a relatively weak formulation of the precautionary principle, Canada’s commercialization record has been poor when compared with the US and other OECD countries (Mitchell and Munn-Venn 2005).

The combination of a weak version of the precautionary principle and a low level of commercialization in Canada can be explained in two ways: Firstly, the regulatory framework is not the only variable that accelerates or hinders innovation and commercialization. Rather, these variables can also include investor’s confidence, access to capital, and external market influence

Secondly, a strong formulation hinders innovation, but the formulation can act as a barrier without being present in the host country. In other words, when there is a lack of coherence regarding the formulation of the precautionary principle, which is adopted by other States, these agreements can directly affect the level of commercialization in other countries by creating uncertainty about access to export markets.

Policy implications

Brooks (1989) defines public policy as “the broad framework of ideas and values within which decisions are taken and action, or inaction, is pursued by governments in relation to some issue or problem” (p. 16). This definition suggests that governments are tasked with the responsibility to engage in complex decision making, sometimes employing various methods of analysis in a way consistent with national or institutional interests. The case of decision making concerning environmental and food safety regulations are no different.

As such, an understanding of what causal pathways influence particular outcomes offers decision makers a potentially useful framework for modelling and simplifying complex governance arrangements, the framework also aids in identifying various influential actors, allowing decision makers the option of either using mitigating strategies to curb their opponents’ efforts or seeking potential alliances based on shared interests. We should not exaggerate the policy relevance of pathways analysis. Reviewing the application of the pathways framework to the case of forest policy in Canada, Jeremy Wilson has argued that the framework lacks predictive capacity for two reasons, both of which are evident in the GM cases studies. First, each of the pathways enables a wide variety of different strategies and approaches. Second, “we can expect to find that as they design and adapt strategies, NGOs slide naturally from one pathway to the next” (2003,

21) in unpredictable ways. Nevertheless, Wilson argues that pathways framework does alert policy makers to the consequences of the internationalization of a policy issue, that the issue will be “significantly influenced by pressures and ideas originating from beyond Canadian borders” (22). This feature of the GM case explains how the Canadian government could win the battle to enshrine a weak version of the precautionary principle in domestic law and policy but lose the larger war to promote the idea of science-based risk assessment as the basis of science and innovation policy. Thus, understanding how best to invoke the pathways where state actors have an advantage can allow governments to manage the particular version of the principle that they eventually wish to adopt, and to see that version evolve into ‘hard rules’ of customary law in of biotechnology sector. However, the information gathered during this research suggests that a more realistic outlook for the principle is that there will continue to be varying formulations, and the status of the principle will remain unchanged but not unchallenged. As well, regulatory harmonization will remain an aspiration as a result of competing interests and ideas, with harmonization becoming increasingly difficult to achieve over time.

The implications of disharmony will ultimately result in a disjointed effort to engage in meeting the demands of food security, with developing countries facing increased uncertainty and food shortages. Also, developing countries will remain reluctant to adopt the technology and/or receive food aid if the aid is comprised of genetically modified products or seed. This is because they fear losing market access to countries which are opposed to GM technology. The discourse at the international level suggests that the decision to adopt a strong formulation of the precautionary principle by national decision makers is premised on the notion of protectionist policies, with the intention of protecting domestic markets and industry, as is the case of importing countries such as the EU and Japan. On the other hand, countries that adopt a weak or moderate

formulation of the principle, do so with the intention of maintaining market access and ensuring the protection of a comparative advantage, as is the case in exporting countries such as the US and Canada.

Postscript

I have argued that the international rules pathway is not sufficient to explain the formulation of the precautionary principle adopted by Canada. The thesis suggests that there are additional pathways through which international norms are transmitted to the domestic realm. The findings of this research have implications for how we account for policy change, since it takes into account the role of non-state actors, institutions and interests.

Specifically, the thesis also revealed that State actors possess privileged access along the international rules and the international norms and discourse pathways. This status occurs because of the structure of the global governance architecture, which positions the state as the legitimate representatives of a member country. Non-state actors have access along these paths, but they remain ineffective owing to their inability to stand as equals with State actors in the international arena. In the case of the international rules pathway, Non-state actors are able to exert pressure on governments in order to change domestic policies, but only if they are able to raise issues of non-compliance by the state. Success can also be achieved based on the moral vulnerability of the state.

Along the markets pathway, the state is seen as a gatekeeper. This means that the state is able to dictate which actors are given access but they remain vulnerable to consumer pressure, since the consumer is the actor who gives the state legitimacy. Similarly to the markets pathways, the state acts as a gatekeeper along the direct access pathway, but unlike the markets pathway, they are not vulnerable to non-state actors along this pathway. For non-state actors, success along this

pathway occurs when the State grants access, but access can be blocked if the state perceives a threat to its sovereignty.

These findings are important, not only because the formulation of the precautionary principle adopted by a country can have implications for innovation and technology commercialization, but also because we are now better able to account for how a particular formulation is adopted.

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