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# Global Climate Change and the Industrial Animal Agriculture Link: A Critical Discourse Analysis

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**GLOBAL CLIMATE CHANGE AND THE INDUSTRIAL ANIMAL AGRICULTURE LINK:  
A CRITICAL DISCOURSE ANALYSIS**

by  
Elizabeth Bristow

A Thesis  
Submitted to the Faculty of Graduate Studies  
through Sociology  
in Partial Fulfillment of the Requirements for  
the Degree of Master of Arts at the  
University of Windsor

Windsor, Ontario, Canada  
2009  
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## ABSTRACT

This thesis examines the discourses of a variety of stakeholders regarding global climate change (GCC), assessing if and how they construct industrial animal agriculture as posing a risk, and if and how these discourses may have shifted since the release of the Food and Agriculture Organization's (FAO) *Livestock's Long Shadow* report. Using Ulrich Beck's concepts of risk society, risk conflicts and relations of definition, this thesis examines how various animal rights and welfare groups, environmental organizations, meat industry stakeholders, governmental agencies and newspapers in Canada, the U.S. and internationally, investigate and construct industrial animal agriculture as a risk, if at all, and how these definitions conflict. In general, social movement organizations were found to problematize industrial animal agriculture before and after the release of the FAO report, whereas industry stakeholders and governmental agencies paid little, if any, attention. Newspapers, however, cited a wide range of topics relating to animal agriculture and GCC, but the most common were based on ethanol and other bio-fuels and alternative sources of energy. This research finds that while the problematization of animal agriculture's contribution to global climate change has been acknowledged by a number of organizations, for the most part, it has not increased since the release of *Livestock's Long Shadow*.

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## LIST OF ABBREVIATIONS

Agriculture and Agri-Food Canada	AAFC
American Meat Institute	AMI
Animal Alliance of Canada	AAC
Canadian Meat Council	CMC
David Suzuki Foundation	DSF
Environment Canada	EC
Environmental Defense Fund	EDF
Environmental Protection Agency	EPA
Food and Agriculture Organization	FAO
Friends of the Earth International	FoEI
Global climate change	GCC
Green Peace International	GPI
In Defense of Animals	IDA
International Fund for Animal Welfare	IFAW
People for the Ethical Treatment of Animals	PETA
Sierra Club of Canada	SCC
The Nature Conservancy	NC
United Nations	UN
United States Department of Agriculture	USDA
World Society for the Protection of Animals	WSPA

## **Introduction**

Global climate change (GCC) has received a great deal of attention of late, yet discussions of the risks posed by some industries and substances have escaped the close scrutiny of social scientists. Situated within green criminology -- a sub-field of criminology that attends to harms perpetrated against the environment and nonhuman animals, rather than just those perpetrated against humanity -- this project begins to fill that gap in the social scientific literature. More specifically, Ulrich Beck's theorizing of the risk society is utilized in this project to examine discourses of GCC and the construction of industrial animal agriculture as a contributing risk.

Beck (2004) argues that during the first modernity, industrialization produced side effects that were predictable and able to be controlled. The second modernity on the other hand, presents unpredictable and uncertain global risks, and the rationalization of these risks becomes more tenuous, opening space for competing discourses. This study uses Beck's theorizing and concepts to examine the link between industrial animal agriculture and GCC. It looks at the development of "risk conflicts" between organizations, and the "relations of definition" to analyze discourses surrounding industrial animal agriculture, and examines whether or not meat industry stakeholders have lost the power to "rationalize risk" (Beck and Willms 2004, 139).

While much of the current data on GCC suggests that the transportation industry is a major source of greenhouse gas emissions, industrial animal agriculture is also a significant contributor. Not only do the animals themselves produce methane through respiration and decomposition, but when combining all areas of the livestock sector (e.g. production of feed, rearing, transportation and processing), it produces large volumes of carbon dioxide, methane

and nitrous oxide. Accordingly, Steinfeld and colleagues remark, “[a]t virtually each step of the livestock production process substances contributing to climate change or air pollution, are emitted into the atmosphere, or their sequestration in other reservoirs is hampered. Such changes are either the direct effect of livestock rearing, or indirect contributions from other steps on the long road that ends with the marketed animal product” (Steinfeld et al., 2006, 103). Livestock activities contribute through the major sectors for greenhouse gas reporting: energy, industry, waste, land use, land use change and forestry and agriculture (Steinfeld et al., 2006). While natural scientists are beginning to research the problematic contributions of the meat industry to GCC, there appears to have been little discussion among meat industry interest groups and the general public about the contribution of industrial animal agriculture to how to slow GCC. The release of a report by the Food and Agricultural Organization (FAO) of the United Nations (UN) examining the contribution of industrial animal agriculture to GCC in 2006 may signal the opening up of discursive space surrounding the risk posed by industrial animal agriculture. The report aggregates emissions based on the livestock commodity chain - feed production, animal production and processing and transporting animal products. It concludes that the animal agriculture industry produces 18% of greenhouse gas emissions, which is greater than that contributed by the transportation industry.

This study is the first to examine the discourses of social movement organizations, stakeholder groups, and the newsprint media related to this risk, potential “risk conflicts” (Beck and Willms 2004) among stakeholders, and the possibility that these discourses have increased in quantity or changed qualitatively in response to the FAO’s report. To this end, documents produced by Canadian, U.S., and international animal rights and welfare groups,

environmental groups, industry stakeholders, government agencies and newspapers are analyzed. More specifically, the animal welfare/rights groups examined include The People for the Ethical Treatment of Animals, In Defense of Animals, Animal Alliance Canada, Ark-II, World Society for the Protection of Animals and the International Fund for Animal Welfare. The environmental organizations included in the analysis are The Nature Conservancy, the Environmental Defense Fund, the David Suzuki Foundation, the Sierra Club of Canada, Green Peace International and Friends of the Earth International. The industry stakeholders include the American Meat Institute and the Canadian Meat Council. The government agencies included in the analysis are the U.S. Environmental Protection Agency, the U.S. Department of Agriculture, Environment Canada and Agriculture and Agri-Food Canada. Lastly, the newspapers include *USA Today* and the *Globe and Mail*. (Descriptive information on these organizations can be found in Appendix A).

I employ critical discourse analysis to examine the discourses of risk related to GCC in the documents of these organizations and the newspaper accounts, paying particular attention to discussions related to animal agriculture. These discourses are important because they impact how we address global climate change, locally and globally. I pay particular attention to whether there is any change (i.e., in frequency and in framing industrial animal agriculture as a GCC risk) following the release of the *Livestock's Long Shadow* report. Before delving further into the methods used in this study, I provide an examination of the green criminology and GCC literatures, as well as a discussion of the theoretical perspective and research methods employed, followed by presentation and discussion of the findings. The thesis concludes with a discussion of the strengths and limitations of this project and suggestions for future research.

## **(Green) Criminology and (Environmental) Harm**

Criminologists have traditionally concerned themselves with harms that arise from criminal acts. However, conflating general harm with criminal harm in criminology risks overlooking many other socially significant phenomena and creates a highly partial, biased and distorted view of harm. The more inclusive concept of *social harm* is used to encompass a wide variety of events and conditions that affect people throughout their lives: harms which mainstream criminology has overlooked. Admittedly, this term is very broad and potentially unwieldy. Nonetheless, it is argued that marginalizing social or non-criminal harm results in overlooking some of the most dangerous and damaging forms of harm in our society (Hillyard and Tombs 2004).

One of the main reasons why many social harms have not traditionally been included within the purview of the discipline of criminology is that criminology relies on state definitions of crime, motivating one observer to state, “to date criminology’s greatest and recurring limitation is that it allows state and legally defined conceptions of crime to run its agenda” (Muncie 2000, 7). Increasingly, however, other harms are finally being recognized as part of the realm of criminology, including racism, sexism, and economic exploitation. In addition, the areas of harm that have been hidden in the past are now beginning to appear in mainstream research agendas. This has created a deepening of the criminological agenda and reconceptualization of crime (Muncie 2000).

One notable area of harm that has been largely overlooked within criminology is environmental harm. White (2002) argues that environmental harm is generally left out of criminological definition of harm due to the “politics of ‘denial’”, in which particular concrete manifestations of social injury and environmental damage are obfuscated, ignored, or

redefined in ways that re-present them as being of little relevance to academic criminological study or state criminal justice intervention” (p. 83). He argues that denial of this harm is ingrained in the hegemonic dominance of anthropocentrism (White 2002). In other words, the dominant view of human superiority refuses to acknowledge that other non-human beings deserve protection from harm (especially harms stemming from human actions).

In the latter half of the 20<sup>th</sup> century, as the amount of pollution increased, it became apparent that environmental degradation and crimes against the environment were becoming increasingly relevant issues. The recognition of the importance of these issues and the broadening conceptualization of harm within criminology has given rise to a subfield referred to as green criminology. According to two pioneers in the field, “green criminology refers to the study of those harms against humanity, against the environment (including space) and against non-human animals committed both by power institutions (e.g. governments, transnational corporations, military apparatuses) and also by ordinary people” (Beirne and South 2007, xiii). The suggestion made by green criminologists is that we should broaden our perspective when thinking about the notion of crime. Beyond traditional definitions of crime, offences and injurious behaviour, green criminology seeks to analyze the role that social institutions play in generating environmental harms (Carrabine, Iganski et al. 2004).

Beirne and South (2007) argue that green criminology starts out by problematizing the nature of crime. Therefore, it asks questions such as: How is crime defined? Who is it defined by? What are the purposes and effects of these definitions? Which harms are defined as crimes and which are not? Which harms are defined as both harmful and criminal? Which are defined as neither? Thus, they argue that green criminology should be a discourse based on harm, addressing violations of what some individuals have diversely

termed environmental morality, environmental ethics and animal rights. It should aim to unearth relevant sources and power relations, which may include the state's willingness or reluctance to construct certain types of harms as crimes, and social inequalities and their adverse effects (Beirne and South 2007).

It has been asserted that environmental harm is rather unique in that it victimizes all people irrespective of characteristics such as race, class, and gender. In *Risk Society*, Beck states, "poverty is hierarchal, smog is democratic" (Beck 2001, 36). However, he later qualifies this statement, stating "it's impossible to miss the extent to which environmental risks are clearly distributed along the contour map of poverty" (Beck and Willms 2004, 130). While some groups may be subjected to environmental risks more than others, Beck argues that when risk conflicts and potential harms reach a certain level of intensity, due to globalization, they become universal throughout the system – touching everyone (Beck and Willms 2004). Therefore, the potential for mass environmental victimization becomes more probable.<sup>1</sup> A full discussion of Beck's theorizing and how it relates to this project is presented following a brief overview below of research on GCC and its attendant risks.

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<sup>1</sup> A focus on environmental victimology has also emerged within green criminology (see Williams 1996).

## **Global Climate Change**

### *What is it?*

The natural world is constantly changing. One type of change that has received increased attention of late is climate change, or “a shift in the ‘average weather’ that a given region experiences” (Environment Canada 2007). There is a wide array of ways to measure these changes, such as changes in average temperature, prevailing wind patterns, precipitation trends and norms, storm frequency and severity and more (Environment Canada 2007). We have seen these changes historically through the natural occurrence of ice ages. Ice ages, also called glacial ages, are “any geologic period during which thick ice sheets cover vast areas of land. Such periods of large-scale glaciations may last several million years and drastically reshape surface features of entire continents” (Encyclopaedia Britannica Online 2008). However, the current rate and magnitude of global climate change far exceeds past observed natural variations and oscillations (Environment Canada 2007). Many scientists agree that the global average surface temperature – or the average of near surface air temperature over land and sea – has increased since 1861, and in fact argue that the increase in temperature during the 20<sup>th</sup> century is likely to have been the largest of any century throughout the past 1,000 years (Houghton, Ding et al. 2001).

Some scientists believe that this has contributed to a new epoch, “a period of geological time usually reserved for distinguishing between massive periods of change on the planet” (Suzuki and Moola 2008). According to researchers, the last ice age was approximately 10-12,000 years ago, and since then we have been in a relatively stable period that geologists call the Holocene epoch. However, as it has become increasingly difficult to deny that humanity has had a growing influence on our planetary state, some scientists argue

that we have pushed our way into a new era: the Anthropocene epoch (Suzuki and Moola 2008). They define this epoch as “a time when human activities have become the dominating force of change on the planet” (Suzuki and Moola 2008).

### *Primary Causes*

The primary cause of climate change is the release of heat-trapping gases into the atmosphere, namely water vapour, carbon dioxide, methane and nitrous oxide. While the temperature of the Earth is regulated by a natural temperature control system, known as the “greenhouse effect”, an abundance of these gases assists in trapping an exorbitant amount of heat from the sun, thus preventing radiation from dissipating into space, resulting in what we call global warming (Environment Canada 2007). According to Environment Canada, the primary contributors to the natural greenhouse effect are water vapour (65%), carbon dioxide (25%) and other gases, especially but not only methane (10%) (Environment Canada 2001). Water vapour comes from a variety of sources, such as natural respiration, transportation and evaporation. As the earth’s temperature rises, the amount of water vapour stored in the atmosphere also increases (Environment Canada 2007). It is widely agreed upon that carbon dioxide, produced by automobiles, industrial processes, power plants and deforestation (The Nature Conservancy 2005), is the main greenhouse gas that contributes to dangerously rising temperatures. In 2006, Canada’s greenhouse gas emissions organized by gas consisted of: 94% carbon dioxide, 3% methane, 2% nitrous oxide and 1% other. The other gases consist of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>) (Environment Canada 2008).

### *Focus on Carbon*

At present the research on GCC places a strong emphasis on carbon dioxide and how human actions have a significant impact on the amount of carbon dioxide released into the atmosphere. In fact, many natural scientists argue that carbon dioxide is the most important anthropogenic greenhouse gas that contributes to global climate change (Solomon, Qin et al. 2007). Commonly mentioned causes of carbon dioxide emissions include the burning of fossil fuels, automobile emissions, deforestation, power plants and other industrial processes (The Nature Conservancy 2005). Policies are being implemented based on this research. For instance, in January 2008 the European Commission announced a new set of proposals to reduce global warming gases within the European Union (EU). Their main focus was on the reduction of carbon dioxide by 20% by 2020 in the EU's chemical, fertilizer and aluminium industries (Scott 2008).

Methane gas is generally mentioned as the second most important greenhouse gas contributing to global warming. Environment Canada breaks the two major greenhouse gases down molecule by molecule. They state that while carbon dioxide is the least effective in promoting warming, methane on the other hand absorbs and radiates approximately 21 times the amount of heat energy that carbon dioxide traps (The Nature Canada 2001). However, the fact that carbon dioxide generally accounts for the largest *amount* of greenhouse gas emissions might explain why while methane production has consistently been mentioned in research as a contributor to climate change, it has not yet been problematized to the extent that carbon dioxide has.

There are a number of anthropogenic causes of methane production, including fossil fuel production and transport, livestock and waste management (The Environmental Literacy

Council 2002). Despite the increasing research conducted on global climate change, until recently, animal agriculture has not been commonly recognized as a significant contributor to the climate change problem, and instead attention has focused on energy saving and the reduction of carbon dioxide emissions. The important connection between industrial animal agriculture and GCC has also been overlooked in the social scientific literature. The link has not entirely been overlooked in the field of natural science, however. The FAO report indicated that natural scientists are making the argument that more attention needs to be paid to methane, as well as the impacts of livestock more generally, since their impact is not limited to methane emissions (Steinfeld et al. 2006). For instance, an article titled “The Role of Livestock Production in Carbon and Nitrogen Cycles” focuses on ways in which the meat industry contributes to GCC other than through methane by way of animal waste, calling specific attention to grazing land and cropland (Steinfeld et al. 2007). Environmental scientist, Nick Costa, also wrote an article on the variety of ways that the meat and livestock industry affect the environment and contribute to GCC. In addition to methane emissions, he calls attention to the problematic affects of land use for grazing and water scarcity among other things (Costa 2007). Furthermore, an article in *The Lancet*, a popular medical journal, talked about livestock production and how it relates to energy, climate change and health (McMichael et al. 2007). The authors argued that,

greenhouse-gas emissions from the agriculture sector account for about 22% of global total emissions; this contribution is similar to that of industry and greater than that of transport. Livestock production (including transport of livestock and feed) accounts for nearly 80% of the sector’s emissions (McMichael et al. 2007, 1253).

Thus, it is clear that natural scientists are beginning to recognize all of the areas of livestock production that contribute to GCC.

### *Social Scientific Research*

According to Rosa and Dietz (1998), it is theorized that climate has been linked to society since thoughts have been recorded. The greenhouse gas effect in particular has been discussed since the early 1800s in the science community, with nearly 60 years being spent developing the analogy (Rosa and Dietz 1998). Charles Fourier, a French utopian socialist, was the first to recognize that society has an effect on climate, his predecessors generally thinking in terms of climate's effect on society (Rosa and Dietz 1998). He called attention to the possibility of human activities having an effect on the natural cycle of greenhouse gases, making a prediction that the polar ice caps would eventually begin to melt due to human activities. His claim was bound to have influenced geochemist Svante Arrhenius, who made the first systemic inquiry on the impacts of climate change in 1896. He later estimated that the atmosphere's carbon dioxide levels have doubled due to anthropogenic activities, particularly industrialization (Rosa and Dietz 1998).

During the late 1980s and through the 1990s, some of the warmest temperatures on record were registered globally (Rosa and Dietz 1998). According to Rosa and Dietz (1998), it is possible that increased complexity in the modeling of climate patterns has resulted in greater depth to global climate change knowledge, and furthermore enhanced recognition that humans may in fact be irreversibly modifying the environment. If we are actually permanently altering the earth's climate, judging by its magnitude, the sustainability of a wide variety of ecosystems as well as both human and non-human forms of social organization will all be tested (Rosa and Dietz 1998). Speculation regarding an increased amount of carbon dioxide in the atmosphere contributing to global climate change has been affirmed with modern scientific aids such as empirical investigation, complex computer

models and other sophisticated heuristics. As well, scientists generally use a variety of changes to predict future alterations to climate, including: economic and energy growth, the rate at which humans reproduce, use the land, introduce technology and emit greenhouse gas, with a clear focus on carbon dioxide (Rosa and Dietz 1998).

At this point, neither general sociological knowledge, nor knowledge regarding the climate's reciprocal relationship with society, is able to forecast societal changes resulting from changes in climate. However, Rosa and Dietz (1998) argue that changes in climate may have caused societal changes in the past, citing the possibility of the creation of sand dunes driving farmers away. They argue that "it is only through a more refined understanding of the recursive relationships between climate and human activities that we can hope to anticipate broad societal impacts if the suspected warming of climate were realized" (Rosa and Dietz 1998, 425). Through this understanding, sociologists will be able to answer important questions that have originated from physical scientists, policy makers and elsewhere outside of sociology, that apply to the field of sociology in particular. Such questions include, "how are social structure and social life tied to climate in the contemporary era, and what would be the likely impacts to these social entities if climate were to change?" (Rosa and Dietz 1998, 425).

Some research attention has been paid to lay perspectives of GCC. It is argued that due to the complex nature of scientific literature, laypeople struggle with properly understanding the issues and thus misconstrue the data. In general, academics believe that lay perspectives on global risk and climate change are important to understand for a variety of reasons. Kempton (1991) argues that there is a possibility for effective public communication techniques to be designed if one studies lay perceptions. Furthermore,

Dunlap (1998) argues that it is important to analyze the public's understanding of GCC, as it is assumed that this information can influence policy making. O'Connor and colleagues (1999) believe that an increase in environmental knowledge,

may directly affect environmental behaviours by heightening a sense of awareness and obligation and by providing cues for appropriate ameliorative behaviour. Knowing the causes of a problem and the ameliorative options should promote pro-environmental acts independent of risk perceptions and environmental values (p. 461).

Thus, the social scientific literature has focused on lay perceptions with potential pro-environmental outcomes in mind. However, the discourses of governments, news media, environmental organizations and other stakeholders, which presumably influence these lay perceptions, have received less attention. This study begins to fill this gap.

The social scientific research on GCC has followed two paths: (1) the neo-realist and, (2) the social constructionist (Rosa and Dietz 1998). The first sees the scientific consensus as being unproblematic and reliable. Therefore, climate change is merely a context for extending academic knowledge. In this case, a sociologist's job would be to identify, theorize and model human sources of climate change, as well as their impacts on society. On the other hand, the second is more sceptical of science, and focuses more on how GCC (and other global environmental problems) is framed as a social problem. Sociologists of this persuasion ask why these issues are of concern and what are the social conditions or actors behind the framing of these issues in specific ways (Rosa and Dietz 1998). This project falls into the second category, as it is interested in how the risk posed by industrial animal agriculture has been framed by various stakeholders. This concept of framing will be discussed further in a later section, along with an overview of the development of environmental discourses in general.

### *Livestock's Long Shadow*

In 2006, the UN's Food and Agricultural Organization (FAO) released *Livestock's Long Shadow*, a report regarding livestock farming and its environmental effects. The report explains that livestock farming has become a booming global industry, for two main reasons: the increasing population of the world and changes in food preferences. The report notes that scientists tend to classify producers of greenhouse gas based on land use changes, agriculture and transportation. What is problematic about these classifications is that areas of agriculture, such as the animal agriculture industry, bleed over into other sectors, such as the transportation sector. What the FAO did instead was aggregate emissions based on the livestock commodity chain - feed production, animal production and processing and transporting animal products. The authors conclude that globally the livestock sector is responsible for 18% of greenhouse gas emissions, which is more than the worldwide transportation sector. This can be broken down into nine percent of the carbon dioxide, up to 37 percent of methane and 65 percent of nitrous oxide contributing to GCC (Steinfeld, Ferber et al. 2006, 272).

The animal agriculture sector contributes to the anthropogenic production of carbon dioxide through deforestation for the purpose of grazing land or arable land. Furthermore, fossil fuel consumption for the production of feed grains and feed oil crops as well as the transportation of animal products also contribute to the problem. Methane gas is emitted through rumen fermentation and livestock waste, and nitrous oxide is produced from leguminous feed crops and chemical fertilizers which are applied to feed crops (Steinfeld, Ferber et al. 2006, 272). Thus, there is a wide array of ways in which animal agriculture affects the release of excessive amounts of greenhouse gas emissions. From the report it can

be concluded that the livestock sector is one of the top contributors to the most serious environmental problems, not only at a local level, but globally as well, and therefore urgently needs to be addressed (Steinfeld, Ferber et al. 2006).

The exact reasons why the FAO's report emerged at this point in time and the politics leading up to it have not been investigated and are not quite clear. However, we can speculate that several factors were involved. Perhaps a collaboration of concern from the nearly 200 member countries of the UN could have prompted an investigation into other causes of global warming, as there have been few groundbreaking changes in other sectors to decrease the severity and speed of global warming.

Further, one might wonder if other industries which have been identified as contributing to GCC, notably the automotive industry, influenced a shift to focus on other industries, such as industrial animal agriculture. It is certain that the automotive industry has at least taken note of the release of *Livestock's Long Shadow*. In an editorial titled "Livestock are the Real Climate Pigs" in *Ward's Auto World*, the author argues that while livestock impact climate on a greater scale than cars and trucks, the auto industry has been singled out as the central enemy in the GCC emergency; the editorial states that this makes it clear that the war on global warming is cynical, selective and politicized (Winter 2007). It further argues that it is ludicrous that governments are creating extremely tough regulations for automakers to develop environmentally friendly cars, yet the food industry (including restaurants, fast food places, farmers etc.) are not required to make any changes. Winter argues that, "if the auto industry is only part of the problem, it can't be 100% of the solution" (Winter 2007, 3).

The development of scientific knowledge related to GCC also likely influenced the FAO's report. Prior to its release, several studies were published on the contribution of animal agriculture to GCC. Some of the studies date back to the late 1980s and come from all over the globe, including North America, Turkey, Spain and the United Kingdom (Brown 2005; Gbetnkom 2005; Hatirli, Ozkan et al. 2005; Hospido and Sonesson 2005). For instance, shortly before the release of the FAO report, researchers at the University of Chicago published a study on the benefits of vegan diets for consumers and the environment in the summer of 2006. In comparing five different diets, their results determined that a vegan diet is the most energy efficient. In contrast, a diet containing meat contributes to global warming through the burning of fossil fuels and non-carbon dioxide emissions that can be associated with animal waste (Eshel and Martin 2006). The previous year, *Geographical* published an article titled "Is it true that cattle contribute to global warming?" (Edwards 2005). Concern over livestock's contribution to global warming dates at least as far back as 1989, when *Discover* published an article titled "Bovine Madness". In that piece, Stone (1989) focuses on methane gas being released when cows burp. She cites the National Center for Atmospheric Research as stating that more than 80 percent of the world's methane emissions are biological and natural.

According to Lever-Tracy (2008), 2005, the year before the release of the FAO's report, was a year of increasing awareness and evidence of climate change. On virtually a daily basis, the media was saturated with both evidence and warnings from credible natural scientific bodies. "There were reports of record breaking heat, droughts and hurricanes, melting ice, floods and rising sea levels that were destroying lives and livelihoods, spreading tropical diseases beyond their prior range, threatening the survival of many species and

demonstrating the unreadiness of even the most powerful states” (Lever-Tracy 2008, 445).

The year 2005 was arguably a tipping point which resulted in human-induced climate change achieving the status of a dominant discourse, and provided a more stable foundation for the FAO report the following year, which drew attention to a risk factor which was previously largely overlooked. I turn now to Ulrich Beck’s work to better understand the social dynamics of risks.

## **The Risk Society and Environmental Harm**

German sociologist Ulrich Beck argues we are living in a “risk society” and that the risks that surround us are connected to human actions that undoubtedly have a negative impact on the globe (Beck and Willms 2004). Furthermore, he asserts that the risks we face have changed over time. In an interview with Johannes Willms (2004), Beck describes the transformation between what he calls the first and second modernity. While he does not provide a specific date for when the first and second modernities began, he provides the following explanation of how he distinguishes between them: “The first modernity depended, tacitly not crucially, on many non-modern structures for its clarity and stability. When modernization begins to transform those structures, and make them modern, they cease to be useable foundations. This is what distinguishes the second modernity” (Beck and Willms 2004, 29). He provides examples of non-modern structures that he believes were originally intended to have a narrow scope, but through growth and expansion have “revolutionized their own foundations” (e.g., market expansion, legal universalism, and technical revolutions), leading down a path to the second modernity (Beck and Willms 2004, 29). Beck argues that the second modernity can only be described as a process of transformation of the first modernity, and is thus a fluid concept. He calls this process meta-change, since modernity has always been a dynamic system of continual change. According to Beck, the second modernity is not part of an evolutionary process, and thus it is not a matter of a simple switch from A to B. The first and second modernities are not mutually exclusive in time and space and “they exist simultaneously, and completely interpenetrate each other” (Beck and Willms 2004, 31).

Beck’s central point is that the risks we face and how they are addressed changes from the first to the second modernity. During the period of the first modernity, a nation-

state centered era, the risk society was based in terms of controlling predictable side effects of industrialization (Beck and Willms 2004). In contrast, the second modernity, a non-state centered era, is characterized by the unpredictability and uncertainty of various global risks, for example environmental dangers. The rationalization of risks becomes more difficult during this period, providing space for competing discourses (Beck and Willms 2004). The construction of risks can be influenced by various stakeholders (Beck and Willms 2004; Walters 2004); however, the ability of previously powerful stakeholders (e.g. the scientific community, business interests) to do so becomes circumscribed during the second modernity. This study examines the discursive activity of various stakeholders related to the risk posed by industrial animal agriculture to global warming as a possible instance of the processes Beck describes. It should be noted, however, that a total opening up of discourses problematizing the risk of GCC posed by industrial animal agriculture was not anticipated. As Marion Nestle (2002) has demonstrated, the food lobby remains quite powerful. Instead, one must envision the development of more modest ruptures.

According to Carrabine et al. (2004) the risk society is characteristic of a civilization that values the future more so than the past or present. Such a society strives for change and breaking away from traditional practices. These changes, however, are typically ones that have uneasily predicted consequences and thus foster a risk society. Technological changes made during the second modernity that may at first seem like advancements actually generate “subtler side effects that more often than not escape the immediate perception of those affected” (Beck and Willms 2004, 17). Modern technologies are now creating a wide range of new and ‘manufactured’ risks to both humanity and the earth itself. These humanly produced dangers not only have the potential to result in massively unforeseen consequences,

but it is possible that they may take many thousands of years to reverse (Carrabine, Iganski et al. 2004). Thus, contemporary risk society is one in which “modern industrial societies create many new risks - largely manufactured through modern technologies – that were unknown in earlier days” (Carrabine, Iganski et al. 2004, 314).

Beck traces a second modernity risk through stages: the first is when the media tells a tale that scares the public, creating a risk consciousness. In the second stage, marked by initial official resistance, political force increases and institutionalized rationality systematically blocks off any acknowledgement of the risk in question (Beck and Willms 2004). This is when a critical misunderstanding generally occurs, where “uncertainty” is believed to mean “minuscule probability” because the thought of a risk being based on uncertainty rather than probability is incomprehensible. The idea that this type of risk is a mere fantasy is furthered when it is brought to scientists who depend on causal evidence and inference to confirm their beliefs. Therefore when scientists do not have answers as to the cause of a new risk, such threats are generally thought to be false and not given further consideration (Beck and Willms 2004).

Some people believe that uncertainty is merely a cause of imperfections in data, and thus if we know more, then we will be able to predict, as well as control risks. However, one thing that must be stressed is that more knowledge does not always mean less uncertainty (Beck and Willms 2004). Anthony Giddens claims that more knowledge can in fact produce more uncertainties, or what he calls manufactured uncertainties (as cited in Beck and Willms 2004). All of these things lead to what Beck terms risk denial: “It’s about a legal system, and a political system, and a system of science which, by holding firm in their old rationality,

seem, when seen from the outside, to be equal participants in a conspiracy to systematically deny the risks the total system has produced” (Beck and Willms 2004, 121).

### *Risk Conflicts and the Relations of Definition*

Due to a lack of preconditions that help to successfully rationalize and socially construct risk, Beck (2004) argues that second modernity risks typically give rise to risk conflicts. He notes the possibility that risk may be considered an unintentional medium of communication because risk conflicts break down existing communication barriers, while putting people into communication who may not necessarily want to communicate. Furthermore, he argues that these conflicts force obligations and liabilities onto those people who typically have the law on their side in order to avoid these types of ordeals. Risk conflicts can not only cut through existing rules but allow costs to be redistributed in ways that were not thought possible (Beck and Willms 2004, 139).

In *World Risk Society*, Beck (2001) uses the controversy over genetically modified (GM) food as an example of risk conflicts. He argues that manufactured uncertainties are created as neither experts nor laypeople know the full extent of their consequences. However, uncertainties are overridden by powerful forces. Ignoring the warnings from many scientists that genetic modification is in its infancy, “globalized businesses, genetic advertisers and their fellow travelling philosophers, stock market spectators and governments under the threat of unemployment have attempted to push through these radical and uncertain biotechnologies” (Beck 2001, 105). While initially, in the early 1970s, there was a consensus among scientists that there were uncertainties regarding GM food, this gradually subsided as there had not been any accidents or catastrophes, and investment poured into biotechnology

and the life sciences during the 1980s. However, suddenly in the late 1990s, Britain's mass media exploded with distrust of GM food, as British consumers were on edge from increasing incidence of "mad cow disease" linked to unsafe food practices (Beck 2001).

What ensued was the chaos that Beck refers to as risk conflict. Contradictory stories were being told by experts and counter-experts, which produced even more distrust among consumers, thereby threatening the future of the food market. Furthermore, the food industries ignored and neglected consumer uncertainties and fears, instead of openly addressing their concerns and informing the public about genetically modified foods. To make matters worse, the food industries not only rejected, but counteracted a policy that would force them to provide information about their company's products, detailing if they had been genetically modified. This resulted in even more distrust of the food industry and markets. The question underlying the controversy is: Who is actually governing our lives? (Beck 2001).

During this period of conflict, as risks begin to unfold and develop, becoming more apparent, Beck argues "the risk society produces new antagonisms of interest *and* a new type of community of the endangered whose political carrying capacity remains, however, an open question" (Beck 2001, 47). The risk society generally unifies its victims into a global risk population, wherein the hazards of modernization destroy boundaries. People are thus forced into a self-endangering collective (Beck 2001). Beck argues that new sources of conflict and consensus are generated, and that eliminating scarcity is now replaced by eliminating risk. He goes on to say that "even if the consciousness and the forms of political organization for this are still lacking...through the dynamic of endangerment it sets in motion, [risk society] *undermines the border of nation states as much as those of military alliances*

*and economic blocs*...risk societies bring about ‘communities of danger’ that ultimately can only be comprised in the United Nations” (Beck 2001, 47, emphasis in original). The FAO report may be a manifestation of a developing “community of danger.”

Further, Beck coins the phrase “the relations of definition,” which refers to the definition of risk. He stresses the point that risks are social constructs, perceived and established through social mediation, and based on power relations that are inscribed in a system of science and a system of law (Beck and Willms 2004). Thus, he argues that the concept of relations of definition is meant to bring out the various power relations that are involved in defining risks. He argues that while the calculation of risks has been established by science and legal institutions in the past, during the second modernity, this method collapses. While attempts are made at using these methods to calculate risk, the fact of the matter is that the new industrialized, decision-produced threats are generally incalculable and spread across the globe (Beck 1992).

Beck’s theorizing has proven useful for other scholars examining risk conflicts. For instance, Walters (2004) uses Beck’s theory in his article “Criminology and Genetically Modified Foods”, in examining the way that risks can be systematically defined, industrially produced and politically reflexive. Walters (2004) argues that not only are issues relating to genetically modified (GM) food a global matter, but they demonstrate how governments and corporations have the power to define and manipulate ‘risks’ for political and economic gain. It should be noted, however, that Beck argues that the power of stakeholders in second modernity is not absolute and the defining of risks can open sites of resistance, ultimately leading to risk conflicts, such as those we have witnessed related to GM foods.

### *Beck and GCC*

Lever-Tracy (2008) argues that while Beck's concept of 'risk society' is the only well-known social theory that focuses much of its attention on the interface of society and nature, he fails to apply his concept to global warming. What she does not acknowledge, however, is that when Beck first wrote *Risk Society: Towards a New Modernity* in 1986, translated from German in 1992, global climate change was not a prominent issue. Furthermore, in recent years, Beck (2002) has revisited his concept of the world risk society, specifically citing global warming as one of its dimensions. It is also worth noting that Beck has highlighted industrialized animal agriculture as being problematic: in *Ecological Politics in the Age of Risk*, he laments that animals are being "transformed into gigantic meat factories" (Beck 1995, 18). Lever-Tracy (2008) further argues that Beck's perspective would not be useful for examining GCC because he sees globalized risks as emerging from advanced technologies, and Lever-Tracy asserts that the most detrimental impact on climate comes from burning fossil fuels through basic industrial production. While the burning of fossil fuels and basic industrial production undoubtedly play a role in GCC, like many others, Lever-Tracy overlooks the role of the hyper-industrialized animal agriculture sector in GCC, where advanced technologies are being applied to maximize production, thus increasing the risk posed to GCC. Beck's perspective might therefore be particularly illuminating in examining the relations of definitions and risk conflicts regarding industrial animal agriculture and GCC.

The risk posed to the global climate by industrial animal agriculture provides a useful case for examining the way that risks can be socially defined and the development of risk conflicts. Consistent with what Beck argues regarding the second modernity, global

warming is a transnational risk, and thus it is becoming difficult to control how it is socially constructed. This opens space for potentially competing discursive activity from industry, government, scientists and social movements. In this case, the UN has stepped in to address the “community of danger” which has been created. The impacts of this development on the discourses of various stakeholder groups and the media, and the potential risk conflicts that ensue, awaited investigation. In undertaking this task, this study also draws on the literature examining environmental discourses, reviewed in the next section.

## **Environmental Discourses**

Many scholars have argued that the environment is socially constructed in various ways (Barry, 1999). Different societies, groups and individuals have different ways of thinking about and theorizing the environment. Barry (1999, 21) argues that “different cultural or other value based views of the environment mean that not all humans (who share the same senses) will necessarily have the same meaning of ‘environment.’” Thus, the social movement groups, media, government agencies and industry stakeholders analyzed here would likely construct different discourses about the environment, and GCC most specifically.

According to Benton and Short (1999), environmental discourses explain the world around us. While environmental issues such as global warming have arguably recently developed into a dominant discourse, thereby generating a stronger public awareness of the links that tie the planet to the human population, environmental discourses have been around since the 1800s. The idea of wilderness was the first environmental discourse in the “new world” in the 1830s. This discourse viewed the wilderness as pristine, untouched by culture or humans (Benton and Short 1999). However, it has only been in the last half-century that environmental problems have increasingly become more dominant in everyday communication and viewed as global issues.

While environmental issues may have previously seemed amenable to national policies, they have grown to become global concerns in recent years. The formation of the Intergovernmental Panel on Climate Change in 1988 by the World Meteorological Organization (WMO) and the United National Environment Programme (UNEP) marked GCC as a significant international issue of concern. As a scientific body, the IPCC was

formed to give policymakers an objective source of information about GCC's causes, as well as its potential environmental and socio-economic consequences, and possible ways to adapt and mitigate the problem. With focus on risks caused by human-induced climate change, the IPCC aims at using high scientific and technical standards, while reflecting a wide range of views, expertise and geographical coverage (Intergovernmental Panel on Climate Change). The international concern also prompted the UN to sponsor the Conference on Environment and Development (UNCED), also known as the Earth Summit, in 1992. This showed a definite recognition that the current environmental problems were not able to be solved merely by national policies alone.

Still, for environmental issues the focus tends to be at the national level: "Within traditional accounts of global environmental politics the notion of the state as the primary arena of political power remains unchallenged and there have been relatively few analyses of the changing nature of the state or sovereignty" (Bulkeley 2005, 878). Bulkeley (2005) argues for a different approach which acknowledges other actors in the development of environmental governance and discourse. "Knowledge-based" or "constructivist" approaches begin to "open up the boundaries of the state, and to consider the influence of domestic politics on international relations and vice versa. At the same time, the role of non-state actors in the process of regime formation and policy implementation are increasingly acknowledged" (Bulkeley 2005, 879). In other words, rather than starting with government and moving from the top down, she suggests that when talking about environmental governance, perhaps discourses move from the bottom up, beginning with grassroots and local organizations.

Furthermore, rather than being governed by inter-state negotiations and regimes alone, environmental governance moves through what Rosenau calls “spheres of authority” (as cited in Bulkeley 2005, 880) “which can be territorially based, or non-territorial networks that compete and co-operate through the exercise of formal and informal authority” (Bulkeley 2005, 880). Environmental discourses are thus constructed through a wide variety of actors across the globe, and not just governments; there is a transnational network that is constructing global environmental issues. Social movement organizations are an important part of such transnational networks.

According to Brulle (1996), social movements can be interpreted as creative activities of society revamping itself. In order for a social movement to establish an identity, it is essential for a new narrative of society to be created. The very act of voicing a new representation of the social world is the formation of a social movement (Brulle 1996). When discussing the environmental movement itself, Benton and Short (1999) argue that it would be more appropriate to think of it as a variety of different organizations, groups and even movements, that have all been motivated by differing aims. Characteristic of varying features of collective action frames (Benford and Snow 2000), which will be elaborated on later, environmental groups differ in their objectives, as well as their resonance. Furthermore, Benton and Short argue that some of the larger organizations have caused controversy simply in part due to the fact that they are successful and renowned. Much of their success tends to come from their formal political involvement, which inevitably includes compromises and negotiations. In order to accomplish goals, environmental groups typically need to strike deals, cultivate friends and exercise power: “Politics is the art of the possible” (Benton and Short 1999, 115). Since the 1960s, many environmental groups have

seen an increase in membership, and thus have gained an increased number of resources to publicize their events, educate the public and thus influence decision-makers in the political realm. In turn, this has further increased membership (Benton and Short 1999).

In discussing the development of discourses of social movement actors more generally, Benford and Snow (2000) explain that, “[social] movement actors are viewed as signifying agents actively engaged in the production and maintenance of meaning for constituents, antagonists, and bystanders or observers” (as cited in Benford and Snow 2000, 613). Social movements construct meaning and reality through framing, which indicate an active and progressive phenomenon, implying agency and contention. Hajer (as cited in Milligan and Binns 2007) argues that discourses frame specific problems. In other words, they make a distinction between certain aspects of a situation instead of others. Interpretive frames may be unlike existing frames, or may even challenge current ones. Through the process of framing, collective action frames develop, which are “action-oriented sets of beliefs and meanings that inspire and legitimate the activities and campaigns of a social movement organization” (Benford and Snow 2000, 614).

Benford and Snow (2000) name a number of varying features of collective action frames. The first is *Problem Identification and Direction/Locus of Attribution*. They argue that this is the most obvious way collective action frames differ because social movement organizations address not only a variety of problems or issues, but they also vary in the way they address these issues. The second feature is *Flexibility and Rigidity, Inclusivity and Exclusivity*. The number of ideas collective action frames incorporate and discuss is diverse; they vary in degree of exclusivity, rigidity, openness, elasticity, and elaboration on certain topics. The third feature is the *Variation in Interpretive Scope and Influence*. Generally

speaking, collective action frames centre around the interests of a specific group or an array of connecting problems. Master frames are created, however, when a collective action frame has a very broad scope that typically encompasses interests and activities from other movements. Environmental justice frames are included in this group, as are rights frames, choice frames, etc. (Benford and Snow 2000). It could be argued that GCC is developing into a master frame.

The last varying feature of collective action frames is *Resonance*, which helps to explain the effectiveness of a frame, and why some resonate more than others. Benford and Snow argue that the credibility of the proposed frame and its relative salience are two interacting factors that determine a frame's degree of resonance. In terms of credibility, three factors are important: frame consistency, empirical credibility and the credibility of the frames' articulators and claims makers. The first describes the congruence of a social movement organization's actions with their beliefs and claims. Empirical credibility deals with the alleged fit between the framings and current world events. Lastly, if a frame's articulators are credible, then their claims tend to be more persuasive. There are also three dimensions of salience: centrality, experiential commensurability and narrative fidelity. The first deals with how central the beliefs, values and ideas of the movement are to its target audience for mobilization. Experiential commensurability concerns the resonance of the movement's frames with the personal, everyday experiences of the audience. Lastly, narrative fidelity is concerned with how culturally resonant the proposed frames are (Benford and Snow 2000). In this project, I examine how the selected organizations frame industrial animal agriculture and GCC, paying particular attention to differences between the collective

action frames of the stakeholder groups along the lines that Benford and Snow (2000) articulate.

When it comes to the development of environmental discourses and discursive development in general, one must remember that they are closely linked with discourses in the media, which are examined in this study as well. Furthermore, the construction of news stories by journalists is strongly related to the sources they have access to and rely on. McMullan (2006) explains that legal, political and government sources tend to dominate news coverage. Attention in this study is also therefore paid to which sources the media are relying on in their stories about GCC.

Some recent case studies dealing specifically with environmental problems are instructive in understanding various techniques and outcomes of framing. In Lockie's (2006) case study, "Capturing the Sustainability Agenda: Organic Foods and Media Discourses on Food Scares, Environment, Genetic Engineering, and Health", he finds that despite social movements, programs, and research initiatives over a number of decades, there were only a small number of articles found concerning any aspect of the sustainability of food networks before 1996. From 1996 to 2002, the media neglected to attract significant attention to some features of sustainability (Lockie 2006). Lockie concludes that in the articles he did find, issues pertaining to environmental and safety attributes of food recognized in the media were characteristic of organic and GM foods being on two opposing sides of a controversial debate. While few alternatives or innovative measures to combat the issue of sustainable food networks were discussed, the articles typically revolved around farmers and governments as either protagonists or antagonists (Lockie 2006). Extravagant claims, hidden agendas, and/or "fundamental stupidity" of pro and con groups for genetic modification were

common; thus, authors attacked each other's research claims, as well as their credibility (Lockie 2006). Furthermore, Lockie found that "articles thus tended to draw on several framings within an overall framing of the articles as a factual report on public debate" (Lockie 2006, 318). For instance, genetic engineering (GE) and GM foods were framed on one hand as being examples of human progress and modernization, and thus newsworthy in their own right as scientific achievements. On the other hand, they were seen as constituting personal and environmental risk. As well, it was argued that GE and GM foods posed a threat to the rights of farmers, consumers and thereby to democracy, by not allowing them to decide if they wanted to grow or ingest GM food (Lockie 2006). Based on Lockie's (2006) findings, it is reasonable to expect that discourses regarding industrial animal agriculture and GCC will vary, and may include, for instance, personal attacks, exaggerated allegations and concealed agendas.

Another useful case study regarding environmental discourses is Bocking's (2005) "Protecting the Rain Barrel: Discourses and the Roles of Science in a Suburban Environmental Controversy". In a struggle to save the Oak Ridges Moraine from being destroyed for urban expansion, environmentalists used science to draw attention to the issue. According to Jasanoff (1997, 582), "science is environmentalism's favourite background". While scientific knowledge was used to define the issue and support and dispute arguments on both sides of the controversy, "it also impeded discussion of matters of fundamental political importance, but that could not be expressed in scientific terms" (Bocking 2005, 612). Bocking argues that when environmentalists use science to frame their issues, demonstrating that they view science as a key part of their advocacy, their materials often bear a resemblance to academic seminars. Furthermore, he explains that metaphors are

generally highly effective as a communication strategy in order to aide in the public's understanding of scientific knowledge and to capture their imagination (Bocking 2005). It might therefore be expected that various stakeholders included in the current study would invoke scientific discourses. How they do so and to what ends are critically examined herein.

The growth of crisis narratives in the environmental movement is examined in an article by Milligan and Binns (2007). They draw from a discussion on the "development of narratives" by Roe to define crisis narratives (as cited in Milligan and Binns 2007, 144). Milligan and Binns argue that they are "accounts of an existing or impending disaster that have a somewhat predetermined beginning, middle and conclusion, and that involve individuals or groups which are either unable or unwilling to influence the direction of events" (Milligan and Binns 2007, 144). It is not immediately clear if such crisis narratives are emerging around the issue of the link between industrial animal agriculture and GCC. This possibility is also examined in the analysis.

As shown above, environmental discourses have been around for hundreds of years. However, only in recent years has it been acknowledged that environmental problems have grown from national to global issues (which might provide some evidence in support of Beck's contention that we have entered into the second modernity). Environmental movement groups and social movement groups more generally, construct meaning and attempt to influence the masses through framing. Importantly, collective action frames differ between groups, depending on their goals, scope, credibility, etc. The goal of this thesis is to investigate if and how various organizations frame the problem of animal agriculture and

GCC and how the frames vary across stakeholder groups. The methods used to accomplish the goals of this study are discussed next.

## **Research Methods**

### *The Research Question*

As outlined earlier, discussions of global climate change have consistently focused on carbon dioxide as the most significant contributor to global warming and climate change. While methane production has been mentioned, it has not been problematized to the extent that carbon dioxide has, and the contribution of the livestock sector to other greenhouse gases has traditionally received little attention. The 2006 release of the *Livestock's Long Shadow* report by the FAO, highlighting the considerable impact of animal agriculture on global climate change, is therefore an important departure from the status quo. However, it is unclear what impact, if any, it has had on discourses of global climate change by various stakeholder groups; in Beck's terms, what "risk conflicts" and "relations of definition" have emerged in this case?

This study begins to fill this gap in the literature by addressing the following research question: Have the discourses of GCC, as articulated by government agencies, news media, environmental organizations and other stakeholders, shifted since the release of the *Livestock's Long Shadow* report toward constructing animal agriculture as an environmental risk? In this project, the central hypothesis is that there will be a shift in the discourses regarding GCC toward greater problematization of animal agriculture and its contribution to GCC after the release of *Livestock's Long Shadow*, consistent with Beck's (2001) proposition that it becomes more difficult to rationalize risks once they become globalized.

There are several other derivative hypotheses and predictions examined in this project. First of all, I predicted that there would be differences in the discourses among the organizations examined due to their varying perspectives regarding climate change, which

are based on their background knowledge as well as their interests. This prediction draws on Holloway's (1999) work examining the construction by farmers and scientists of the risk posed by GCC to animal agriculture. He asserts "that these issues are discursively constructed and understood in different ways by different groups" (Holloway 1999, 2017). For instance, I anticipated that the animal welfare/rights groups would increase their discussion of animal agriculture as being negative, as the FAO report gives them more leverage to promote vegetarianism and animal rights. I also expected that environmental groups, especially those with a strong focus on GCC, would likely increase their attention to the animal agriculture industry.

Based on Lockie's (2006) findings, I also predicted that discussions of industrial animal agriculture's contribution to GCC would variously include extravagant claims, hidden agendas and personal attacks to discredit the authors. For instance, animal rights groups may criticize conclusions made by the Canadian Meat Council claiming that livestock farming is not an important contributor to GCC. On the other hand, the Canadian Meat Council may try to discredit the findings of researchers for PETA, and possibly claim that their interests are biased since they push for diets that lack meat. Therefore, I predicted there would be a polarized debate and the emergence of clear "risk conflicts". Further, I did not expect organizations such as the Canadian Meat Council and the American Meat Institute to acknowledge the FAO report or to discuss any sort of reduction in meat and dairy production, as doing so would hurt the industry. If there is any discussion, I expected it to take a critical position.

I also hypothesized that the media attention would increase after the release of the report, but that the increase would not be dramatic, as an article published in a magazine

titled *USA Today (Society for the Advancement of Education)* in September 2007, asserts that the media paid little attention to the FAO's document.<sup>1</sup> Wolfson (2007) argues that this could possibly be due to the fact that the report uncovered a significant truth that most consumers would not be too happy about. Due to this claim, and the findings in Lockie's (2006) study, it was reasonable to predict that the livestock industry's contribution to GCC would not attract immense attention from the media, but I did anticipate at least a modest increase. Also, consistent with Benford and Snow's (2000) argument, I expected that the more politically involved environmental and animal rights organizations are, the more successful they will be in getting their message across and they might therefore be cited by the media.

Although Beck (1992) argues that in the second modernity government and industries begin to lose their power over controlling the social construction of risk, there is still a possibility that some governments and industries are so powerful that their interests still influence the "relations of definition". Therefore, they may continue to utilize scientific knowledge and other resources in order to limit perceptions of GCC, and more specifically animal agriculture's contribution as a risk. If these prevailing sources exerted significant power, it was possible that the FAO's report would not result in a significant increase in discourses regarding industrial animal agriculture and GCC at all.

### *Type of Design*

This project utilizes qualitative methods. Qualitative methods were chosen over quantitative because I am interested in examining the discourses of global climate change. Thus, there is

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<sup>1</sup> This New York-based magazine is published by the Society for the Advancement of Education.

a need to explore and describe possible trends, and furthermore to develop theory (Creswell 1994), all of which are more amenable to qualitative methods. Before surveys and interviews can be conducted asking people's opinions and knowledge on a topic, it is useful to understand what larger discourses are at work. Following this research project, subsequent surveys and interviews may prove useful.

The specific qualitative design used for this research project is content analysis. According to Berg (1998), content analysis is “any technique for making inferences by systematically and *objectively* identifying special characteristics of messages” (228). The type of content analysis I employ, however, is more qualitative and might be more appropriately described as critical discourse analysis (CDA). CDA examines the influential power relations involved in texts. This method of analysis asks questions about the social context within which a text is written. The questions posed can include the following: For what reason was this text constructed? Who is it addressed to, and why? Does the author have concealed intentions, and if yes, what are they? What are the hidden assumptions and biases that underlie the text? (Trask 1999, 62). As one of the founders of CDA, Norman Fairclough highlights three interrelated dimensions of discourse: the object of analysis; the process by which the object is produced and received by human subjects; and the socio-historical conditions that govern these processes. He argues that these dimensions all require their own kind of analysis: textual analysis (description); processing analysis (interpretation); and social analysis (explanation) (Janks 1997). These forms of analysis are undertaken here.

### *Data Collection, Recording and Analysis Procedures*

The CDA employed in this project focuses on written documents, such as newspaper stories, organization websites and government documents. Content analysis consists of a variety of sampling techniques including: simple random sampling, systematic sampling, stratified sampling and purposive sampling (Berg 1998). I have used purposive sampling in selecting which environmental and animal rights groups, other stakeholder groups, newspapers, and governmental agencies to examine. A list and description of each of these agencies and organizations included in the sample can be found in Appendix A.

The newspapers I examine are *USA Today* and *The Globe and Mail*. I chose these two papers because they are the widest circulating national newspapers coming from the U.S. and Canada. According to the Canadian Newspaper Association, the *Toronto Star* was the widest circulating Canadian newspaper in 2006, however I decided not to use it as it is not a national paper and I wanted to focus my attention on newspapers that reach a wider, national audience. In the case of the newspaper analysis, relevant articles, opinion-editorials, and editorials were found searching the Factiva newspaper database using keywords such as global climate change, global warming, and agriculture. To be exact, I used the following strings of search terms: “(Livestock's Long Shadow OR global climate change OR global warming OR climate change) AND (animal OR agriculture OR livestock OR farm OR agribusiness)”. The newspaper search came up with 310 articles from the *Globe and Mail* and only 76 from *USA Today*. Out of these, only approximately half of each was somewhat relevant and related to the topic at hand; these are the articles on which I focused most of my attention (124 from the *Globe and Mail* and 46 from *USA Today*).

I chose to investigate the U.S. government in addition to the Canadian government because they are close neighbours and have a great deal at stake in both the GCC debates and the livestock industry. I examine the discourses of the Environmental Protection Agency and Environment Canada, as they are the most probable agencies of the government that will discuss GCC. I also investigate the United States Department of Agriculture and Agriculture and Agri-Food Canada, as they are the areas of the U.S. and Canadian governments that are most concerned with the livestock industry. I chose the American Meat Association and the Canadian Meat Council as the industry stakeholders because they are national trade organizations. Specific Canadian, U.S., and international environmental organizations and animal rights groups that were chosen were selected because they were well known and more established than others. Furthermore, I wanted to ensure that the organizations selected have a broad enough mandate that GCC would fall within it.

The texts analyzed are publicly available data from each of these outlets, mainly available on their websites. Documents and web pages from two years prior to the November 2006 release of the FAO report, up to and including April 2008 are analyzed in order to investigate what is (or is not) being said on the topic of animal agriculture related to global climate change. I looked at organizations' websites, navigating through links on their homepages, sitemaps and downloadable documents, analyzing the content on their sites. Thus, I am unable to provide an exact discrete number of the document analyzed as I was examining entire websites.

According to Berg (2001), the general sequence of events that a content analysis follows is: (1) Textual data is collected; (2) Codes are either developed systematically or identified in the data inductively, and then attached to sets of notes; (3) Categorical labels or

themes are generated from the codes; (4) By way of the categories, materials are then sorted to identify common phrases, patterns, relationships and similarities and differences; (5) Examination of the sorted materials will help to isolate meaningful patterns and processes; (6) Patterns that are identified are considered in conjunction with previous research and theories, in order to establish generalizations. A variation of Berg's steps was used in this study. I began by searching for documents from each organization that discuss GCC. Basic information about the documents was recorded, such as the date of the text, the author, and source of the document. Like many qualitative studies, several activities occurred simultaneously, such as data analysis, data collection, data interpretation, and writing (Creswell 1994).

Data were organized first by which outlet they were derived from: media, social movement groups, governments or industry stakeholders. I used open coding to pick out a variety of classes and categories in the texts. In reading through the documents I undertook a mostly inductive approach to creating the codes. I asked series of questions as I read through each document that allowed me to group together similar content into various categories (Berg 1998). In general, I looked to see if, and how, they discuss animal agriculture as a contributor to global climate change. Specific notes were taken regarding any change in the way in which animal agriculture is discussed following the release of *Livestock's Long Shadow*. Furthermore, reflective notes were recorded that included my own personal thoughts, feelings, assumptions, difficulties, ideas, instincts, and impressions (Creswell 1994).

Subsequently, I attached labels and themes to the notes I took, grouping like information together. From these notes I was be able to identify patterns and make note of

any differences in the way these texts discuss GCC and animal agriculture after the November 2006 release of *Livestock's Long Shadow*. I next sorted and organized my data by use of coding frames, and undertook intensive coding around each category by breaking them down into smaller groups.

A couple of examples will help to explain the process I used. For instance, the social movement groups were divided by animal welfare/rights groups and environmental groups. Then they were broken down based on where they originated (Canada, the United States or internationally). Some of the labels and themes I identified included diet, GCC, and animal agriculture. Furthermore, under the diet label, some of the more specific codes included: health, low-fat, vegetarian/veganism, organic/locally produced/sustainable, no meat/less meat and the link to GCC. The newspapers were divided into two categories: *USA Today* and the *Globe and Mail*, then they were broken up by year. Some of the labels used in coding them included agriculture, biofuels, food and miscellaneous. The agriculture label included the following more specific codes: livestock, seeding, farming and methane organization. A variety of quotes are used from these coding categories in reporting the research findings (in the next section) to provide examples and support my interpretations and conclusions, which are articulated and tied to the literature and theoretical framework in the Discussion section.

## **Research Findings**

The following section details the findings of the research conducted. Herein it is demonstrated that People for the Ethical Treatment of Animals was the only animal welfare/rights group, and in fact the only organization out of all that were investigated, that showed a significant increase in the problematization of industrial animal agriculture following the release of *Livestock's Long Shadow*. That is not to say the link between the meat industry and GCC was not acknowledged by the other groups. In fact, all of the social movement groups, except the International Fund for Animal Welfare and Friends of the Earth International were found to have linked animal agriculture to GCC before the release of *Livestock's Long Shadow*. However, PETA was the only organization that increased its problematization of the link between meat production and GCC following the release of the FAO report, while two of the other social movement organizations (Animal Alliance Canada and In Defense of Animals) cited the FAO report. The industry stakeholders did not acknowledge the issue at all, and while the governmental agencies linked animal agriculture to GCC, they did so through methane and nitrous oxide emissions; they did not link it to carbon dioxide through transportation or feed crops. None of the industry stakeholder groups cited the FAO report, and the Environmental Protection Agency was the only government organization that did. Finally, while few newspaper articles cited *Livestock's Long Shadow* directly, there was a moderate increase in the number of articles that problematized industrial animal agriculture's link to GCC in *The Globe and Mail* after the release of the FAO report, whereas articles on the subject in *USA Today* stayed consistently low.

I begin by discussing the results related to the animal welfare/rights groups, followed by the environmental organizations. The industry stakeholders and governmental agencies

are examined after that. The newspaper accounts are examined last, as some of the interest groups' messages are articulated in newsprint. Analysis of the main themes and outcomes are discussed, and quotes from the various organizations are included to render my interpretations more transparent.

### *Animal welfare/rights groups*

People for the Ethical Treatment of Animals (PETA) was the only animal welfare/rights group that increased its problematization of industrial animal agriculture following the release of *Livestock's Long Shadow*. In fact, they showed over a 100 percent increase in the number of articles linking animal agriculture to GCC between 2007 and the first quarter of 2008. However, while PETA was the only group which increased its discursive activity around this topic, it was found that all of these groups, except for the International Fund for Animal Welfare (IFAW), linked animal agriculture to GCC prior to the FAO report. A breakdown of the ways animal agriculture contributes to greenhouse gas emissions was provided by all the organizations, with PETA devoting the largest amount of space to this discussion and problematizing animal agriculture in the most numerous ways. Four of the six animal welfare/rights groups used animal agriculture's contribution to GCC as leverage to promote vegetarian or vegan diets. However, only two of the groups, PETA and In Defense of Animals (IDA), specifically argued that vegetarianism and veganism were "significant" methods to combat GCC.

All of the animal rights organizations, except IFAW, voiced surprise that environmental groups were not paying what they considered to be significant attention to the problem of industrial animal agriculture and GCC. Two of the groups (PETA and IDA)

specifically criticized environmental groups for not picking up on the link between industrial animal agriculture and GCC. PETA cited an exclusive interview they held with Paul McCartney, wherein they asked him “What do you think about the fact that most major environmental organizations and the most prominent environmental advocates are omitting vegetarianism from their list of the top ways to help curtail global warming?” (People for the Ethical Treatment of Animals 2008). He responded that he thought it was very surprising, but “of course there are many powerful businesses which would wish to resist the idea” (People for the Ethical Treatment of Animals 2008).

Further, IDA cited an Earth Save report that argues that discussions regarding the environment typically inform people about energy, recycling and water or air quality, but not how their food choices have an effect on the environment. Their recommendation is to encourage food choices to be part of environmental dialogue. The animal welfare/rights groups examined here are trying to do just that, yet their preferred approaches differ at times. Both PETA and IDA argue for meat-free diets, whereas others, such as the World Society for the Protection of Animals (WSPA) and the Animal Alliance of Canada (AAC), argue that humane treatment of farm animals would be acceptable, likely in the form of smaller scale local farming and organic operations.

Three of the six groups, PETA, AAC and IDA, specifically cite the FAO’s *Livestock’s Long Shadow* report. For instance, AAC mentions the report in their Spring/Summer 2007 newsletter, in which the author writes a witty article comparing the effect of cutting meat out of your diet and driving a fuel efficient car such as the Toyota Prius. Freston (2007) claims that over the past decade, the Toyota Prius (a hybrid car) has been the “gold standard of environmentalism” (p. 7). But after citing facts from both

*Livestock's Long Shadow* and a University of Chicago study (described below), and asking how often people are usually ready to buy cars, the author argues that we have a more effective method of fighting the world's most serious environmental crisis. Freston (2007) argues that eating vegetarian meals provides "more bang for your buck" than if you were to drive a Prius (p.7). Additionally, whereas a Prius cuts carbon dioxide emissions, eating less meat cuts carbon dioxide and methane (Freston 2007).

In the 2006 University of Chicago study cited by Freston, researchers tested the environmental effects of five different diets, and concluded that vegan diets do the least harm to the environment (ABC News 2006). Freston explains that "producing a calorie of meat protein means burning more than ten times as much fossil fuels – and spewing more than ten times as much heat-trapping carbon dioxide – as does a calorie of plant protein" (Freston 2007, 7). The study is also cited by IDA in their section on vegan resources. IDA uses facts from the report to explain why eating meat is harmful to the environment, and then informs readers that they need to get the word out: "Most people fail to recognize the environmental consequences of eating meat. Speak out for the earth by letting others know about the many ways in which animal agriculture contributes to global warming" (In Defense of Animals 2008).

IDA and the WSPA both emphasize the purchasing power of consumers. In a section titled, *The Power of Your Fork*, IDA encourages readers to think about food options (e.g. vegetarian choices) daily, like they do recycling, reducing and reusing (Earth Save). The US organizations are also keen on lobbying governments to persuade them to acknowledge these issues. PETA argues that it is by this method that the meat and dairy industry have influenced politicians and government agencies into ignoring the threat of livestock farming

to health and the environment: “Contributions from the meat and dairy industries to key legislators, and executive agencies (e.g. the USDA [U.S. Department of Agriculture]) that hire meat and dairy industry representatives to fill crucial posts means that the interests of the agriculture industry usually come before the public good” (People for the Ethical Treatment of Animals).

The only organization that demonstrated an increase in the problematization of animal agriculture and its contribution to GCC after the publication of the Food and Agriculture (FAO) report was PETA. In 2006, PETA cited seven news stories specifically problematizing industrial animal agriculture.<sup>2</sup> Eight news stories are cited in 2007, and there was an increase to 18 articles in the first quarter of 2008. This is a significant increase of over 100% in the first quarter of 2008 alone! As an illustration of the types of articles PETA was calling attention to, in May 2006, they highlighted a news story describing the University of Chicago study that concluded that vegan diets produced the least amount of fossil fuel emissions during production. A news release two months later discussed how the problems with a new regulatory loophole proposed by the U.S. Environmental Protection Agency (EPA) would allow more factory farms to pollute with little oversight, as they were expected to regulate themselves. In August 2006, PETA cited an article from *E-Magazine* which criticized Al Gore for not tackling the issue of livestock farming and global warming in his book and movie *An Inconvenient Truth*. These articles were written before the FAO report was released.

The following August, after the FAO report had been released, PETA cited an article from the *New York Times* titled “Trying to Connect the Dinner Plate to Climate Change.” On

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<sup>2</sup> Prior to 2006, there were no news stories available online to investigate.

the “Go Veg” section of their website, PETA starts out by quoting the FAO report’s perspective on the meat industry, stating that it is “one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global” (People for the Ethical Treatment of Animals). Further, the “Recent News” section of PETA’s website demonstrates that they were discussing the link between animal agriculture and GCC both before and after the FAO report. Thus, they had already been problematizing the issue and *Livestock’s Long Shadow* seemingly gave them a more recent study to cite and augment the argument they had been making for some time. In this way, PETA stood out from the other animal rights and welfare groups.

Another group that stood out, albeit for a different reason, is IFAW. Much of their attention focused on conservation of natural habitats. Their bi-annual newsletters focused on this issue, as well as environmental degradation and damage to the environment due to oil pollution, all pertaining to how it affects wildlife. A program publication titled *On Thin Ice*, devoted to GCC, focused on the impacts of global warming on ice-dependent marine mammal species in the US and did not discuss industrial animal agriculture as a cause, nor did they discuss causes of GCC in general. Rather, the paper mainly concentrated on the effects of GCC. IFAW did not address the link between GCC and animal agriculture and is one of the three groups (the other two are ARK-II and WSPA) that did not mention the FAO report directly. The WSPA’s failure to mention the *Livestock’s Long Shadow* report seemed particularly odd as they claim to be the only animal welfare organization recognised by the United Nations and the Council of Europe (World Society for the Protection of Animals), and one would think they would be more in tune with developments at the international level, particularly in relation to UN actions.

While there were no discernible difference between the U.S. and Canadian animal welfare/rights groups in their coverage of the link between industrial animal agriculture and GCC, it was clear that the U.S. groups are much larger in size and are therefore able to provide more widespread and detailed information. Furthermore, as stated above, it was apparent that the U.S. organizations recommended lobbying the government as a preferable tactic.

Thus, while not all of the animal welfare/rights groups cited *Livestock's Long Shadow*, all but one (IFAW) linked animal agriculture to GCC. The other five groups all used industrial animal agriculture's contribution to GCC as leverage to promote eating less meat, and some went further by advocating vegetarianism and/or veganism. Global warming was listed as one of a number of reasons why people should "Go Veg", including habitat destruction, inhumane treatment of animals and contributing to world hunger. With the exception of PETA, there did not seem to be a significant increase in the problematization of animal agriculture's contribution to GCC since the release of the FAO report by the animal rights/welfare groups studied here.

#### *Environmental Organizations*

The problematization of industrial animal agriculture also did not significantly increase following the release of *Livestock's Long Shadow* within the discourses of the environmental organizations analyzed here. All but one of the six organizations specifically encouraged less meat consumption prior to the report's release and all of the organizations, with the exception of Friends of the Earth International (FoEI), articulated a connection between GCC and industrial animal agriculture. All of these organizations included diet in their lists of things

one could personally do to reduce their carbon footprint. However, the organizations generally failed to draw connections between all of the aspects of industrial animal agriculture that contribute to GCC. For instance, animal agriculture was not listed as a contributor to deforestation, although deforestation was recognized as being the second largest contributor to GCC. *Livestock's Long Shadow* was not used by any of the organizations to support their arguments; rather, two similar reports by the Intergovernmental Panel on Climate Change (IPCC) and Green Peace International (GPI) were used to discuss the problem of industrial animal agriculture by three of the organizations.

There were a number of similarities among the discourses of the environmental groups. To varying degrees, the organizations indicated an interest in lobbying governments and advocating for policy changes. Some of the policy initiatives were geared directly at agriculture. For instance,

the Sierra Club of Canada [SCC] lobbies the federal government on the federal agricultural policy framework and taxation as related to food and agriculture. [The program also encourages] individuals to buy locally, to buy organic products when possible, to avoid farmed fish and meat raised in factory farms and to limit the distance from farm to fork are fundamentals promoted by the Safe Food and Sustainable Agriculture program (Sierra Club of Canada).

In addition to lobbying governments, each organization (except FoEI) stated that they will put pressure on and work with industry leaders to make their businesses more environmentally friendly. The David Suzuki Foundation (DSF), for instance, aims at creating “green leaders.” In other words, industry leaders and communities that have learned that there are “opportunities that make both economic and environmental sense, [as] they’re finding out energy conservation and energy efficiency save money and create new industries and jobs” (David Suzuki Foundation 2007). It would appear that this level of lobbying is

greater than that found with the animal welfare/rights groups, as rather than simply trying to influence and pressure governmental agencies and industries through lobbying, DSF works to educate industry leaders to inform them of how to become “green leaders”. Based on the information available, it appears that the animal welfare/rights groups do not do this to the same degree.

The Nature Conservancy (NC), the Environmental Defense Fund (EDF) and GPI all stated that they use a strong science-based approach to achieve their goals; GPI even created a specific Science Unit. The NC for instance, “relies on insights and knowledge from the world of science to make our conservation work more effective” (The Nature Conservancy 2008). The EDF on the other hand argues that strong science guides their work, and therefore they aim to advance policy through breakthrough research (Environmental Defense Fund 2008). Discussions pertaining to GCC quite often include scientific facts that explain the process of how greenhouse gases are emitted into the atmosphere and warm the climate. Thus, having “strong scientific findings” would be particularly useful for the environmental organizations in linking industrial animal agriculture to GCC. This point is elaborated upon below.

Drawing on scientific evidence, all of the groups recognized that deforestation was a major cause of climate change due to the release of carbon dioxide into the atmosphere, and it became the center of the NC’s platform, where it is cited as the second largest cause of climate change, after the burning of fossil fuels. However, the major causes of deforestation (e.g. animal agriculture) were left out of these discussions.

The effects of industrial animal agriculture in relation to GCC were touched on in detail by all of the organizations except one, FoEI. Instead, they focused most of their

attention on developing countries, and how these countries would be adversely affected by the effects of GCC. While five of the six environmental organizations did make a connection between industrial animal agriculture and GCC, none of the organizations cited *Livestock's Long Shadow* in their discussions. In varying degrees of depth, the environmental organizations explained how animal agriculture contributed to the release of greenhouse gas emissions. Importantly, however, the data used to support these arguments came from reports written by the UN's Intergovernmental Panel on Climate Change (IPCC), GPI or the organizations' own research.

For instance, although it did not address the FAO report specifically, GPI cited reports by the IPCC to link animal agriculture and GCC. The IPCC's Working Group III released a report in 2001 titled "Mitigation of Climate Change". In general, the report gives an in-depth analysis of the pros and cons of various approaches to mitigating and avoiding climate change. However, it also has a specific chapter dedicated to Agriculture (chapter 8). This chapter outlines various destructive practices of industrial agriculture and gives workable solutions to assist in reducing its contribution to climate change. These solutions are meant to benefit not only the environment, but farmers and consumers around the world (Smith, Martino et al. 2007).

There was another document that was cited by three of the organizations (DSF, SCC and GPI), titled *Cool Farming: Climate Impacts of Agriculture and Mitigation Potential*. This report was published by GPI and covers many of the same topics as *Livestock's Long Shadow*. Released in January 2008, it was written by a lead author of the most recent IPCC report, Professor Pete Smith, and his research team. The report looks at ways in which animal agriculture directly and indirectly contributes to greenhouse gas emissions, including

farm operations, conversion of land to agriculture and the production of agrochemicals (Bellarby, Foereid et al. 2008). The SCC did not cite the IPCC directly when discussing the connection, but it did cite the GPI report which included data from the IPCC. As well, while the DSF and FoEI recognized the IPCC as leaders in GCC research, they did not use specific information from their reports to relate animal agriculture to GCC and instead the DSF used the GPI report.

All of the organizations appealed to public opinion and habits by giving tips on how to personally reduce one's carbon footprint. Diet was mentioned amongst a wide variety of tips from each group, which included recycling, using less water, driving less, etc. Some organizations even broke down the tips by what to do at home, at work, when shopping, during the holidays and more. In comparison to other contributing factors to GCC, meat consumption seemed to be given equal amount of attention compared to the other personal tips given by the NC, EDF, DSF, SCC and GPI. FoEI is the only organization that did not place an equal amount of emphasis on meat consumption. Their focus is mainly regarding energy, and giving a voice to developing countries that will be impacted by the effects of GCC first and foremost.

The NC, EDF, DSF, GPI and SCC all promoted the consumption of fewer animal products and more vegetables. To give some examples, the DSF suggests to “eat meat-free meals one day a week and [to] eat locally whenever possible, [as] anything that travels – including food – generates greenhouse gases” (David Suzuki Foundation). The EDF also argues the small changes can make a difference: “if every American skipped one meal of chicken per week and substituted vegetables and grains, for example, the carbon dioxide savings would be the same as taking more than half a million cars off of U.S. roads”

(Environmental Defense Fund 2007). More dramatically, the NC suggests replacing “meat and cheese with healthier beans, legumes, whole grains and extra servings of fruits and vegetables” (Souther 2008).

While all of the organizations (except FoEI) suggested lowering intake of animal products, the same organizations also provided the benefits of ridding them from our diets altogether. For example, the NC argues that “vegan and vegetarian diets emit 72% and 42% less [greenhouse gases] than the typical American diet, respectively. A heavy meat diet emits 24% more than the average” (The Nature Conservancy). According to the EDF, “vegetarians produce less heat-trapping emissions than carnivores” (Environmental Fund 2006). And GPI claims that meat wastes other sources of food, more sources of water, produces more greenhouse gas emissions and helps chew through forests at an alarming rate (Green Peace International).

Regarding individual dietary choices, while some emphasized it more than others, every organization (except FoEI) agreed that individuals should eat less meat and more organic and locally grown food to benefit their health, as well as the environment by reducing their carbon footprints. Notably, more emphasis was placed on consuming organic and locally grown food rather than going vegetarian. For instance, the SCC cites a 2008 report titled *Tomorrow Today* by the Canadian Parks and Wilderness Society, the DSF, and others. The authors argue that “to reduce agricultural greenhouse gas emissions, the federal government should encourage consumption of locally produced foods, particularly organically grown food that does not require energy-intensive fertilizers and pesticides” (Canadian Parks and Wilderness Society, David Suzuki Foundation et al.2008). All of the groups appeared similarly keen on sustainable agriculture. However, while benefits of

vegetarianism are discussed by all environmental organizations (except FoEI), none of them strongly advocated vegetarianism, they merely suggested reducing the amount of meat products one consumes. FoEI is different than the other organizations, as they do not advocate lowering the intake of meat, yet they cite Friends of the Earth Europe's suggestion to "support local farmers' markets, buy locally produced organic foods, and eat less meat to help create a high quality and healthy farming system and a greener countryside" (Friends of the Earth Europe).

What is interesting about all of the organizations (except FoEI) is that they all promoted less meat intake before *Livestock's Long Shadow* was released. For instance, the SCC released a special climate change issue of *SCAN (Sierra Club Activist News)* in February 2005, stating that "eating less meat, or becoming vegetarian, selecting organically grown meat and fish, and buying organic fruit and veggies are all choices that are increasingly important" (May 2005). Additionally, it is stated that "[a]lthough agriculture is usually reported as a small contributor to our greenhouse gas emissions, when the whole food chain is taken into account, the globalized food machine is a major factor in climate change" (May 2005). Further, it appears while the *Livestock's Long Shadow* report was not used to problematize industrial animal agriculture, the GPI's similar report, *Cool Farming*, and the UN's IPCC report, *Mitigation of Climate Change*, both served as sources that the environmental organizations could cite in discussing a problem they were already aware of.

In conclusion, FoEI was the only environmental organization investigated that did not detail the problematic effects of industrial animal agriculture in relation to GCC. Furthermore, the other organizations all recognized the problem before *Livestock's Long Shadow* was released in 2006. While none of the organizations used the FAO report to make

the connection between animal agriculture and GCC, some of the groups (GPI, DSF and SCC) used similar reports, such as the Agriculture chapter of *Mitigation of Climate Change* by the IPCC and *Cool Farming* by GPI. These reports were used to promote lower meat diets and even vegetarianism, as well as eating locally, sustainably produced and organic food by all environmental organizations investigated, except FoEI. Interestingly, each organization except FoEI talked about this particular issue before the FAO report was released and there was no significant increase in the problematization of animal agriculture after the release of *Livestock's Long Shadow*.

### *Industry Stakeholders*

There was variation between the environmental discourses of the two industry stakeholder groups investigated, but both failed to exhibit an increased problematization of industrial animal agriculture after the release of the FAO report. While the Canadian Meat Council (CMC) did not discuss issues pertaining to GCC over the time period examined at all, the American Meat Institute (AMI) demonstrated a slight increase in its discussion of general environmental issues related to the meat industry, but GCC was conspicuously absent. The AMI did emphasize the various environmental initiatives they had taken to reduce the industry's effect on the environment. It should be noted that the AMI did report that industrial animal agriculture does contribute to GCC through methane emissions; however, the number they provide is significantly less than that documented in the FAO report.

The two stakeholder organizations addressed similar issues in their literature, including meat storage, packing, safe handling and food safety. However, the AMI was much more vocal in terms of discussing matters related to the environment and GCC than the

CMC. Whereas the AMI had a section of their website dedicated to the environment in general, the CMC said very little. They merely stated that “more recently, the environmental challenges have also been addressed [by the CMC]” (Canadian Meat Council), giving no further information. More specifically, the CMC made no mention of the environmental effects of animal agriculture and furthermore did not link it to GCC at all. The AMI did address the link between GCC and animal agriculture, but it did not address the link between all possible areas of animal agriculture and GCC (their only discussion of it was through the AgStar program, which I examine below). Rather, they discussed more general environmental issues, most prominently, the use of ethanol.

The AMI’s environmental focus was mainly on arguing against the use of ethanol as an alternative fuel. They argue that ethanol (made from corn) is not a viable fuel source as it takes feed crops away from animal farmers. Their concern is that as costs increase meat consumption (and ultimately sales in meat) may decrease, or consumers may find it cheaper to import products, thus hurting the business for U.S. livestock farmers. The AMI advocates for livestock farmers to have a fair chance in purchasing bushels of corn. This topic takes up a large portion of the AMI website, as well as their news releases in recent years, in an attempt to problematize ethanol as a suitable renewable fuel. The organization says it aims at involving the public and advocating for various policy initiatives by government.

Unlike the CMC, the AMI also addressed the link between animal agriculture and GCC, albeit not to a great extent. They acknowledged that animal agriculture contributes to environmental harm. Further, the AMI (2008) cited the EPA in stating that at the present time, eight percent of anthropogenic sources of methane emissions are due to livestock waste, and this number is expected to rise given the trend towards larger farms. It is

important to note that this is a much more conservative estimate than that provided in *Livestock's Long Shadow*, which states that the livestock sector is responsible for 37 percent of anthropogenic sources of methane (Steinfeld, Ferber et al. 2006). In response to the acknowledgement that the industry does have an effect on GCC, the members of the meat and poultry industry in the U.S. are said to aim for full compliance with a variety of federal, state and local environmental regulations, as well as a comprehensive set of environmental practices (American Meat Institute). One such practice is involvement in the AgStar Program, a voluntary program implemented by the EPA whereby farmers are encouraged to use biogas (methane recovery) technologies which reduce emissions while achieving other environmental benefits. Additionally, the AMI has developed the Environmental Management System (EMS), another voluntary program that helps organizations to minimize production costs, make efficient use of energy and natural resources, minimize product waste and regulate their environmental compliance, reportedly managing a company's environmental footprint. Further discussions related to the environment involve commending member companies for their environmental achievements. For instance, every two years, the AMI gives away Environmental Achievement Awards to companies that go beyond basic environmental compliance (e.g. resource management, pollution prevention, upgrades to improve, environmental outreach to public and environmental training programs).

While neither organization mentioned the *Livestock's Long Shadow* report, the AMI did mention the FAO's Conference on Climate Change, Bioenergy and Food, held in June 2008. They specifically cite the FAO Director General's critique of ethanol, "calling it 'incomprehensible' that up to \$12 billion in U.S. subsidies are used to divert 100 million

tonnes of cereals from human consumption ‘mostly to satisfy a thirst for fuel for vehicles’” (American Meat Institute 2008). Whereas the FAO argues that ethanol takes away food from the hungry, the AMI argues it takes away from the meat producers. It should be noted that while the AMI does not encourage organic and natural meat products, they do mention these products in their “Fact Sheets”. However, the AMI does not take a directly negative or positive stand on the subject. Their concern with organic products is regarding demand for their products.

Based on the findings, it appears that there was no change in discourses relating to animal agriculture and GCC by the CMC, let alone any discussion regarding GCC at all. With the AMI, there was a slight increase in linking the environment to the meat industry, but it was generally in terms of biofuels and in part by voluntary efforts to make farms more environmentally friendly, not specifically in reference to the link between GCC and animal agriculture. The small connection that they did make was through the EPA statistic that linked animal agriculture through methane emissions, although the statistic they cite downplays the contribution of the industry to GCC because the whole chain of production is not taken into account.

### *Governmental Agencies*

None of the governmental agencies investigated, which included the Environmental Protection Agency (EPA), Environment Canada (EC), United States Department of Agriculture (USDA) and Agriculture and Agri-Food Canada (AAFC), demonstrated an increase in the problematization of industrial animal agriculture after the release of *Livestock’s Long Shadow*, and in fact the EPA was the only agency that specifically cited the

report. However, the EPA only used the report to cite the amount of methane that is produced through liquid holding tanks and lagoons for animal manure. Generally speaking, all of the governmental agencies were quite broad in the causes of GCC that they discussed. They all recognized carbon dioxide as being the most important greenhouse gas that causes GCC, and identified the burning of fossil fuels, transportation and deforestation as the main anthropogenic sources of greenhouse gas emissions. Although the organizations examined gave many suggestions regarding how to personally reduce greenhouse gas emissions, reducing meat consumption was never mentioned.

While only one of the four governmental agencies analyzed, the EPA, specifically cited *Livestock's Long Shadow*, they all made reference to the IPCC. References to IPCC reports included a variety of topics, including animal agriculture's link to GCC. The EPA, for instance, used a 2007 IPCC report to discuss how GCC affects agriculture (instead of the reverse), stating "recent studies indicate that increased frequency of heat stress, droughts and floods negatively affect crop yields and livestock beyond the impacts of mean climate change, creating the possibility for surprises, with impacts that are larger, and occurring earlier, than predicted using changes in mean variables alone" (as cited in United States Environmental Protection Agency 2007). IPCC reports were also used to discuss how agriculture contributes to the problem of GCC. For example, the USDA cited IPCC data demonstrating that "over half of global annual emissions of CH<sub>4</sub> [methane] and roughly a third of global annual emissions of N<sub>2</sub>O [nitrous oxide] are believed to derive from human sources, mainly from agriculture" (as cited in United States Department of Agriculture 2004).

Furthermore, the positions of the governmental agencies on GCC and agriculture were fairly similar to each other. For instance, they all recognized carbon dioxide, methane

and nitrous oxide as the most important greenhouse gas, with carbon dioxide at the top. The main anthropogenic causes listed include the combustion of fossil fuel, with transportation and deforestation following. When discussing animal agriculture in the context of causes of GCC, methane was discussed as the key gas due to manure and anaerobic fermentation, with nitrous oxide following, due to fertilizer and pesticide use. They also talked about how GCC would affect farming due to droughts and other effects of climate change.

There were similarities in the discourses of the respective agencies between the U.S. and Canada as well. The environmental agencies, for example, both had sections detailing ways that individuals could cut their emissions. The EPA has tips for what you can do at home, on the road, at the office, at school, state and local governments, businesses, waste, and agriculture and forest land. "At home" tips include: change five lights, look for EnergyStar qualified products, heat/cool smartly, use waste efficiently, and so on (U.S. Environmental Protection Agency 2007). Diet, however, was left out. Recommendations for agriculture and forest land include: planting trees, practicing sustainable forestry and using conservation tillage on croplands, but does not explicitly mention converting to small farms (U.S. Environmental Protection Agency 2007). EC had a similar breakdown. At home, electric/gas, wood and water heating were mentioned, as are major appliances, lighting, yard equipment etc, but again there was no mention of diet.

EC also acknowledges indirect pollution sources: "As products are created and services provided, energy is used in each unique industrial process (e.g. manufacturing, refining, transportation), but also from overarching industrial use of energy to run all of these facilities" (Environment Canada 2007). In other words, the production of goods and services may have indirect effects on the environment that may not be obvious. To give an example,

raising cattle for food may result in direct pollution sources due to anaerobic fermentation and waste management. However, the indirect pollution sources must also be considered, such as greenhouse gases that are emitted through growing feed crops, fertilizers for the crops, as well as transporting the feed crops, fertilizers and meat products both to farms and on the farms. Although not entirely inclusive, EC does acknowledge some of these indirect pollution sources when talking about off-road diesel engines that emit greenhouse gases and are used by agricultural, construction, forestry and mining sectors (Environment Canada 2006). Furthermore, the agency states that “the operation of farm equipment such as tractors and other machinery releases the many pollutants associated with the combustion of fuels, including nitrogen oxides” (Environment Canada 2006).

The discourses of the agricultural agencies examined also shared some similarities. To start, discussions of fossil fuel emissions centered on how various areas of agriculture contributed to GCC. There were no comparisons of which industry (i.e., the automotive industry versus the agricultural industry) emitted more of a certain type of greenhouse gas. Furthermore, both agricultural agencies emphasized methane and nitrous oxide as the top greenhouse gases released from livestock production. The most recent information provided by the USDA regarding greenhouse gas emissions is from a report investigating the U.S. Agriculture and Forestry Greenhouse Gas Inventory from 1990-2001. It states that in 2001, the agricultural sources of greenhouse gas emissions were as follows: 48% nitrous oxide from cropland soils; 25% methane from enteric fermentation; 17% nitrous oxide from livestock waste; 8% methane from livestock waste; and 2% methane and nitrous oxide from rice cultivation and residue burning (U.S. Department of Agriculture 2004).

While USDA does mention carbon dioxide resulting from livestock production, it is not problematized to the extent that methane is. Carbon dioxide emissions are mentioned as a result of soil degradation and farm operations (i.e., manufacturing and distribution of nitrogen fertilizers and other farm chemicals and generating electricity) (U.S. Department of Agriculture 2007). Carbon dioxide emissions are not linked to feed or meat production, transport or deforestation. While both agencies spent a great deal of time explaining how GCC affects farming, they also detailed what farmers can do to reduce their emissions. These solutions include reducing emissions by conservation tillage and sequestering carbon, as well as using methane to generate energy for the farm.

As mentioned earlier, the EPA was the only agency that directly cited *Livestock's Long Shadow*. It was mentioned in a 2008 document titled "Green House Gas Balance for Composting Operations". What is interesting is that the only reference made to the report is in terms of the amount of methane produced by the storage of animal manures in liquid holding tanks or lagoons. Therefore, the emphasis on methane is still apparent, to the exclusion of other contributions to GCC made by the industry, which is particularly noteworthy because the major contribution of the report was pointing out the effect on various greenhouse gases throughout the supply and production chains. Based on archived publications and news stories from the four governmental agencies examined, there were no signs of an increase in the problematization of industrial animal agriculture following the *Livestock's Long Shadow* report.

## *Newspapers*

This study documents an increase in articles from both *USA Today* and the *Globe and Mail* relating to the search terms over time (these articles mainly discussed alternative energy sources, which represented on average 39% of the articles found in both papers). The largest increase in the number of articles including the search terms was found between the years 2006 and 2007 (an increase of approximately 31 articles relating to the search terms per newspaper). However, there was not a significant increase in the number of articles problematizing industrial animal agriculture and GCC after the release of the FAO report. In fact, *Livestock's Long Shadow* was only cited in two articles, both from the *Globe and Mail*. While the various reports and conferences by the IPCC were cited in both newspapers to discuss the anthropogenic causes of GCC, they still did not directly link industrial animal agriculture to the problem. Manure was the main way that livestock farms were connected to GCC in the media discourses, with very few articles linking other areas of the meat industry to greenhouse gas emissions.

In both of the newspapers analyzed, the largest number of articles related to GCC and animal agriculture were those addressing biofuels, such as ethanol. They described an increasing demand for ethanol and thus increasing competition for corn among farmers, cattle ranchers and the poor. Approximately the same number of articles in both papers focused on the burning of fossil fuels, energy use and fuel for automobiles as the main GCC culprits; and they commonly discussed alternative energy sources. These two types of articles account for about 39% of the units analyzed in the *Globe and Mail* and *USA Today* combined. To break this down, 37% of the articles in Canada's *Globe and Mail* talked about

bio-fuels and alternative energy sources, while 43% of *USA Today's* articles discussed these topics.

Fewer articles discussed methane as an important greenhouse gas (approximately 10% of the *Globe and Mail* articles and 5% of the *USA Today* articles). These articles either talked about how animal manure contributed to methane emissions, or how the methane could be captured and turned into an alternative source of energy. Surprisingly, although livestock farms were connected to greenhouse gas emissions (and thus GCC) through manure, few articles directly linked any other area of animal agriculture (e.g., feed crop and transportation) to GCC. In fact, only two articles (both from the *Globe and Mail*) made the direct connection and mentioned *Livestock's Long Shadow*. For instance, an article from 2007 entitled "Ignoring the Meat of the Global Warming Issue" described the contents of *Livestock's Long Shadow*. This article went into the details of how industrial animal agriculture contributes to GCC in a wide variety of ways, stating that "feed crops take 30 percent of the world's arable land...[and that] livestock command 70 per cent of the planet's agricultural land and 30 per cent of its entire land surface" (Reynolds 2007). An additional article from 2007 cited the study at the University of Chicago regarding vegan diets being the most environmentally friendly. The author discussed the regular activities that individuals do that may be more harmful than they realize. Among these actions she mentions eating meat, arguing that it is bad for the planet, and that according to the University of Chicago study "the meat-rich American diet has such a big ecological footprint that turning vegetarian would do more to reduce global warming than trading in your SUV for a Toyota Prius" (Von Hahn 2007, p L3).

Further, approximately 15% of the articles in both newspapers specifically cited the UN's IPCC and their various reports and conferences. These articles discussed a variety of anthropogenic causes of greenhouse gas emission, as well as ways that we can slow GCC; however industrial animal agriculture was not directly cited as one of the causes. Thus, while *Livestock's Long Shadow* may not have been cited in many articles, the UN's position on GCC was not entirely overlooked.

Only one article was found in *USA Today* that discussed the link between diet and the environment. This article was published in 2007 and was about a best-selling author who led her family towards an environmentally conscious diet by thinking about food transportation. She argued that "each item in a typical U.S. meal has traveled an average of 1,500 miles, consuming a lot of fossil fuel" (Minzesheimer 2007). Thus, her argument was to eat locally, but not necessarily vegetarian. Four articles were found in the *Globe and Mail* the same year, and one in the first quarter of 2008 that mentioned lowering daily meat intake, as well as consuming organic and local food.

Out of the 170 articles analyzed here, there was a definite increase in the number of articles related to the search terms used in both newspapers as time progressed. The largest increase in both was between 2006 and 2007, as coverage in both newspapers jumped by an average of 31 articles each. To break it down into increases or decreases in themes over time, the *Globe and Mail* had a moderate increase in the number of articles on biofuels. *USA Today* had eight in 2007 and two in the first quarter of 2008. While this count is small, it represents a 100% increase, as only one of the articles was in the first quarter of 2007. The articles in *USA Today* that discussed how livestock manure contributes to methane emissions, and furthermore GCC, stayed consistently low, whereas the *Globe and Mail* had a moderate

increase. The *Globe and Mail* also had a greater increase in articles that cited the IPCC, while *USA Today* only had a moderate increase. The same was true for fossil fuel articles in *USA Today*, while the *Globe and Mail* increased continually with the largest increase from 2006 to 2007.

Overall, many of the articles from both newspapers noted that the existence of GCC was agreed upon by scientists, and thus talked more about the current and potential effects of GCC. The U.S. articles tended to look more at the economic impact of GCC and how it would affect the country from a business perspective. Many of the articles from the *Globe and Mail* seemed to be personal accounts of how GCC has affected individuals' consumer choices, business, or other aspects of daily life, and thus appealed more to the general public. There was often mention of "what we could do" to slow climate change. Solutions tended to follow the same lines in terms of driving less, buying fuel efficient cars, using energy efficient bulbs, turning off lights and on rare occasions, changing diet.

Further, not many of the newspaper articles made specific mention of the other organizations that I investigated. Some exceptions included mentioning the USDA's introduction of a new food pyramid in May 2005; the *USA Today* mentioned that the Nature Conservancy published studies to target worldwide climate efforts, including monitors on coral reef bleaching and the plan to farm heat-resistant corals in the Florida Keys (Vergano 2007); and scientists from the DSF were quoted in two *Globe and Mail* articles.

As stated earlier, *Livestock's Long Shadow* was acknowledged in a couple of articles during the time period researched. These articles outlined the findings of the report, linking livestock production to not only methane emissions, but carbon dioxide and nitrous oxide. They gave information about methane and nitrous oxide being more potent gases than carbon

dioxide, as well as giving an idea of how much land is used for feed crops alone (Reynolds 2007). What was generally neglected was the link between the transportation of feed crops as well as animal products and deforestation. While the number of articles related to the search terms used increased in both newspapers, particularly those on alternative sources of energy, there was no significant increase in articles problematizing the animal agriculture industry specifically.

## **Discussion**

This section examines what the findings discussed above mean with respect to my research questions and the application of Beck's theorizing and concepts, as well as the environmental discourse literature, and the contribution this project makes to the sub-field of green criminology. After exploring these issues I discuss the strengths and limitations of my study and suggest avenues for further research.

### *The usefulness of employing Beck's theory to examine the connection between GCC and industrial animal agriculture*

Beck's risk society theory depicts a shift from the first modernity to the second modernity. To review, the first modernity is characterized by predictable risks, such as natural disasters and famine, whereas second modernity risks are unknown and caused by human actions. Beck argues that in the second modernity, risks become more difficult to rationalize and those dominant stakeholders who previously had the power to control and influence the construction of risks lose their authority. He explains, "In a world risk society...we enter a world of *uncontrollable risk*...[being] the only apt description for the second order, *unnatural*, human-made, manufactured uncertainties and hazards beyond boundaries we are confronted with" (Beck 2002, 41).

Overall, this study does not provide clear support for this aspect of Beck's theorizing. Notably, we might infer that the animal agriculture industry still shows a degree of control in constructing risk, since animal agriculture has not been highly problematized by government, media and many social movement groups. One could speculate, however, that because larger social movement groups, such as PETA, are pushing the issue and that other groups, such as

the DSF, are recognizing a wider range of causes and effects of GCC in relation to animal agriculture in particular, that the effect may begin to trickle down through the other organizations. Thus, while it is clear that we are no longer in an industrialized society where risks are completely naturalized and predicted (i.e., the first modernity), the phenomenon under analysis here does not provide evidence that we are fully situated in a period of the second modernity.

As stated earlier, Beck traces the second modernity through two stages. The first stage is where risks are largely denied and seen in terms of probabilities, where “there is an increasing clamour to change this definition of risks...it’s largely warded off, even as newer and graver risks are coming into being out of sight” (Beck and Willms 2004). Furthermore, during this stage “public perception is still dominated by the industrial society consensus that progress, production, preserving jobs, and producing wealth are society’s central goals and that anything that calls these things into question is a threat to be rejected” (Beck and Willms 2004). However, despite all of this, Beck also notes that global risk factors still exist and increase; they go largely unnoticed during the first phase of the second modernity. He uses the lack of reflection on environmental problems as an example of the first phase of second modernity (Boyne 2001).

The second stage is described as a period where faith in progress is questioned. Beck argues that people begin to suspect the worst, even if the industries still try to save face and boast about their advantages. Thus, suspicions arise as to the actual benefits stemming from industries, and instead realizations of their harms and concerns about safety are articulated. In this latter phase, “risk consciousness dwells more on risks that haven’t yet come into existence than on advantages that might flow from new developments” (Beck and Willms

2004). There is also a growing realization that nobody has a monopoly on the truth (Beck and Willms 2004). In other words, the industries and stakeholders that were once so powerful in constructing risk begin to lose their grip.

Based on the results of this research, it is clear that the stakeholder groups have not lost their discursive power, which would be a critical indication of the second phase in the transition to the second modernity. However, I would argue that signs of Beck's first phase of the second modernity are present. The links being made between animal agriculture and GCC among most of the environmental and animal rights/welfare groups examined here might be indicative of the "increasing clamour" to alter the current definition of risks to which Beck refers. The silence of the industry stakeholders in response to these claims and the FAO report might indicate that the clamour has not yet gotten loud enough to demand a response.

*What risk conflicts and relations of definition have emerged?*

Although there is not a lot of support for the overall theory of the risk society in this study, it is important to note that some of the concepts Beck uses in his work, such as risk conflicts and the relations of definition, are useful in making sense of my research findings. Beck (2004) has argued that with globalized risks there is a lack of preconditions that would help to successfully rationalize and socially construct risk, and thus risk conflicts typically emerge: "There are always competing and conflicting claims, interests and viewpoints of the various agents of modernity and affected groups, which are forced together in defining risks in the sense of cause and effect, instigator and injured party. There is no expert on risk" (Beck 1992). In relation to GCC, uncertainty in fully understanding the causes has given rise

to a variety of risk conflicts between the organizations investigated, with some depicting animal agriculture as more of a risk than others. However, we might infer from the limited amount of explicit conflict observed and that fact that the animal agriculture stakeholder groups have not deemed it necessary to even address the link between industrial animal agriculture and GCC that the agricultural industry still holds a substantial amount of power over the construction of risk, and thus the risk conflicts that have been spotted are not as drastic as we would expect if we were in the second modernity.

However, this is where his concept of the relations of definition, or the definition of risk, is useful. Recall that Beck argues that examining the relations of definition helps to uncover the various power relations that are involved in defining risk. He states that they assist in making sense of risk conflicts because they generally motivate the power structure of risk (Boyne 2001). Risks “can be changed, they are particularly *open to social definition and construction*. Hence the mass media and the scientific and legal professions in charge of defining risks become key social and political positions” (Beck 1992). The lack of firm problematization of the animal agriculture industry due to its contribution to global climate change demonstrates how much power the industry may still have. While Beck (2004) argues that those who typically have power over the definition of risks lose this power in the second phase of the transition to the second modernity, it appears that the meat industry stakeholders may not have lost power in defining risks. Nonetheless, some risk conflicts and differing relations of definition were apparent among the groups examined and are worth discussing briefly here.

The groups examined here focused on different aspects of GCC, as well as divergent features of animal agriculture (when it was addressed). The social movement groups and

governmental agencies discussed many areas of livestock farming as one of many causes of GCC. The social movement groups took it one step further and suggested eating less meat as one of many personal ways to fight GCC. The industry stakeholders, however, did not depict industrial animal agriculture to be as problematic as the social movement organizations depicted. Whereas the CMC made no specific mention of how industrial animal agriculture is related to environmental concerns, the AMI recognized its contribution to GCC only by way of methane and carbon dioxide emissions through farm equipment. They encouraged and rewarded member companies that made efforts at reducing these emissions, yet made no mention of reducing the operations. I had predicted that because of their interests, these stakeholders would not acknowledge the release of *Livestock's Long Shadow*. In this case, my prediction was correct: neither organization mentioned the UN document which highlights the numerous ways industrial animal agriculture contributes to GCC. There are a variety of conditions that might have induced the meat industry stakeholders to address the issue, such as demands by the government, a drop in consumer sales and significant pressure from social movement organizations.

There was also a clear distinction between the environmental topics that the meat industry stakeholders found to be important (e.g., ethanol) versus what topics the social movement organizations called attention to (e.g., eating less meat to help slow GCC). There was a fundamental conflict between what these groups were constructing as environmental risks. Beck claims that when risk conflicts arise, those individuals and corporations who typically have the law on their side, and have been able to avoid these types of situations in the past, now have obligations and liabilities forced upon them (Beck and Willms 2004). In terms of the industry stakeholders, it appears as if this is not yet the case, as they have not

been forced to speak of the link between industrial animal agriculture and GCC. However, perhaps as time progresses, industry stakeholders will feel more pressure from social movement groups and be forced into addressing it. My research indicates that although some of the social movement organizations are addressing the link, and the amount of attention at least one animal rights group is giving it is increasing greatly, their messages on the issue have not fully taken root in the news media and certainly not in governmental agencies. I would predict that this could change in time if the social movement organizations (particularly the environmental organizations) increase the amount of attention they are paying to the link between GCC and industrial animal agriculture.

It should be noted, however, that an increase in the amount of critical attention paid by the social movement organizations to the link between GCC and industrial animal agriculture is not inevitable. It may be dependent upon actions taken in the natural science community. For instance, Brulle (2000) has critiqued the mainstream environmental movement for relying too heavily on natural and physical scientists to determine their agenda. It may also be impacted by the perception of whether or not action on the issue will be taken up by the media. Research has indicated that social movement groups generally tend to focus on issues that will be acknowledged by the media (see Doyle 1994), and as demonstrated here, the media has not taken up the issue of a link between GCC and industrial animal agriculture as a concern. Doyle argues that “by being continually concerned about ‘what the media thinks’, what *sells* becomes important and not the dissemination of information conducive to the wide ranging public debate of policy” (Doyle 1994, 26). When “managed media images” are what influences a social movement group’s decision to cover a certain issue, a hidden loss results due to self-censorship. A fear of what the media will think

dominates, and people begin to forget that the media is meant to be an information tool and not an end in itself (Doyle 1994). Thus, when social movement groups decide to take the safer approach that will get positive media attention, they miss out on opportunities to bring forth controversial, yet important issues to the table for society to think about.

This could potentially be the reason why the social movement groups investigated have not put much emphasis on the problematization of industrial animal agriculture. The link between the meat industry and GCC could be seen as controversial and thus social movement groups may decide that it is not worth their time to put serious effort into a campaign against it. While ten of the twelve social movement organizations investigated did make subtle links between the meat industry and global climate change, only one (PETA) made considerable effort to publicize the problematic link and further used the FAO report as evidence to make their case.

The industry stakeholders clearly defined environmental risks differently than the social movement groups. For instance, the industry stakeholders constructed corn-based ethanol as a risk. The AMI even linked ethanol to GCC in a February 2008 news story, stating “the widespread use of corn-based ethanol could generate nearly twice the greenhouse gas emissions as the gasoline it would replace because of expected land use changes, authors of a new study published in *Science* magazine have concluded” (American Meat Institute 2008). Many of the animal welfare/rights groups, on the other hand, clearly defined the meat industry as being a risk to GCC, thus providing one of their motives for promoting low- (or no-) meat diets. Due to the fact that none of the governmental agencies paid close attention to the problem of industrial animal agriculture and GCC, we can speculate that the power of

the industry stakeholders has influenced how the American and Canadian governments define risks and that the social movement organizations have not yet made inroads here.

This study also demonstrates that even if the same risks are identified by groups, they may be constructed or framed differently. Benford and Snow (2000) argue that collective action frames vary according to the ways organizations identify problems and the ways they address issues. This can be seen through the way FoEI problematizes GCC and furthermore, issues with ethanol. They were the only environmental group examined that focused on developing countries; that is, they wanted to give a voice to those countries who were not receiving “access to sufficient energy within ecological limits from appropriate sustainable sources for a dignified life” (Friends of the Earth International). Many of these countries also farm corn, which is sent to more developed countries to be used for alternative fuel, such as ethanol, leaving the farmers and their families malnourished. Therefore, FoEI framed ethanol as being a problem differently than the AMI, which argued that ethanol was bad because it took corn away from cattle ranchers and (ironically) pointed to potential environmental implications.

This research does, however, document consistency in the arguments made regarding the link between industrial animal agriculture and GCC across the animal welfare/rights groups examined. To be more precise, five out of the six groups examined (all except IFAW) acknowledged the relationship. However, consistent with what Benford and Snow (2000) call “direction/locus of attribution”, the organizations varied in the ways they addressed the issues and possible solutions. All of the groups (except IFAW) promoted less meat intake as a way to mitigate GCC. PETA cited a *New York Times* article which articulated this convergence: “the biggest animal rights groups do not always overlap in their

missions, but now they have coalesced around a message that eating meat is worse for the environment than driving. They and smaller groups have started advertising campaigns that try to equate vegetarianism with curbing greenhouse gases” (Deutsch 2007). As demonstrated, my prediction that animal rights groups would use livestock farming’s harmful effects on the environment by way of GCC as leverage to promote lower meat diets was correct in all but one case: the IFAW. In terms of veganism versus simply lowering meat intake, some animal welfare/rights groups argued that meat should be completely taken out of diets, while others (e.g. AAC) argued that eating meat was okay, just less of it. Four of the organizations (PETA, IDA, AAC and ARK-II) have specific vegetarian and/or vegan campaigns, although the depth of their campaigns and the links made to GCC vary.

Benford and Snow (2000) argue that organizations also vary in the number of ideas they incorporate and discuss. This was observed in comparing the results from the organizations investigated here. For instance, in general, the animal welfare/rights and environmental groups covered all of the ways that animal agriculture contributes to GCC, whereas government and industry stakeholders only acknowledged some areas (e.g., the ways that animals contribute to methane and nitrous oxide emissions). The newspapers incorporated a wide range of topics relating to GCC. Since there are a wide variety of topics related to GCC, and more specifically how industrial animal agriculture contributes to GCC, the organizations investigated can pick and choose which ones they wish to illuminate. The problem with this is that meat industry stakeholders may choose to ignore some of the ways their industry contributes to environmental harms, such as GCC, yet they may appear to be concerned about the environment in other ways. For instance, due to the AMI’s recognition of the AgStar program, which encourages farmers to recover methane to reduce emissions

from meat production, individuals may believe the AMI is keen on all environmental issues related to their industry, and therefore not question their efforts. However, the AMI may be (purposefully) neglecting other environmental issues that should be addressed, such as the way in which greenhouse gas emissions are produced through deforestation to make room for grazing land and animal feed production.

I predicted that there would be differences in the discourses due to varying perspectives on GCC, and would include extravagant claims, hidden agendas and personal attacks, further to Lockie's (2006) findings. This prediction only proved to be true in a couple of cases. For instance, there were no claims that there is no connection between animal agriculture and GCC, nor were there claims that the scientific data used in *Livestock's Long Shadow* was incorrect. Not many of the animal welfare and rights organizations that were investigated made personal attacks, however evidence of this was most prominent with PETA, the largest and most well-funded animal organization that I investigated. As stated in the analysis, PETA argued that the major environmental organizations were ignoring vegetarianism as a significant method to combat GCC. However, upon investigation of the environmental groups, it was found that this was not the case, and that all of the groups except FoEI addressed the issue of industrial animal agriculture being linked to GCC, and that five of the six environmental organizations even advocated vegetarianism. It is possible that the environmental organizations did not address the issue to a greater degree because PETA was devoting significant attention to it and they feared aligning themselves with that organization, which has the reputation of being a radical animal rights group (although other animal rights groups might disagree).

Furthermore, PETA attacked the US government, citing its unwillingness to acknowledge the harmful effects of livestock farming. For instance, dating back to 2003, the Bush administration and the meat industry stakeholders demanded more research into the link between poisonous gases emitted from hog farms and neurological problems affecting nearby inhabitants, even though scientists argued that the link was undeniable (Lee 2003). Dealing specifically with GCC, PETA argued that the USDA, the EPA and the U.S. Food and Drug Administration (FDA) are all corrupt, stating that,

elected officials who receive campaign contributions from the meat, dairy and egg industries often return the favour by working to ensure that industry-friendly officials are appointed to high ranking posts in government agencies such as the USDA, the EPA, and the FDA. In turn, elected and appointed officials who do the bidding of the farmed-animal industries are frequently rewarded with cushy industry jobs once their terms in office end (People for the Ethical Treatment of Animals).

According to PETA, the watered down food safety and environmental policies put consumers at the mercy of meatpackers and consumers are paying the price with their health (People for the Ethical Treatment of Animals). However, based on the findings of this research, while the USDA and the EPA did not go into as much depth as PETA in linking industrial animal agriculture to GCC, they did not deny its harmful effects. In fact, as stated in the analysis, I noted that the USDA cited IPCC data arguing that agriculture is one of the main contributors to over half of the global annual emissions of methane, and approximately a third of global nitrous oxide emissions. Moreover, the EPA did cite *Livestock's Long Shadow* (U.S. Department of Agriculture 2002).

PETA may be viewed as attempting to construct a crisis narrative, as discussed by Milligan and Binns (2007), around the GCC and animal agriculture link. However, based on the lack of problematization of animal agriculture's contribution to GCC among the media in

particular, it can be concluded that this crisis narrative has not caught on among more general audiences. Although, judging by the amount of discussion surrounding the effects of and solutions to GCC in general, and the increase in these narratives, my expectation of a crisis narrative being developed around GCC in general is correct. Thus, it seems that at this time, PETA's criticisms are unwarranted.

While the governmental agencies investigated did not completely ignore the problematization of animal agriculture in regards to GCC, part of the relative inattention to the issue may be attributed to the agriculture industry's influence on government. This industry has a long history of governmental influence. Dating back to the 1920s in the US, agricultural lobbying groups have demonstrated their dominance over political parties in midwestern rural areas (Hansen 1991), while the continuing influence of the agricultural industry has recently been documented. In 2005, Gawande (2005) published a study analyzing what he calls "agricultural PACs" (political action committees). Between the years of 1991 and 2000, he examined their contribution to U.S. election cycles to study the link between agricultural protection and lobbying spending (Gawande 2005). He found that contributions from PACs are generally very concentrated; that is, while many of them exist, only a small number of them dominate political contributions. These were found to have generally been created to gain access to politicians, with heavier contributions being made when they might be seen to influence electoral outcomes. The study also found that "the top twenty recipients among House candidates often consist of members of the Agriculture committee...[and furthermore] the top House recipient of agricultural PAC money receive a significant portion of their total PAC receipts from agricultural PACs, which is probably a

reason why they vie for positions on the Agriculture committee” (Gawande 2005). This puts the agricultural industry in a powerful position to influence policy.

The meat industry in particular exhibits significant influence. It has become quite common to have former meat industry employees in USDA positions and vice versa. For example, Alisa Harrison, once the director of public relations for the National Cattlemen’s Beef Association, became a spokeswoman for the U.S. Agriculture Secretary (Schlosser 2004). With over 100 lobbyists-turned-government-officials in the Bush administration, there have been at least twenty instances where former industry advocates have assisted in writing, shaping and pushing for policy shifts that will benefit their former industries. Having pushed for them as industry advocates, they knew exactly which changes to make (Mulkern 2004). The Department of Agriculture has been especially subject to critique. According to Schlosser (2004, 2), “right now you’d have a hard time finding a federal agency more completely dominated by the industry it was created to regulate”. What is worse is that the USDA’s mandate can often times be quite contradictory: they try to promote meat sales on behalf of producers on one hand, and on the other hand they are charged with guaranteeing that U.S. meat is safe for consumers (Schlosser 2004).

As discussed earlier, Beck has argued that the construction of risk can be influenced by various stakeholders (Beck and Willms 2004; Walters 2004). PETA argues this is the case when they make the claim that the USDA and the EPA have been corrupted. Although the word “corrupted” may be too harsh, based on the findings it would appear that these agencies are in fact downplaying the link between animal agriculture and GCC. While there is some problematization of animal agriculture by way of methane emissions, the USDA for instance, fails to directly link industrial animal agriculture to carbon dioxide emissions from

transportation and feed crops, for example. Beck has also argued that powerful stakeholders (the meat industry in this case) have less influence on the construction of risk in the second modernity (Beck and Willms 2004). Although this research cannot make definitive conclusions in this regard, it would appear that the meat industry still has some influence on the governmental agencies at this time. Perhaps animal agriculture's contribution to GCC has not been constructed as a great enough risk yet, to the point where industry stakeholders have lost much of their influence. However, the influence of meat industry stakeholders is not as evident on the animal welfare/rights groups, environmental groups and even the media.

If the meat industry was exerting total influence on the news media then an article titled "Ignoring the Meat of the Global Warming Issue", probably would have not made it to the pages of the *Globe and Mail*. However, while the article linked the animal agriculture industry to methane and nitrous oxide emissions, it failed to make a link to carbon and the effects of transportation and deforestation. The omitted details are exactly the ones that the FAO report makes clear. Is there a reason behind the lack of detail? It is possible that these things were just not mentioned because they are indirect effects, although they are certainly substantial. It is also possible that all of the links are not being drawn on purpose because doing so would lay bare the findings of the FAO report that the industrial animal agriculture is responsible for more greenhouse gas emissions than the world-wide transportation sector. The failure to make all of these links was also witnessed in the examination of the governmental agencies and the industry stakeholders, as mentioned above.

The news media have often been critiqued for being biased in favour of dominant social forces, institutions, and classes, and thus for limiting their coverage on important

issues according to the interests of those holding power. One recent case is the coverage (or lack thereof) of the war in Afghanistan. Ricchiardi (2008) argues that the recent conflict in Afghanistan was largely overlooked on television in the United States, and the few newspapers that did cover the story merely placed small stories at the bottom of the front page, or hidden somewhere inside the paper. When the U.S. invaded Iraq, the journalists who had been in Afghanistan quickly dispersed to Iraq, where more American troops were in danger. Furthermore, when the danger switched back to Afghanistan this past year, news coverage still concentrated on Iraq (Ricchiardi 2008). Although 2007 was a year where bombings in Afghanistan drastically increased and a record number of U.S. and coalition troops were killed, a study by the Project of Excellence in Journalism found that only 0.9 percent of the overall news reportage in the U.S. that year covered stories on Afghanistan (Ricchiardi 2008). The Country Director in Afghanistan for the Institute for War and Peace Reporting, Jean MacKenzie, argues that journalists are at fault for allowing governments to set their reporting agendas. She targets the U.S. as the dominant force, followed by Britain and Canada. She argues that the press follows the action of national leaders, and that the media does not spend enough time deciphering the “real” story (Ricchiardi 2008).

In recent years, studies on the media’s lack of coverage of important global climate change issues have also begun to appear. The construction of environmental issues has been strongly influenced by mass media (Boykoff and Boykoff 2007). However, due to the fact that environmental topics often include complex scientific findings and language, translating this specialized knowledge into terms that are comprehensible to the average person poses a difficulty for journalists. Boykoff and Boykoff (2007) argue that there are three “first-order journalistic norms”: personalization, dramatization, and novelty, which are the underlying

influences on how news is selected as well as the content of news stories. The authors describe a jump in media coverage of global warming from 2001 to 2002, and argue that it was due to politics, not breakthroughs in natural science, and especially President Bush's rejection of the Kyoto Protocol and refusal to make any changes to slow global warming if they harmed the nation's economy (Boykoff and Boykoff 2007). They assert that "a personalized focus on Bush's resoluteness or obstinacy – depending on how one looked at it – was a standard feature of press coverage of global warming" (Boykoff and Boykoff 2007, 1199). In other words, rather than focusing on the real issues of how society was contributing to global climate change and what we could do to slow it, the news media was focused on the politics of one person.

The authors also looked at various IPCC reports and the lack of attention they received in the media. For instance, the IPCC published a Special Report on Emissions Scenarios (SRES) in 2000, which discussed 40 scenarios that had been developed to provide "alternative futures based on varying levels of fossil-fuel intensive behaviors as well as levels of socio-economic equality" (Boykoff and Boykoff 2007). The report received little attention on television networks or in print media, even though they were written to instigate conversation regarding "possible future developments through complex climate interactions." (Boykoff and Boykoff 2007, 1200). The authors argue that the lack of attention could likely be attributed to the excessive scientific language and thus greater difficulty for journalists to craft it into a fresh and dramatic story.

Similarly, author Ross Gelbspan (2005) states that "although the scientific community has known since 1995 that we are changing our climate, the U.S. press has done a deplorable job in disseminating that information". Gelbspan (2005) offers a number of

possible explanations for this, none of which, he argues, are justifiable. He argues that “the career path to the top at news outlets normally lies in following the track of political reporting. Top editors tend to see all issues through a political lens” (p. 68). He states that climate change has been featured in a number of main stories, as well as “small, normally buried reports of scientific findings”; however, the only time it has really seen the limelight is when it is an issue discussed in U.S. politics. For instance, the media attentively covered the Senate’s vote not to ratify the Kyoto Protocol in 1997, as well as President Bush’s more recent withdrawal of the U.S. from the Kyoto process. It should be noted, however, that GCC itself was not the focus of the media coverage, rather the attention was paid to political tensions between the U.S. and the European Union, which is strongly in favour of the Kyoto process (Gelbspan 2005). In discussing the Kyoto protocol, Gelbspan remarks that “the culture of journalism is, basically, a political culture that is not particularly hospitable – that is, in fact, institutionally arrogant – toward nonpolitical areas of coverage. If the press were disposed to look beyond just the politics of Kyoto, it would be an eye-opener for the American public” (Gelbspan 2005, 70).

The link between industrial animal agriculture and GCC has also been quite non-political in nature. Furthermore, this study demonstrates that *Livestock’s Long Shadow* does not seem to have politicized the problem at all. Perhaps one reason why the media has not called attention to the report is that it was not overtly political and instead it was scientific, which could pose a problem for reporters in constructing a dramatic story.

One of the most prominent differences in discourses of risk across the groups was found among the industry stakeholder groups. There were differences between the industry stakeholders and the other groups (e.g. governmental agencies, social movement groups etc.)

and within the industry stakeholder group category itself. First of all, it was the only type of group where no one cited the *Livestock's Long Shadow* report at all, and furthermore there was little environmental problematization of animal agriculture. Within the groups it was found that the CMC made no connection between animal agriculture and GCC period, let alone discuss the environment at all. There are several possible reasons for this. First, the CMC's website was much smaller than the AMI's, and it is a much smaller trade organization as well. Moreover, this issue may not have fallen directly under their mandate (i.e., packaging and food safety) and therefore they may not have felt the need to address the situation. (It should be noted that that environmental issues do not fall under the AMI's mandate either, yet there is an environmental section on their website.) It is also possible that as a stakeholder in the meat industry, and thus an obvious supporter of animal agriculture, they may have felt as though their interests would be best served by not addressing the issue at all. Or perhaps, they are preparing their own data and counterarguments. At this point, however, it is all speculation, and it is not clear why the CMC did not address the issue.

While they did not acknowledge the *Livestock's Long Shadow* report, the AMI did recognize that animal agriculture is harmful to the environment, yet there was not a strong link made to GCC specifically. The most frequently addressed environmentally related issue was concerning ethanol and the balance of corn for food and fuel. In other words, the AMI was most concerned with farmers' corn going to produce alternative fuels rather than to cattle ranchers for feed crops, which demonstrates that they are greatly concerned with their own interests. The reasons for not responding to the *Livestock's Long Shadow* report, or significantly problematizing animal agriculture and its contribution to GCC, could have been due to any number of reasons, including those listed above for the CMC. However, due

to such a strong emphasis placed on the “problem” of ethanol over the past two years, it leads me to believe that the AMI did not address the issue because it would hurt their interests as stakeholders in the meat industry.

In sum, there were various risk conflicts (some clearer than others) and conflicting relations of definition among the groups of organizations investigated. While there were some differences in the ways organizations within the same category constructed risk, for the most part, their main goals were quite similar. All but one animal welfare/rights groups (IFAW) used the negative effects of industrial animal agriculture as support for vegetarian and/or vegan campaigns. Yet, only one organization (PETA) was found to increase their problematization of industrial animal agriculture. The environmental groups also used animal agriculture as a method to promote lower meat diets or vegetarianism, as well as eating local, sustainable produce and organic food. These groups constructed animal agriculture as one of many risks to GCC.

Industry stakeholders constructed risk much differently than the social movement groups. Though the AMI did acknowledge the environment as an important consideration in the meat industry, neither stakeholder group discussed the industry as a significant risk to GCC. Instead, they constructed risk through biofuels, namely corn-based ethanol, likely because it poses a threat to cattle ranchers. The governmental agencies, while not as neglectful as the industry stakeholders, did little to recognize the harmful effects that industrial animal agriculture has on GCC. Construction of risk was made mostly by linking methane and nitrous oxide emissions, but none of the governmental agencies linked carbon dioxide from industrial animal agriculture to transportation of goods and fertilizers or feed production, like some of the social movement organizations did. Lastly, although the

newspapers investigated had many articles on biofuels and alternative energy sources, there was also a wide variety of other topics relating GCC, which included articles on the negative effects of industrial animal agriculture. A few articles mentioned the FAO report, but overall when the link between industrial animal agriculture and GCC was addressed, the focus was on the direct effects, not the whole, more troublesome picture. It is clear that the various groups investigated have differing opinions on whether industrial animal agriculture should be viewed as posing a serious risk to GCC and which aspects of industrial animal agriculture should be focused on.

*Have the discourses of GCC shifted since the release of *Livestock's Long Shadow* toward greater construction of industrial animal agriculture as an environmental risk?*

In general, as I predicted, there was not a dramatic increase in the problematization of animal agriculture, except with PETA. Overall (with the exception of IFAW) while all of the animal welfare/rights groups acknowledged the issue, there was no evidence of an increase in its problematization. These results were similar with the environmental groups: while all groups except FoEI linked animal agriculture to GCC prior to *Livestock's Long Shadow*, none seemed to discuss it more since the report was released. As predicted, the industry stakeholders did not acknowledge the FAO report at all, and therefore there was no increase, nor was there a rise in problematization by the governmental agencies. There was, however, an increase in newspaper articles connecting animal agriculture to the problem.

In terms of media discourses, I predicted that attention to animal agriculture as a cause of GCC would increase after the release of *Livestock's Long Shadow*, but not dramatically. Based on the analysis of the two newspapers examined here, overall there has

not been a significant increase in discourse formation and change surrounding animal agriculture and GCC following the release of *Livestock's Long Shadow*. While there were only two articles that specifically mentioned *Livestock's Long Shadow* (both from the *Globe and Mail*), they were both from August 2007, and therefore there was not a dramatic increase in acknowledgement of the document over time.

In both newspapers, articles pertaining to the competition for ethanol and rising food prices resulting from this came up frequently, as did articles relating to other alternative sources of energy. A deeper investigation into the variety of other stories that were reported on in the newspapers provides some explanation for why a greater link between animal agriculture and GCC was not made. A November 2007 article from *USA Today* talked about the commonly suggested solution to GCC: turning off your lights. The author argues that not only is sitting in the dark an inadequate response to GCC, but “Americans don’t like to limit ourselves, period” (Vanderkam 2007). If applied to the problem of industrial animal agriculture, this could be one of the reasons why changing dietary habits has not been widely discussed in these newspapers. It would mean that countries that have been raised on the traditional diet of (now industrially produced) meat and potatoes would have to alter their practices.

These findings are consistent with those of Lockie (2006) regarding media discourses on the sustainability of food networks. Recall that he found that between 1996 and 2002 significant attention to varying features of sustainability was lacking in the media. Rather, most attention was paid to issues pertaining to the environment and safety features of food, most of them pitting organic and genetically modified food against each other. Similar results were found in my study. For instance, similar to placing organic and genetically

modified food on opposing sides, the pros and cons of ethanol as a sustainable alternative fuel was one of the most frequently occurring topics, followed by other alternative energy sources. While the remaining articles relating to GCC were quite varied, only a few articles specifically problematized animal agriculture in all aspects, and even fewer cited *Livestock's Long Shadow*. My finding that significant attention is not being paid to some contributors to GCC (in particular, industrial animal agriculture) therefore parallels Lockie's finding on features of sustainability of food networks in the media.

These findings are also akin to Lockie's (2006) finding that "despite the development of sizable sustainable agriculture movements, programs and research initiatives over several decades, very few articles on any aspect of sustainability found their way into any of the publications included in this analysis". Similarly, this study indicates that there was not an increase in the problematization of industrial animal agriculture; rather, attention was centered around a controversy regarding alternative fuels and energy.

According to Benford and Snow (2000), the credibility of the claims makers has an influence on a frame's resonance. In this case, as a respected panel of scientists, IPCC's data was given attention in the media (as well as by various organizations that were investigated). However, what is interesting is that while reports of the IPCC, an organization affiliated with the UN, have been picked up by a variety of organizations, the FAO (also under the UN umbrella, and thus likely to be considered credible) report was not given much attention. Perhaps the FAO is a less well known organization, which has impacted the amount of attention the report received. The higher level of attention given to the IPCC reports compared to the *Livestock's Long Shadow* report could also be related to the more general nature of the IPCC and its reports. The IPCC reports discuss a wider variety of problematic

anthropogenic causes of GCC, whereas *Livestock's Long Shadow* focuses on just one: animal agriculture. By using data from the IPCC reports, organizations and the media can pick and choose which areas they want to focus on, instead of centering the discussion on industrial animal agriculture with the FAO report. This may indicate a particular resistance to the idea that our current production and consumption of meat is harming the environment. "Science" in particular can add credibility to claims. Recall, Bocking (2005) and Brulle (2000) argued that environmentalists often use science to frame their problems. This was substantiated in some cases examined here, such as the EDF and NC, which claimed they used strong science approaches to do their business. When discussing the ways in which animal agriculture contributed to GCC, other organizations (such as the environmental groups and governmental agencies) also used science to back up their points, as it helped to show the various greenhouse gases that were emitted during the production process. It is therefore particularly curious that the scientific FAO report did not receive greater attention.

While Lever-Tracy (2008) argued that 2005 was the tipping point for anthropogenic sources becoming the mainstream in GCC discourses, Weise (2007) argued that 2007 marked the year of GCC becoming the main science story, wherein it moved from being a theory to fact. The article cites the IPCC (which won the Nobel Peace Prize that year) and its February, 2007 report stating that not only is GCC undeniable, but humans' reliance on fossil fuels (coal, fuel oil and natural gas) is the main cause. Weise argues that this has caused a shift in scientific and political circles from discussions of "Is GCC real?" to "What effects will it have?" and "What can we do about it?" (Weise 2007). Findings from each organization examined here have shown that this is in fact true – GCC has largely been accepted as reality. However, the causes of GCC are clearly not receiving equal attention.

### *Strengths and Limitations*

As with any project, this one has associated strengths and limitations. There are a number of advantages to using content or critical discourse analysis as the method for a research project. For starters, it is a cost effective method. Additionally, it is virtually unobtrusive and therefore poses few ethical issues (Berg 2001). Because my analysis only consisted of public documents, I was not held back by having to gain entry to a setting, or permission to study informants, and ethical issues were minimized. Further, to ensure transparency regarding how I arrived at my conclusions, I was able to use paraphrasing and quotes from the documents.

A weakness of content analysis and critical discourse analysis that must not be overlooked, however, is that it is limited in what it can analyze, as it can only examine messages that have been previously recorded (Berg 2001). In particular, this project is limited to documents that are made readily available to the public, and at no cost. Therefore, information not included on an organization's website could not be analyzed here.

An additional problem concerning the websites is the fact that not many of them are dated (and moreover do not have "last modified" dates), therefore it is hard to tell when the organizations first started talking about animal agriculture and GCC, and when information was added (granted they did). Furthermore, since websites are not always archived, especially when it comes to basic information pages, when these pages are updated, there is not always a way of verifying what data was previously cited, nor when it was cited.

A potential limitation of the newspaper analysis is related to the keywords use to search for relevant documents. The string of words searched included "(Livestock's Long Shadow OR global climate change OR global warming OR climate change) AND (animal

OR agriculture OR livestock OR farm OR agribusiness)”. Basically, I was trying to do a search that may contain various combinations of words. It searched for any of the three words or phrases in the first parentheses and any of the five words in the second parentheses. There are a couple of potential problems with this technique. First of all, I may not have thought of all of the possible words or phrases that the articles may have used, although I tried to be exhaustive in my searches. Second of all, the words or phrases may not be in the combinations that I am suggesting. Lastly, the search engine itself may have a defect or may not have pulled up every article, and I have no way of knowing that.

This project also has limitations related to generalizability. Since I sampled only a few groups in each category (media, social movement groups, industry stakeholders and government), there is limited generalizability as it is possible that analysis of documents from other organizations may yield differing results. Nevertheless, generalizability to other organizations was not a goal of this project. Rather, the intent was to analyze the discourses of the organizations that are the most widespread and thus reaching the largest number of people. As the widest circulating sources it is likely that they will educate and influence more individuals than other organizations.

There are also limitations based on space and time. While I have examined a few international social movement organizations, for the most part the sources chosen are from Canada and the U.S. If the same, or a similar study is done in another geographic region (e.g., somewhere in Europe or Asia), the results could be much different. With respect to time, I am only analyzing documents from two years prior to the UN’s November 2006 release of *Livestock’s Long Shadow* and a year and a half following. If this study were to be done five to ten years later, differing results may appear, and greater problematization may

occur with the publication of other documents similar to *Livestock's Long Shadow*. For instance, earlier this year Green Peace International put out a similar document titled *Cool Farming*, perhaps a few more documents like this will attract greater media attention and attention from the American and Canadian governments. It is hoped that this study will provide a foundation upon which future studies can build.

A notable benefit of this project worth mentioning here is that it makes a unique contribution to knowledge. As far as I am aware, this is the first examination of discourses of global climate change related to animal agriculture. Therefore, this project contributes to the research in this area, and hopefully will also prompt further studies on this timely issue. The project also contributes to the area of green criminology as it examines a serious form of global environmental harm and provides greater insight into the “relations of definition” and “risk conflicts” (Beck and Willms 2004) related to the issue. Finally, this research demonstrates how Beck’s theorizing can and cannot be applied to GCC, which has previously not been done in this context.

### *Further Research*

As the scope of this research project had to be narrowed, there are a number of possible extensions to this research that could be undertaken. For instance, this study focused on Canadian, U.S. and International organizations; it would be interesting to do the same study with different organizations, perhaps more grassroots organizations. Furthermore, similar studies in different parts of the world may yield differing results. For instance, the findings would likely differ in various ways if this study had included European countries, which tend to be more progressive in their environmental policies. A study comparing articles from the

*Washington Post*, the *New York Times* and the *Los Angeles Times* to three major newspapers in Britain and Germany from September 1999 to March 2000 found overwhelming evidence that the European newspapers gave climate change much more attention than those in the U.S. It was found that the *Guardian*, a British paper, accorded over three times the coverage to climate change than the *Washington Post*, more than twice the coverage of the *New York Times*, and almost five times more coverage than the *Los Angeles Times* (Gelbspan 2005). Thus, conducting a study similar to this one using European countries might find a more substantial link between animal agriculture and GCC in their social movement organizations, government agencies, industry stakeholders and media.

It would also be interesting to investigate the genesis of the *Livestock's Long Shadow* report. I stated earlier that the events leading up to the report were unknown at the moment, but I speculated that it could be related to pressure from other industries linked to GCC, such as the auto industry. One may want to investigate in more detail what was behind the decision to write the report and if the auto industry or others had anything to do with it.

Lastly, the media analysis portion of this research could be expanded beyond newspapers. Not only do both newspapers strive to appeal to a select audience, not everyone gets their news from newspapers anymore. In a highly technological world, people are increasingly using the internet and television to get their daily news. The same study done using television and internet sources instead of newspapers could add additional interesting findings.

## Conclusion

This research has examined the discourses of a variety of stakeholders regarding GCC to see if and how they construct industrial animal agriculture as posing a risk, and if and how these discourses may have shifted since the release of *Livestock's Long Shadow*. The study finds that the organizations examined differ in their methods and the degree to which they address the problem of animal agriculture's contribution to GCC, with some not even acknowledging it at all. Animal welfare/rights groups used the link to promote eating less meat, some taking it further and recommending a meat-free diet. Environmental groups used a reduction in the consumption of industrially produced meat as one of many personal ways to reduce GCC. The industry stakeholders placed more attention on the problem of ethanol, a corn-based fuel that could hurt their business. The governmental agencies linked animal agriculture to GCC in some ways, but not all, and further did not mention less consumption of meat as a way to reduce GCC. In fact, the EPA was the only agency to cite *Livestock's Long Shadow*, though they only used it to show the industry's contributions to methane emissions. The newspapers cited a wide range of topics relating to animal agriculture and GCC, but the most common were based on ethanol and other bio-fuels and alternative sources of energy.

It was found that all of the animal groups, with the exception of IFAW, made the connection between animal agriculture and GCC; however, only one organization (PETA) significantly increased their problematization of the link over time. Further, three of the six groups (PETA, AAC and IDA) specifically cited the FAO's *Livestock's Long Shadow* report. All of the environmental groups, except FoEI, acknowledged the issue, yet none of them used the FAO report to problematize industrial animal agriculture. However, two similar reports (GPI's *Cool Farming* and the Agriculture chapter of the IPCC's *Mitigation of*

*Climate Change*) were listed by other organizations (GPI, DSF and SCC) to support their arguments. The industry stakeholders did not recognize the full risk posed by animal agriculture at all, nor did the government agencies, although some of them linked one or two areas of animal agriculture to GCC (by way of methane and nitrous oxide emissions). Lastly, it was found that the *Globe and Mail* had many articles that related to GCC and agriculture, but published only two that cited *Livestock's Long Shadow* directly. Overall, while articles relating to GCC increased, there was no increase in the amount the articles problematizing animal agriculture and GCC. The attention being paid to the issue by social movement organizations and the *Globe and Mail* at least may indicate that the power of the stakeholders to control the construction of this risk may be eroded in time. Further research will be necessary.

Beck's concepts of risk conflicts and relations of definition were used to examine how the different organizations investigated constructed industrial animal agriculture as a risk, if at all, and how these definitions conflicted. The animal welfare/rights groups benefited from the risk posed by industrial animal agriculture by using it as support for their campaigns to promote vegetarian and/or vegan diets. This was similarly done by the environmental organizations, which went further to encourage people to eat locally produced, sustainable and organic food, thereby constructing the problem of industrial animal agriculture as only one of many risks to GCC that can be fixed by people.

The construction of risk shifts when examining the industry stakeholders, as neither of them emphasized industrial animal agriculture as a prominent risk to GCC. Instead, they constructed biofuels, such as ethanol, as a risk, as it hurt their interests. Governmental agencies also did not recognize the industrial animal agriculture's contribution to GCC fully.

Instead they constructed risk mainly through the link between the meat industry and methane and nitrous oxide emissions, neglecting a large portion of the industries carbon dioxide emissions. The media was a bit more progressive in this regard. Although they focused a lot on alternative fuels, they constructed risk in a more inclusive way by examining a variety of topics relating to GCC, some of which touched on the risk posed by animal agriculture to GCC.

These discourses were consistent with the varying features of collective action frames identified by Benford and Snow (2000). First, their argument that social movement organizations vary in the problems they identify and their methods at addressing them was demonstrated. As well, they suggest that these organizations vary in the amount of inclusivity and exclusivity, and their elaboration on the number of ideas they incorporated into their arguments. Lastly, Benford and Snow's explanation of a frame's resonance, which included credibility, was applied. The results were also consistent with those in a media analysis by Lockie of sustainable agriculture, in which a lack of media attention was also found, as well as a variety of discourses pertaining to the topic at hand. Furthermore, similar to Lockie's (2006) results, the discourses examined here included some attacks and allegations.

Although in theorizing the risk society Beck argues that powerful stakeholders lose their power to control risks in the second modernity, the results of this study demonstrate more nuanced findings. Beck broke the second modernity into various stages, and while we have not entered the second stage yet, this case may provide evidence that we have entered the first stage of the second modernity. The American Meat Institute and the governmental agencies did acknowledge the risk posed by the industrial animal agriculture industry to

GCC, as did the media and most of the social movement organizations. However, in many cases, only the direct effects of the industry were acknowledged, and the more insidious indirect effects (which make it a greater contributor to GCC than the transportation sector) were overlooked. Thus, while we may be witnessing some slippage, we cannot conclude that the stakeholders have lost their power to construct these risks.

In conclusion, while the problematization of animal agriculture's contribution to GCC has been acknowledged by a number of organizations, for the most part, it has not increased since the release of *Livestock's Long Shadow*. Perhaps a future event will mark the tipping point of widespread acknowledgement of the link between GCC and industrial animal agriculture and the weakening of the power of stakeholders to control its definition as a risk.

## **Appendix A**

The following list provides background information on the various organizations included in the research sample.

### **Animal Welfare/Rights Groups:**

*Based in the United States -*

#### **People for the Ethical Treatment of Animals**

Originating in 1980, in Norfolk, Virginia, People for the Ethical Treatment of Animals (PETA) is a worldwide, not for profit charitable organization. As policy makers and educators for the public, PETA uncovers instances of animal abuse and promotes fair treatment of animals. Their underlying principle is that animals are not there for us to eat, wear, experiment on, or use for entertainment (People for the Ethical Treatment of Animals). With over 1.8 million members and supporters in judicial, scientific and legislative communities, among other areas, PETA gets their message across through public education, research and investigations, legislative involvement, boycotts and protest campaigns, special events, celebrities and international media coverage. Their work focuses on four areas where they believe the largest amount of animal suffering occurs: factory farming, laboratories, the clothing trade and the entertainment industry. They have also done work on various other issues pertaining to the prevention of cruelty and death to animals.

#### **In Defense of Animals**

Veterinarian Dr. Elliot Katz founded In Defense of Animals (IDA) in 1983, after discovering the horrors that billions of animals were facing in laboratories, fur farms and

factory farms. The original focus was on abusive treatment and appalling conditions on the University of California's Berkeley campus. Now, with an expanded mission and with 80,000 supporters, IDA has become one of the most effective animal rights groups. By protecting and advocating for the rights, welfare and habitat of animals, they strive to put a stop to animal exploitation, cruelty, and abuse. Their ultimate goal is to raise the status of animals above being merely property.

*Based in Canada -*

#### Animal Alliance of Canada

Through research, investigation, education, advocacy and legislation, Animal Alliance of Canada is dedicated to not only protecting animals, but developing a well-balanced relationship between humans, animals and nature (Animal Alliance of Canada 2007). With an ever increasing number of supporters, AAC works on a local, national and international scale to combat overt and hidden cruelty (Animal Alliance of Canada 2007). Combining professionals and proven records in animal protection, AAC seeks to protect both animals and our environment through education and legislative initiatives.

#### ARK-II

The Animal Rights Kollektive (ARK-II) began in 1984 in Toronto, Ontario. Through political direct action, as well as public education campaigns, ARK-II fosters the individual liberties of animals by promoting and protecting their rights. Their perfect world would be one in which human and animal liberation is one, within a framework of mutual respect, tolerance and compassion (The Animal Rights Kollektive 2008).

*International -*

### World Society for the Protection of Animals

The World Society for the Protection of Animals (WSPA) is the result of a merger between the World Federation for the Protection of Animals (WFPA) and the International Society for the Protection of Animals (ISPA), founded in 1953 and 1959 respectively. These were among the first organizations to campaign internationally on animal welfare concerns. The 1981 merge joined organizations based out of the U.K. and the U.S., while extending and enhancing their work (World Society for the Protection of Animals International 2008). Now with over 12 offices worldwide and over 550,000 members, the WSPA conducts fieldwork, campaigns and education to promote the welfare of animals both locally and internationally. As the largest coalition of humane societies and animal protection associations worldwide, the WSPA has over 850 member groups in more than 150 countries. Their vision is to live in a world free for animal cruelty and where animal welfare is acknowledged and their mission is building a united global animal welfare movement (World Society for the Protection of Animals International 2008).

### International Fund for Animal Welfare

The International Fund for Animal Welfare (IFAW) educates and influences communities, government leaders and other organizations globally to achieve lasting solutions to critical issues pertaining to animal welfare and conservation that are of benefit to both animals and people (International Fund for Animal Welfare 2007). Having been around for over four decades and spread over 15 countries globally, the International Fund for Animal Welfare has grown to over two million supporters and more than 200 experienced

campaigners, legal and political experts and internationally acclaimed scientists (International Fund for Animal Welfare 2007). The underlying principle of the International Fund for Animal Welfare (IFAW) is that the interests of both humans and animals are dependent on each other.

### **Environmental Organizations:**

*Based in the United States –*

#### The Nature Conservancy

The Nature Conservancy has been around since 1951. Based in the U.S. and around since 1951 and now with over one million members, the Conservancy has worked in all 50 states and over 30 countries. In an attempt to protect a wide variety of habitats, by addressing such threats to conservation like fire, freshwater, forests, climate change, invasive species and marine ecosystems (The Nature Conservancy 2008). With a science based approach, the Conservancy employs over 700 scientists. They collaborate with indigenous communities, businesses, governments, non-profit organizations, multilateral institutions and members of the public to practise non-confrontational, practical solutions to conservation challenges. They operate with five underlining values: integrity beyond reproach; respect for people, communities and cultures; commitment to diversity; one conservancy; and tangible, lasting results (The Nature Conservancy 2008).

#### Environmental Defense Fund

Using a novel approach by linking scientists with lawyers, the non-profit organization entitled the Environmental Defense Fund (EDF) came together in 1967. Originally focusing

on going to court for the environment, the EDF quickly expanded to a wide variety of academics including economics, engineers and computer analysts. Now with over 500,000, and more Ph.D. scientists and economists than any other organization like it, the EDF has become America's most influential environmental advocacy groups (Environmental Defense Fund 2008) Working directly with businesses, government and community groups, the EDF aims to find equitable and cost-effective solutions to the most urgent environmental problems affecting society. Acknowledging America's role in causing as well as solving global environmental problems, the EDF believes is committed to oppose ill-conceived policies as well as propose alternatives (Environmental Defense Fund 2008).

*Based in Canada -*

#### David Suzuki Foundation

The creation of The David Suzuki Foundation (DSF) was inspired by discussions that occurred during a retreat organized by David Suzuki and Tara Collins, held in British Columbia in 1989. Canadian born, Dr. Suzuki and Ms. Collins co-founded the organization which was incorporated in September 1990 and officially launched on the first of January 1991. Originating in Canada, yet now registered in the United States as well, this non-profit, non-partisan, environmental charity aims at balancing the needs of humans with the ability of Earth to sustain all life (David Suzuki Foundation 2007). The Foundation focuses on four main areas: sustainability; oceans and sustainable fishing; climate change and clean energy and the nature challenge. By collaborating with scientists, business and industry, academia, government and non-governmental organizations, the charity aims at protecting nature's

diversity, as well as our quality of life, now and for future generations (David Suzuki Foundation 2007).

### Sierra Club of Canada

Originating in the United States, the Sierra Club of Canada (SCC) initially only had Canadian chapters within the U.S. However, in 1963 the Sierra Club of Canada emerged, with its national office being in Ottawa since the late '80s. Now, with five chapters across Canada, and dozens of local groups in communities, the Sierra Club of Canada has over 10,000 members and supporters. The organization aims at developing, “a diverse, well-trained grassroots network working to protect the integrity of over global ecosystems” (Sierra Club of Canada). There are five main threats that the Sierra Club of Canada attends to: harm to animal and plant life, deterioration of oceans and atmosphere, the increasing amount of toxic chemicals in virtually all living organisms, destruction of the planet’s only remaining wilderness and the rapid growth of the population and over consumption (Sierra Club of Canada).

### *International -*

#### Green Peace International

The originators of Green Peace were a group of activists who dreamed of a green and peaceful world. It all began in 1971, where a small group of advocates attempted to go from Vancouver to Amchitka, Alaska to combat U.S. underground nuclear testing. Now, a transnational organization based out of Amsterdam, the Netherlands, Green Peace focuses on global environmental campaigns in order to change people’s attitudes and behaviours, as well

as protect and conserve the environment. There are six main ways they go about this: catalyzing an energy revolution; defending our oceans; protecting the world's remaining ancient forests; working for disarmament and peace; creating a toxic free future and supporting sustainable agriculture (Green Peace International).

### Friends of the Earth International

In 1971, four organizations from around the world (France, Sweden, England and the U.S.A.) came together to form Friends of the Earth International (Friends of the Earth International 2008). Originally designed for a group of environmentalists to meet and discuss issues annually, FoEI eventually grew to almost 70 groups worldwide that campaign together on various critical issues relating to the environment and sustainable life. With over one million members and supporters combined, there is a consensus that environmentally sustainable development requires a mixture of strong grassroots activism and valuable local, national and international campaigning (Friends of the Earth International 2008). The organization's vision is to have societies living in harmony with nature, and developing a peaceful and sustainable world. Equity and people's rights are also a large part of FoEI's mandate, as they aim to put an end to domination and exploitation. They aspire for an interdependent world where people live with dignity, wholeness and fulfillment in a society built on sovereignty and participation. They believe that our children's future will be better due to their actions towards social, economic, gender and environmental justice (Friends of the Earth International 2008).

## **Industry Stakeholders:**

*Based in the United States -*

### American Meat Institute

Originally named the American Meat Packers Association in 1906, the American Meat Institute (AMI) was founded in Chicago, IL following the passage of the Federal Meat Inspection Act. Its main object was to assist its 300 member companies to adjust to the new federal inspection. As a national trade organization, the AMI monitors legislation, regulation and media pertaining to the meat and poultry industry in the United States. Speedy updates and analysis are given to the companies they represent, which consists of approximately 70 percent of the country's meat and poultry producers and their suppliers. In addition to keeping companies informed, the AMI completes their own scientific research in order to develop ways for their companies to improve their plants and products. Through meetings and educational tutorials, the AMI hopes to provide networking and information-sharing tools for its members. The organization runs with three main foci in mind: representing the industry and advocating its news; being a catalyst for continuous improvement and enhancing its member's ability to participate and respond to needs of customers and suppliers (American Meat Institute).

*Based in Canada -*

### Canadian Meat Council

The Canadian Meat Council (CMC) is a trade organization that aims at assisting meat packers and processors who are federally inspected. The Council was founded in 1919 and has 45 regular member companies that operate around 75 federally registered meat plants

across the country, which account for over 90 percent of the red meat processed in Canada. Furthermore, they have over 65 associate member companies that provide goods and services to support the meat industry (Canadian Meat Council 2007). Their main objective is to provide a forum for members to converse about topics regarding government regulations, activities, competition (both domestic and international), and issues with other national trade organizations.

**Government:**

*Based in the United States -*

Environmental Protection Agency

The Environmental Protection Agency (EPA) is an agency of the United States federal government that was created in 1970 in response to an increasing public demand for cleaner air, water and land. This group was put in charge of not only developing standards for Americans to live in a cleaner environment, but also to find methods to repair damage that has already been done. Before this, no coordinated efforts had been made by the federal government to develop a method of attack on the pollutants that are harmful to the health of Americans or degrade the environment (U.S. Environmental Protection Agency 2008). The 17,000 employees come from a wide range of backgrounds including: engineers, scientists, policy analysts, and specialists in the legal, public affairs, financial, information management and computer fields. Its headquarters are in Washington, D.C., and there are ten regional offices and over a dozen labs. Their mission is to protect the health of American citizens and promote a cleaner, healthier environment (U.S. Environmental Protection Agency 2008).

## United States Department of Agriculture

The United States Department of Agriculture (USDA) is a United States Federal Executive Department of the government. Based on well-grounded public policy, the best science obtainable and efficient management, the USDA contributes leadership on food, agriculture, natural resources and other related issues (United States Department of Agriculture 2004). There are seven different secretarial departments, including: farm and foreign agricultural services; research, education and economics; and natural resources and environment. Originating in the late 1800s, the USDA's framework for achieving its goals includes key activities such as: expanding markets for agricultural products and support international economic development, further developing alternative markets for agricultural products and activities, and improving nutrition and health by providing food assistance and nutrition education and promotion (United States Department of Agriculture 2004).

*Based in Canada -*

## Environment Canada

Environment Canada is a sector of Canada's federal government and has the following as its goals: preserving and enhancing the quality of the natural environment; conserving Canada's natural resources; conserving and protecting Canada's water resources; forecasting weather and environmental changes; enforcing regulations that relate to boundary water; and coordinating environmental policies and programs for the federal government (Environment Canada 2007). There are nine different areas of Environment Canada: Canada-Child Agreement on Environmental Cooperation, Canadian Ice Service, Canadian Wildlife Service, Clean Air On-Line – Canada's Clean Air Act, Climate Change, Freshwater,

Meteorological Service of Canada, National Pollutant Release Inventory (NPRI), and North American Agreement on Environmental Cooperation (NAAEC). The department's national headquarters are in Gatineau, Quebec, and there are over 100 offices across the country.

With approximately 6,000 employees, approximately 60 percent of their workforce operates in areas of science and technology. Furthermore, approximately 80 percent of their annual budget of over ½ billion dollars goes towards these types of activities.

### Agriculture and Agri-Food Canada

Established in 1995, Agriculture and Agri-food Canada (AAFC) is a department of the government of Canada that provides information, research and technology on all issues pertaining to agriculture. Furthermore, it provides a variety of policies and programs that aim to achieve security of the food system, a healthy environment and innovation for growth (Canada 2008). Its tasks include: supporting agricultural productivity and trade, being responsible for the inspection and regulation of animals and plant-life forms and coordinating rural development and enhancing the quality of rural life (Agriculture and Agri-Food Canada 2007). The department and its portfolio partners (e.g. Canadian Dairy Commission and the National Farm Products Council) reports to Parliament and all Canadians through the Minister of Agriculture and Agri-Food, as well as the Minister for the Canadian Wheat Board.

*International -*

Food and Agriculture Organization of the United Nations

In 1942, an agreement was made between 44 governments at a meeting in Hot Springs, Virginia, USA. The result was the Food and Agriculture Organization (FAO). The purpose of the FAO is to achieve food security for all, and thus ensuring that all of humanity has regular access to a sufficient amount of high-quality food in order to lead active and healthy lives (Food and Agriculture Organization 2008). The organization does a lot of behind-the-scenes work to provide awareness and assistance to people and nations in need. They aim at raising levels of nutrition, improving agricultural productivity, bettering the lives of rural populations and contributing to the growth of the world economy. The FAO's efforts are focusing in four main areas: putting information within reach; sharing policy expertise; providing a meeting place for nations and bringing knowledge to the field (Food and Agriculture Organization 2008).

**Newspapers:**

*Based in the United States -*

USA Today

As the widest circulating U.S. daily newspaper, USA Today reaches over 2 million people (Bruelles Luce 2007). The paper was created in 1982 by the Gannett Co., Inc., who used an emerging technology that allowed them to launch a full-colour national daily general-interest newspaper (Encyclopaedia Britannica Online 2008).

*Based in Canada –*

### The Globe and Mail

According to the Canadian Newspaper Association, the Globe and Mail is Canada's second widest circulating daily newspaper (The Canadian Newspaper Association 2008). The Toronto Star is the widest circulating, however the Globe and Mail was chosen due to its national coverage. The Globe and Mail is the result of a merger between two newspapers of opposing views. A liberal newspaper titled *The Globe*, was founded in 1844 by Scottish immigrant George Brown. In 1872, John A. Macdonald founded a conservative paper titled The Mail, later called the Mail and Empire (Encyclopaedia Britannica Online 2008). When the two newspapers merged in 1936, they became an independent newspaper, The Globe and Mail. As Canada's national newspaper, it sees its role as "independent but not neutral" (The Encyclopaedia Britannica Online 2008). It has its hands in domestic and foreign news, and international cable television and magazine publishing.

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