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Modern Society, Technology and Electronic Waste: Who Should Be Responsible?

Extended Producer Responsibility & E-waste
in the Province of Ontario, Canada

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Abstract

Electronic waste (e-waste) in modern society is a growing issue that creates risks by degrading natural resources, through the production of the electronic devices in question, but also at a later end-of-life stage when recycled irresponsibly; by harming individuals directly – those who partake in the recycling, but also indirectly when deadly toxins from recycling flow into water and soil sources. This thesis looks specifically at the recent progression into modern society and associated risks as can be linked to the environmental problem of e-waste in Ontario, Canada. It looks at individuals as consumers in society and examines their knowledge about the increasingly prevalent solution of Extended Producer Responsibility (EPR) as it should perhaps be used as a solution in Ontario. Through the use of semi-structured interviews with consumers – and considering the objective variable of government structure in Canada and Ontario that affects consumer views about e-waste; this study aims to understand what individuals think would work best in Ontario, a state-led directive or an EPR-based solution.

Key Words: Ontario, E-waste, Extended Producer Responsibility (EPR), consumers, risk society, modern society, reflexive modernization

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1. Introduction

The progression through time into modern society has brought about many exciting phenomena balanced with un-planned consequences taking the form of different characteristics. These consequences can be characterised by risks that are increasingly more serious than previously; environmental problems such as air and water pollution, that are made up of an ever-more complex mix of deadly chemicals. These problems require new solutions from new sources than previously, which have been handled mainly by the state. Modernity today has been termed ‘reflexive modernity’ by some, the ‘information’ or ‘global age’ by others. In this era, given the risks that have emerged along with it; not to mention the dissolve of the state which is a characteristic of it - in order to overcome new problems more attention from areas such as public or expert bodies is drastically needed.

Technology’s role as a driving force for man-made risks cannot be overlooked. At the consumer level, we are bombarded with media messages enticing us to purchase the latest consumer devices. The United Nations Environment Programme (UNEP) notes upon the force industry and the consumer market have in pushing electronic technology: “Industry seduces with gadgets and utilities that can lead to a more convenient, flexible and independent life” (Schwarzer et al., 2005: 1). We on the consumer side often succumb to these characteristics; the end result is a build up of unused electronic devices, ultimately causing health problems and harming the earth’s natural resources.

This thesis looks at the problem of e-waste as a modern risk today that causes unintended social and environmental problems. In focussing on one area where problems associated with e-waste exist: Ontario, in Canada – this study attempts to understand more about the knowledge of individual consumers in Ontario and their actions surrounding e-waste policy.

1.1 Research Problem: E-waste

E-waste is a form of solid waste that has been growing steadily for years due to the quick turnover of electronic products on the consumer market. All electronic devices at end-of-life can be considered e-waste: televisions, cameras, hard drives, refrigerators, microwaves and amplifiers for example; however the most common forms of e-waste tend to be in the form of computers and mobile phones, due to these devices being widely known for their quick turnover rates with new features and models appearing regularly on the market.

E-waste is a relatively new problem evolving from the lack of usage of electronic devices in the consumer market. Aside from the production of these items being costly to natural resources, their improper handling can be detrimental to the health of communities and the environment through toxic pollution that can spread easily. A horrific tale of pollution from e-waste according to Environmental Health Perspectives magazine can be seen in

Guiyu, China - an area where almost 80% of families run home-operated e-waste “recycling business” with approximately 100 000 migrant workers, including children employed in processing e-waste (Xia et al, 2007). E-waste is often exported from developed countries to lesser developed countries (LDCs) for unsafe dismantling; mostly from the United States but also a large portion of it from Canada as well as Europe. It is also a problem in industrialized countries themselves, as overflowing landfills can lead to many potential pollution hazards. According to UNEP, in 2005 20-50 million tones of e-waste was generated, putting cities and towns that are located near landfills under great environmental and human risk (Schwarzer et al., 2005: 1).

This thesis is primarily concerned with e-waste, the consumers from whom it stems and e-waste policy in the province of Ontario, in Canada. Until recently there has been no federal, provincial or privately run program in place in Ontario to deal with e-waste recycling; and therefore I wish to look at the policy situation there and attempt to understand more about individual knowledge of e-waste in Ontario society. I will look at outside structure of government in Ontario as well as Canada and the failures it has experienced with environmental problems and recycling policy. With this understanding and the answers given by individual consumers about questions regarding e-waste facts and basic policy knowledge, I hope to understand more about how this group of individuals in Ontario feels about e-waste and who should be responsible for a solution.

With the above in mind, the research question for this study is:

To the degree that environmental risks in modern society at least partially stem from the physical build-up of electronic devices, thus creating problems associated with e-waste; do consumers of electronic devices see Extended Producer Responsibility as a possible option to overcome the problem in Ontario, Canada given the current situation there? Why or why not?

1.2 Research Field – Environmental Issues and Risk

Modernization in a global world bringing about negative political, economic, social and environmental consequences is not a new occurrence. Over the years, numerous environmental movements and discourses have been formed as different theorists and experts posit questions regarding responsibility for solutions to new problems. A few corners of thought exist: the sceptical views that question whether environmental problems even exist, by Bjorn Lomborg for example. Lomborg, until recently, has attempted to discredit much scientific evidence about environmental problems with unsubstantiated and perhaps extravagant claims such as: “we are not running out of energy or natural resources. There will be more and more food per head of the world’s population; fewer and fewer people are starving” (Lomborg, 2001: 4). In regards to finding some sort of solution that will please the majority of people in society, changes in power or responsibility in the political realm are often considered. Dryzek (2005) notes the idea behind the ‘green radical’ movement could be interpreted as a “need to bring

transnational capitalism and its institutions (such as the WTO) under control of national governments” (Dryzek, 2005: 214).

With a focus on one type of environmental pollution; e-waste, with EPR as a “change of power” solution - consists of experts in the private sector in charge of decision making, and also design of infrastructure for products from inception right through to end-of-life; including recycling. This has been an increasingly popular policy choice for e-waste in many societies recently, albeit with vastly varying degrees of success. It is perhaps in light of today’s society and its increased risks that we need “new” responsible groups to devise solutions apart from the state; i.e. public awareness organizations, producer organizations and non-governmental organizations (NGOs) that are more capable of dealing with complex environmental issues. E-waste is only one source for environmental problems; however it is growing quickly as it is fuelled by innovation, market and consumer forces, technology, and expanding at a quick rate; and is thus an important and current issue.

The concept of ‘risk’ in modern society has arguably grown in scope to the extent that it could now be associated with problems such as environmental issues that sometimes arise themselves *as* risks. Risk itself can of course be defined in many ways; for example Giddens (1990), in his book *The Consequences of Modernity* emphasizes the existence of a new “risk profile” in modern society. Among others, he notes some new ways in which modern risks have grown and expanded:

- Globalization of risk of *intensity*
 - Globalization of risk i.e. *expanding number of events*
 - Risks emerging from the *created environment*
 - Development of *institutionalized risk environments* (e.g. investment markets)
- (Giddens, 1990: 124)

It is with the third point above that this thesis will concern itself; the created (man-made) risk of e-waste in today’s modern (created) society (environment). This thesis attempts to relate the concept of risk as it exists in modern society to the problem of e-waste - as can be understood as a risk in modern society due to the consequences derived from it, i.e. environmental, health, social and developmental problems. It will be argued that modernity’s progress has resulted in a change in risk characteristic, and society’s ‘normative’ or ‘non-reflexive’ reaction to risks will be assumed to be problematic. Questions pertaining to the notion of ‘risk society’ and what characteristics risks have in relation to the modernization process will be discussed. This discussion will ideally lead to looking next at a potential ‘hidden’ risk in modern society: the rapidly accumulating problem of production of technological wares in the consumer market creating e-waste and how it is handled at end-of-life causing a multitude of problems. The thesis will culminate with a look at the knowledge and understanding about e-waste in the consumer market as it exists in Ontario Canada, using consumer interviews. Subjective responses about general e-waste knowledge and a more clear understanding of individual’s actions regarding e-waste, and what should be done given the state policy in place in Ontario will be the focus.

1.3 Purpose and Outline of the Study

It is important to note that in this thesis there will be no attempts to generalize about a coherent link between state properties and policy and individual behaviour. The intention here is to simply understand more about how individuals feel about e-waste, and if they think private industry could handle a solution. The intention to look at the external area of the state is only used as a postulation for my research.

Intentions in this study are to look at modern risk in society and environmental problems deriving from electronic device build-up in the consumer market. I will attempt to understand knowledge individuals have about e-waste as well as the related policies in the consumer market as they exist in Ontario, Canada. I will attempt to understand individual knowledge about e-waste held by individuals in Ontario, Canada. After gaining more knowledge about their views on modern risks as e-waste, I also wish to understand more about their knowledge on the subject of a private policy solution - extended producer responsibility (EPR). The answers given will ideally shed light on the perhaps equally important objective structures that exist in the society in which these individuals live. The most influential structure is believed to be government in Ontario and Canada, and the environmental policies it has implemented regarding recycling policy for waste and e-waste. I postulate in this thesis that this factor has shaped the thoughts and actions of citizens of Ontario when it comes to their environmental knowledge and actions regarding e-waste.

Problems associated with e-waste range in scope from environmental to social and developmental consequences that are localized both in developing and developed countries. The actions by individual consumers largely in the developed world necessarily affect those in developing nations when it comes to e-waste disposal. Understanding more about the individual consumer is in question here, and specifically with whom the consumer believes responsibility lies in regards to responsibility for devising a solution to the problem of e-waste.

There exists much data about environmental problems and the negative issues related to technology on society in the policy area. With policy solutions to these problems increasingly affecting public bodies in society, the importance to understand the opinions of individuals before implementing policies that affect them is underrated. Thus in this thesis, through the use of the interview process subjective knowledge of e-waste policy on the behalf of individual consumers in Ontario, Canada will hopefully be more clearly understood, as well as the government structure that affects their actions.

2. Methodological Background

The methodology for this project can be partially explained by looking at the concept of structuralism theory as illustrated by Bourdieu in his analysis of individuals and groups in society, which implies that structural conditions affect the actions and thoughts of individuals: “objective structures independent of the consciousness and will of agents, are

capable of guiding and constraining their practices or representations” (Bourdieu, 1989: 14). He thus believes that external structures have great bearing on the consciousness of individuals, and that agents (individuals) construct their world visions under these structural constraints (ibid: 18). It is the structure of government in Ontario and Canadian society that I wish to look at that potentially shape consumer understandings of e-waste, e-waste policy and environmental problems, as well as the subjective views they hold themselves.

Bourdieu notes that objective structures are in essence ‘causes’ of individual will in society that form the foundation for their representations and the framework for constraints that can help explain interactions, rather than [or in addition to] the subjective representations of the agents themselves (ibid: 15). This idea relates to this thesis as the government structure in Ontario presumably affects individual consumer’s lives directly and subsequently translates to shape and form their actions through environmental and e-waste policy.

It is important to note here that in this thesis I do not wish to measure specifically how much the government has an effect on individuals, only to use the entity of the state as an example of an outside structure that could have effect on individual responses, and gain a deeper understanding of consumer views of state e-waste policy.

2.1 Methodology

In describing the process used in his book *Weight of the World* (1999), Bourdieu asserts that the researcher must be well aware of any external structures in social research relationships, specifically when conducting interviews; as they can potentially colour the responses of interviewees: “by definition, scientific questioning excludes the intention of exerting any type of symbolic violence that could affect responses. Yet it remains the case in these matters that one cannot trust simply to one’s own good faith, and this is true because all kinds of distortions are embedded in the very structure of the research relationship” (Bourdieu et al, 1999: 608). He notes, it is these distortions that need to be “understood and mastered as part of a practice which can be reflective and methodical without being the application of a method or the implementation of a theory” (ibid: 608). In this way he asserts that it is important to be reflective in social research in order to understand and master these outside, external distortions in order to obtain a clear understanding of the research object of study.

It is important to note that the intent in this thesis is not to look at all possible external structures associated with e-waste in the interview section of this study; instead I will attempt to understand how only one external structure might have a large impression on consumers’ lives regarding e-waste in Ontario society. The objective structure of government was chosen for this study based on Bourdieu’s theory as mentioned above, which is believed to have strongly shaped individual’s thoughts and actions with regards to e-waste through its former decisions affecting recycling policy in Ontario; which has

ultimately had great bearing on society by deeply affecting people's lives at the individual level.

The government in Ontario and Canada is problematic in this case on two counts. It will be argued that the two-tier government in Canada has been problematic for its lack of implementation of a clear policy for e-waste in the province of Ontario, due often to disagreements between the federal and provincial governmental parties; often causing delays and other bureaucratic problems. Worse perhaps still is Canada's poor performance on the world stage in taking a pro-active stance to meet environmental targets. With specific regards to e-waste, the Ontario provincial government's lack of solution to deal with the problem has led to non-existent infrastructure and policy to deal with consumer electronics at end-of-life. The outcome of the government's policy fumbling has likely affected consumer's views of the government in a negative way. With this as a guiding framework, I wish to discover firstly what individuals in Ontario know about e-waste policy and whether they believe the government should be involved with a solution, or perhaps another private institution – as is the case with producer groups and EPR, that could potentially be an initiative taken instead.

It is thus with both the understanding of the situational government structure in Ontario, the issues it has faced with environmental policy implementation and the effect this has had on individuals; as well as an understanding from a set of interview questions respondents give within this type of framework which I intend to conduct the research for this project and help answer the research question.

2.2 Interviews as Mutual Construction of Shared Knowledge

The qualitative interviews in this thesis were conducted in an open and semi-structured manner as it believed to be the best way in which to allow the interviewees to open up and thus obtain the greatest understanding. However, as a result it is highly unlikely to come up with any objective data or concrete evidence that measures specific reasons for hindering or enabling of the use of EPR as a solution to e-waste; only a deeper subjective understanding is the aim here.

I took as much care as possible in not letting my informants know what my stance was on the issue of e-waste, as I truly wanted to keep my influence on their opinions to a minimum. In the act of transcribing other people's stories in this interview, this can be difficult – obviously I did not want to confuse my interviewees' opinions with my own. He aid in overcoming this problem I chose very open questions that would entail the respondents to give the more of their own experiences.

As a qualitative researcher I rely on different approach than would a quantitative one. Whereas quantitative research involves a 'detached' approach to avoid bias (and to achieve more precise data from which to test hypotheses for example), qualitative research on the other hand involves an "immersion into the phenomenon of interest" (Powdermaker, in Firestone, 1987: 17). This immersion will obviously become more

apparent as the interviews go on in this case, similar to what Denzin (2001) refers to as the interview being an ‘interpretive practice’ (Denzin, 2001: 26). In this sense he means the meanings derived from the interview become contextual, improvised and performative (Dillard, in Denzin, 2001: 25). This is what the interviews in this study intend to do – to engage with the individuals to understand their views and context about e-waste through the subjective, improvised ‘stories’ (i.e. their views on e-waste) they tell.

Tripp (1983) goes so far as to say that contrary to naturalistic research – it is a characteristic of social scientific qualitative interviews to be contextually driven, as they interpret facts as “socially constructed and so are subject to the way in which they are ‘held’ by people” (Berger & Luckman, in Tripp, 1983: 32). Therefore this almost negates any possibility of coming up with objective data that could be used to measure or test any sort of hypothesis in this study.

Qualitative research tends to give greater detail (Patton, in Firestone, 1987: 20) which is a strong reason for their use in research. In as much as I didn’t want to influence my interviewees in any way – it has been argued that the interview process is a mutual sharing of information and therefore there exists a mutual sharing of knowledge where influence is inevitable. Similarly, Tripp notes the researcher’s role is to “participate in the creation of attitudes and views by taking an active role in a series of discussions” (Tripp, 1983: 34). Tripp suggests that the relationship between interviewer and interviewee can often be a symmetrical one that sometimes makes semi-structured interviews in fact co-structured in nature, with similar dialogue between the interviewee and interviewer (Tripp, 1983: 33).

2.3 Limitations to Interview Methodology

The methods used in this study will be purely qualitative in nature, and therefore do not make attempts at testing any sort of hypothesis or seek to obtain purely objective data. The interviews seek to shed light and better understand the situational context of what the respondents know about e-waste and their subsequent actions in light of the governmental situation there. The interviews in this study aim to reach a deeper understanding of individual knowledge about e-waste in light of the present policies that exist. Semi-structured interviews are used to gain the information needed in the study to answer the research question. Since this is the case, there are obviously limits to how much this study is able to achieve.

In working with qualitative interview techniques it is important to outline the disadvantages that can occur. Brenner et al. (1985) list numerous problems that can occur during an interview session. For example the face-to-face contact can be firstly intensive and thus problematic it can lead to bias in data given (Brenner et al., 1985: 4). Similarly, if respondents “feel sensitive about topics raised in the interview, the answers, if provided at all, are likely to be invalid (ibid). A third problem in objective data collection can be noted on the respondent side, namely that of memory decay which can lead to false or invalid data (ibid), this is obviously especially a concern when the respondent is

attempting to remember information about an event for example that has occurred years prior.

Therefore based on the above, no attempts at generalization will be made in this thesis, there will only be an attempt to understand the subjective knowledge of individuals about e-waste in the situational context of the state and the present state policies that exist for e-waste. There will be no attempt to identify any sort of establishing mechanism and/or extract any sort of “hard data” that shows a causal relationship between the state and individual behaviour. I only use this as an example in the study to show how it can be a factor. The intent is merely to gain a deeper understanding about the e-waste situation in Ontario based on the answers given by a group of respondents in the interview section.

In addition to using interviews as method for this thesis, e-waste policy documents for the province of Ontario are also used and assessed to gain an understanding of the past and current programs there. The Canada-wide Principles for EPR Report from 2007 (that was the driver for the current Do What You Can program in Ontario) was mainly used; and also additional policy information gained from the Ontario Electronic Stewardship program website.

2.4 Purpose of the Interviews

The purpose of the interviews is to gain an understanding of the subjective opinions and views of consumers in Ontario about e-waste and associated environmental problems. Ideally, the interviews will help to explain whether the public believes EPR to be a working solution to deal with the problems associated with e-waste in Ontario, and what factors lead them to feel this way. The interview section thus consists in this sense of individuals’ opinions and feelings about environmental issues in relation to e-waste and decision making policies that affect them as they exist in the province of Ontario.

Questions asked will attempt to reveal a better understanding of the knowledge about e-waste held by individual and related policies in order to assess whether they believe state policies or private policies would work best as a solution. Do they understand e-waste to be a serious risk? How do these individuals handle their e-waste at end-of-life? What kind of knowledge about policies and programs in Ontario do they have? And finally, do these respondents believe the government is capable of dealing with environmental problems, or do they perhaps trust industry leading the way instead? These questions among others will form the basis to the set of interview questions.

2.5 Respondent Sample

6 respondents agreed to be interviewed, which allowed me to gain an understanding of the views these citizens of Ontario had about e-waste issues and government policy in Ontario. The results from the interviews generally indicated the same result: that there was a general lack of knowledge about e-waste on the behalf of all 6 informants,

therefore I believe the belief of these 6 respondents could give an understanding of what many individuals in Ontario believe in regards to e-waste policy and who should be responsible for a solution.

The sample of respondents came from what Bryman (2008) refers to as a ‘non-probability’ sample, or a sample population that has not been selected with random selection methods (Bryman, 2008: 168). The respondents in the representative sample frame consisted of only 6 respondents from the above descriptions and thus of course can not be considered an exact representation of the Canadian or Ontario population.

The respondents represented mixed socio-economic middle class backgrounds; each of whom varied in gender, age, ethnicity, and employment background. Most were between the ages of 24-30, as these were individuals I had hoped would be heavy users of electronic equipment. Some held governmental positions while others were employed in information technology sectors and others in the health sector. The respondents were all university educated, employed (or had been), and thus representative of a middle class section of the Canadian population.

These individuals were chosen as they were essentially introduced to me through friends and/or family. Some of them I knew – however none who I was acquainted with closely as I did not want to potentially colour their responses or give misinformation. These individuals were chosen because I believed that respondents between the ages of 25-30 would be the heavy users of electronic devices. As Rattle (2008) has pointed out, fashion trends are a large driving force for consumerism in electronics, (Rattle, 2010: 108) and this cohort of respondents I believed would likely be fashion conscious but as well possibly users of more home entertainment devices as well. It is younger cohorts in society that undoubtedly have the ‘need’ to keep up with the latest fashion and trends – which according to Rattle is a strong driving force for consumers’ discarding electronics before end-of-life; (ibid) and thus I believed this would be the best sample of respondents for the interview.

With the idea that these individuals would be more fashion conscious with a desire to keep up with the latest gadgets, I also wanted to ensure my respondents would have enough disposable income to support a ‘habit’ of purchasing new electronics if they so desired. For this reason I chose respondents who had finished their education and were employed in some way and had a steady income.

2.6 Brief Interview Synopsis

The interviews were performed using a small digital tape recorder set in front of myself and the interviewee in a face-to-face setting. Each interview took approximately 12-15 minutes to complete, some interviewees who knew (or thought they knew) much about the subject of e-waste tended to elaborate to great lengths and provide much detail, while others who were perhaps shy or didn’t know much about the subject of e-waste understandably preferred to give less intricate and shorter answers.

A set of 14 questions were chosen initially, with the idea that they would be sufficient in order to obtain adequate information. However soon the need to add or omit questions along the way upon interviewing the next respondent became the norm. In one instance the need to write an email to a couple of the respondents arose in order to ask an additional question that I thought was pertinent to the study. In this way the interview structure was quite open and flexible, allowing for new questions and ideas to be added both on my behalf as the researcher but also on the behalf of the respondents, who were encouraged to elaborate openly about their ideas and responses with very few closed questions.

2.7 Reflexivity in Research

Social research theories of reflexivity are often rooted in structuralism theory that assume that proper reflection of an individual's actions must take place in order to achieve and experience a thoroughly objective view of reality. Grenfell (2008) describes what Bourdieu means by this quite well here: "it is not only the object of research but the very elaboration of the research object itself and the conditions of its elaboration which need to be scrutinized and reflected upon" (ibid: 200). This requires researchers to consider the outside structures in a research setting that could potentially influence the individual and alter his/her thoughts and/or actions.

The original concept of reflexivity is delegated for the researcher, one which "allows social scientists to control and reduce the influence of an important source of discrepancy with regard to knowledge, namely the unconscious failure by most to recognize and control the effects and influence of their own relation to the object of their research" (ibid: 201). It is a small part of this tactic which will be employed in this thesis; by acknowledging and taking into account the failures of the variable of Canadian/Ontario government that has necessarily affected the thoughts and actions of individuals (in this case, consumers). In this sense the research makes explicit the "unthought" structures in Ontario society, as Grenfell explains: "in Bourdieu's view, reflexivity has to be a common and shared effort aiming at making explicit the "unthought" categories, perceptions, theories and structures that underpin any pre-reflexive grasp of the social world" (ibid: 202).

3. Theoretical Analysis - Reflexive Modernization, Risks and Changes in Society

In looking at the concept of 'reflexive modernization', it is important to note that it is an entirely different concept than that of reflexivity in research described above. Instead, reflexive modernity is a concept used to describe a situational context in society that serves to update or oppose the recent era of 'postmodernism', which has arguably become recently outdated.

Modern social progress has developed quickly since the Industrial Revolution, characterized by swift changes in social, economic and political infrastructure that have led to rapid innovations in modern society. One feature of this leap into today's technological world is the pace at which these changes have taken place. Of particular note here is technology in the reflexive modern era, which has emerged strongly amidst the swift changes in the abovementioned sectors. Sociologist Anthony Giddens (1990) notes that "traditional civilizations may have been considerably more dynamic than other pre-modern systems, but the rapidity of change in conditions of modernity is extreme" (Giddens, 1990: 6). Further on this point of rapid change in modern society, with special relevance to the close association with technology, Giddens notes: "rapidity of change in conditions of modernity is extreme, [and] this is perhaps most obvious in respect of technology" (ibid: 6). Reflexive modernity can be perhaps best described as an emergence of large-scale changes brought on by a new era of globalization in today's modernity, and society's response to them.

According to Beck (1995), the concept of reflexive modernity assumes the dissolve of society based on comparison with the previous postmodern era of modernity, showing a transformation in 3 areas:

1. the relationship of modern industrial society to the resources in nature and culture
 2. the relationship of society to the hazards and problems produced by it (which exceed the bases of societal conceptions of security)
 3. the exhaustion of collective and group-specific sources of meaning (such as the belief in progress, class consciousness) of the culture of industrial society.
- (Beck, 1995: 29)

I will promote in particular the second point listed above, and argue that in modern society under the guise of reflexive modernization we have become oblivious to these new dangers, that we have ultimately created ourselves in modern society. Beck believes that a 'societal dissolve' has been increasing for some time, along with the rise of many hazards and political uncertainties (ibid: 30). He notes that these political uncertainties can involve former insurances in society being rescinded, such as state welfare infrastructure aids formerly taken care of by a 'provident state' within rational control – which the era of modernization deemed more important (ibid: 30). Under reflexive modernization the new groups that now hold power are sometimes multinational corporations for example, which often take hold over many functions previously held by the state. This is of particular interest for this thesis as it considers EPR: a popular policy instrument for e-waste that is often used by different non-state actors and groups in society.

3.1 Modern Risks for Modern Society

For Beck, new risks involved in reflexive modernity are essentially a by-product of modernization itself. Beck argues that modernity has been characterized by ascension through eras of pre-industry, industrial and modern society; and subsequently from a

postmodern era to what he terms a 'risk society' experienced today. He argues that humanity has not yet entered entirely into this new era of risk society but is rather on the verge; that we are heading in this direction in the near future. The journey throughout these phases has become more rapid, and the risks we currently face are more numerous, hazardous, inherently different and increasingly man-made in nature: "from pre-industrial to risk society, hazards and accidents are recognized as the products of faulty human decisions (ibid: 78).

Mythen (2004) notes that modern risks in society today; many of which deriving from man-made sources, are not of the same character that were acknowledged in previous eras. In the transition from pre-industrial to risk society, former hazards become displaced by an increase of man-made risks. These new socially-produced risks are characterized largely as being both "more mobile and more oblique than preceding forms of danger" (Mythen, 2004: 18). This can be easily illustrated and understood using the example of modern environmental problems such as Co2 pollution and its disregard for national boundaries. Co2 pollution spreads easily from one nation to another with ease, for example. Beck argues that we have now entered into an era where risks are much more dangerous than previously and that contemporary society is enmeshed in a culture of risk: "contemporary western society is embedded in a culture of risk which has profound impacts on the nature of everyday life" (ibid: 12).

Beck and Giddens have assumed the existence of new risks in society to have characteristics that take the form of problems like environmental risks. They argue that these new risks need to be approached in a new manner; because they often take the form of unintended consequences such as natural disasters that can be sometimes attributed to the complex chemicals contained within pollution sources today, for example. These new risks are more serious threats to society and require increased attention Beck says; highlighting that these issues are generally more complicated and more technical in nature: "the political and economic 'management' of the risks of actually or potentially utilized technologies – discovering, administering, acknowledging, avoiding or concealing such hazards with respect to specially defined horizons of relevance" (Beck, 1995: 20). These new risks seen in modern society today are often so hazardous that they are sometimes beyond the scope of modern governmental states to deal with. Thus, the need for new sources of power to create solutions is needed drastically in many situations.

3.2 Individualization and Dissolve of the State

According to Beck new characteristics of reflexive modernity experienced in modern society can involve a feeling of helplessness and a lack of security from a situational societal or state dissolve experienced by the individual, causing them to react in certain ways; like making sporadic decisions without reflecting about consequences for example. The idea of a cohesive societal dissolve creating 'forced' individualization in risk society in this way is illustrated well by Mythen (2004) here: "as the structural certainties previously provided by governing institutions evaporate, people are pressed into routinely

making decisions about education, employment, relationships, identity and politics. Consequently, in reflexive modernity individuals assume greater responsibility for the consequences of their choices and actions. According to Beck the changing nature of risk is intrinsically wedded to the broader process of reflexive modernization.” (Mythen, 2004: 17).

Characteristics such as increased individualization, state dissolve and increased risk have been described by many theorists who posit that in risk society the characteristics of risks experienced are not only more harmful, but can be increasingly complex and more difficult to combat with traditional methods; such as by way of a ‘provident state’. With the complex risks that state organizations are sometimes not prepared for, new risks become more threatening to individuals and society, and attention from other groups in society – experts, business, NGO, etc becomes increasingly needed. Problems associated with complex risks in reflexive modern society such as environmental problems means an increased awareness and reflection is needed from individuals in society; for their own safety and wellbeing if nothing else.

3.3 New Risks Threatening Nature’s Foundations

According to Richter (2003), new risks in modern society today may threaten the livelihood of many societies more seriously than previously. The new man-made social and political risks sometimes have not existed before and furthermore often threaten the very foundations and fundamentals of society, such as natural resources, and land (Richter, 2003).

This sentiment is also echoed by other risk theorists such as Lash and Urry (1994) who argue that contemporary risks are more serious as they are characterized by increased mobility as opposed to former risks that usually remained localized in one area. They point out a lack of control by the state to properly manage and govern contemporary risks and environmental problems: “global environmental problems cannot be properly regulated at a national level, due to their mobility. In as much as industrial goods-distributing societies were bounded entities; the generation of social ‘bads’ undoes the regulatory power of the nation state. Contemporary risks cross international borders, dis-embedding and unsettling political and economic interests” (Lash & Urry, 1994: 33). This characteristic of new risks in today’s society being more global in scope and difficult to control is a major feature of risks today; and relates to modern environmental issues in society. This relates the problem of e-waste particularly; as the reach of today’s mobile environmental, social and health problems that stem often from technology essentially reach worldwide.

3.4 Modern Risks, Technology & Environmental Problems

According to Beck, some elements of risk are inherent; enmeshed in contemporary society, becoming more serious as time goes on. This can be illustrated by Beck’s

blatant emphasis on environmental issues in much of his work, going so far as to honour them a centralized position in society. As Goldblatt (1996) points out: “the distinguishing feature of [Beck’s] work is to place the origins and consequences of environmental degradation right at the heart of a theory of modern society, rather than seeing it as a peripheral element or theoretical afterthought. Beck’s sociology and the societies which it describes are dominated by the existence of environmental threats and the ways we understand and respond to them” (Goldblatt, 1996: 155). This highlights his belief in the seriousness of modern risks and the need for individuals to be increasingly reflective of their actions.

3.5 Social Trends Driving Consumption

The science and technology sector aids experts a great deal in devising new solutions to new complex environmental problems like pollution for example, but also one which inadvertently generates new and unforeseen threats. As Richter notes, as helpful as research in this sector may be, it remains questionable whether science and technology is able to deal adequately with modern-day risks that threaten modern society such as looming environmental disaster (Richter, 2003). In fact not only is technology often not able to help find solutions to problems, but in the case of e-waste - technological device build-up in society can also be considered a direct cause of these new problems.

The numerous benefits from advanced technologies are arguably juxtaposed with numerous actual and potential risks for modern society, e-waste produced from a build-up of electronic devices in the consumer market. The electronics industry reaps huge financial benefits from sales on the consumer market offering a stream of new devices and upgrades available: smaller sizes and more features, clearer images on televisions, quicker processing power, more hard drive space and memory on computers, for example. The demand for these new features in technological (electronic) devices has pushed consumerism to high levels, with the help of fashion styles and trends (Rattle, 2010: 108). Rattle (2010) notes driving forces such as branding and brand loyalty that create an urge for consumers to discard functioning products before their end-of-life because consumers have a ‘need’ to keep up with the latest models or fads (ibid: 108). This creates a situation of very high turnover in the consumer market creating e-waste.

This quick turnover rate in the consumer electronics market sometimes pushes electronic devices to their end-of-life stages before they are even rendered unusable. Furthermore it leads to abundance of devices taking up valuable space in homes, storage facilities, and landfill sites at home and abroad in developing countries. With increased demand for new products on the consumer market, e-waste is causing detrimental impacts to the earth’s natural resources through extraction, production and pollution in the quest to acquire new raw materials. The issue of e-waste and its consequences can lead to many problems affecting natural resources, and the health of individuals in societies worldwide.

With the idea that has been built up in the above sections; that progression to modern society has created unintended risks with new characteristics that have unknown

consequences like complex environmental problems; I posit that advancements in technology that benefit society can also be considered hindrances. They can be considered hindrances in the sense that the production of devices creates e-waste that can lead to negative environmental and health issues by toxic chemicals being handled improperly by individuals in LDCs, as will be discussed in a later chapter.

With the dissolve of the state coupled with the complex risks in modern society, solutions by non-state groups have been popular for policy development in recent years. In Ontario, e-waste is now being handled by manufacturers themselves; by the corporate bodies who sell electronic products in the province. These non-state stakeholders such as producers, NGOs, experts and others work to create policies that are more suitable for problems in modern society. These solutions - such as EPR in this case, will be described in a following section, before assessing in detail what the e-waste situation is specifically in the province of Ontario in Canada and what if any policies have been involved.

3.6 Societal Reactions to Environmental Problems

This study can be understood from the notion of new risks emerging in society such as environmental problems and state policy triggering a variety of responses in society from both individuals and groups. Modern environmental problems are so intertwined in social structure, “into society’s fundamental way of functioning” (Lundgren, 2000: 320). Environmental problems are often hard to physically see and thus prove (ibid: 321) so society’s reaction to them is often vague, and even non-existent. Likewise, politicians therefore often are very slow in implementing proper policies to deal with these problems. According to Lundgren (2000), the unknown aspect in terms of what will happen of environmental problem solving, only increases the lack of decision making that affect society. (ibid: 321). Issues like this only make the problems worse, as they simply draw out the implementation of any sort of real solution

Individual reactions to environmental problems can be numerous and therefore perhaps more difficult to assess. With individuals in society holding so many different opinions it is no wonder that reactions and notions about what is “right” are different. Lundgren states that the extent that environmental problems are problematic depend very much on who is being asked (ibid: 326). He explains however, that “no sensible person wants the earth to be destroyed” (ibid: 326).

Dryzek (2005) has come up with various responses to environmental problems noticed in society. For example, the more perhaps pragmatic ‘problem solvers’ in society “assume a solution should come from pragmatic environmental policy problem solving adjustments by the state or through market-type incentives e.g. market adjustments and incentives”. (Dryzek, 2005: 15). A more radical approach on the other hand is seen in the ‘green radicalists’, who reject industrial (modern) society and the way the environment is conceptualized therein in favour of a variety of quite different alternative interpretations of humans, their society, and their place in the world, they hold sensational views in many areas such as self-sufficiency by new economic order for example. (ibid: 16).

The rise of many new “green” lifestyle choices is sometimes seen as a response to new environmental problems. The availability of organic foods and natural products in response to issues such as genetically modified foods and concern for chemical use in household products, for example.

The two extremes listed above by Dryzek are only for those who assume the existence of environmental problems and list their two vastly differing solutions. There are also individuals who deny the existence of environmental problems as well; perhaps due to the lack of their visible nature, as outlined above. Advocacy groups for every kind of environmental problem seem to exist today, however with awareness through the internet and media for problems at an all-time high. This creates many new “response types” to problems over time, with new discourses and discussions being created.

The responses to environmental issues and the question of who should be responsible to deal with them is a very subjective matter then, and one which this thesis will attempt to understand better in one area - looking at the problems associated with e-waste in the situational context of individuals in Ontario.

3.7 State Governance of Environmental Problems

The different areas of knowledge needed today to deal with modern environmental risks are vast, requiring involvement from numerous sectors. To overcome this problem to get many countries involved on the same level, state governance and policy to deal with risks and environmental problems has been used on the international stage for many years now. For decades, risk assessment and governance of these new problems that involve the environment have been dealt with through key programs often implemented by the overarching body of the international organization – the UN. Even with the simple task of even categorizing risk among sectors and stakeholders can be problematic - the ‘unknown’ element with environmental risks makes for difficult assessment. Renn (2009) asks a crucial question regarding the issue of characterizing risks: How can one judge the severity of the issue when the potential damage and its probability are unknown or highly uncertain? (Renn, 2009: 226).

To deal with environmental risks, the UN has had success in organizing key meetings starting in 1968 with the Biosphere Conference, that has ultimately flourished into the implementation of modern ideas and policy in environmental management from the Brundtland Commission and the establishment of the UN Programme on the Environment (UNEP), and to the popular term ‘*sustainable development*’ in 1987 (Bridgewater & Bridgewater, 2005: 198). The Global Ministerial Environment Forum (GEMF) was another important environmental meeting held in 2000 in Malmo, Sweden. It was the first of its kind to host the entire world’s Ministers of the Environment to discuss key issues (ibid, 200).

There is little doubt that these large scale state meetings on an intergovernmental level have certain benefits. Numerous problems can arise however when the state gets mixed in with the risks and problems associated with environmental issues. Bridgewater & Bridgewater (2005) note that we are still “very far away from the ideal picture of international environmental governance”, and believe the focus should be on “reducing overlapping tasks between organizations, ensuring a mutual matching of organizational skills among involved organizations, promoting inter-institutional co-operation, reducing competition, building on the established organizational strengths, embracing new knowledge systems and developing the UN system as a learning organization” (ibid, 203) as a goal for experts involved. Much work is to be done, as new problems constantly arise requiring attention from new sources.

Even with the often useful overarching framework of the UN and its many programs that have been implemented over the past 40 years or so to deal with governance of risk and environmental issues, there is still a long way to go. It is for this reason that policy solutions are being developed and sometimes used by expert, non-state groups in society. New private entities such as NGOs are useful in many regards – at very least by further involving the public sector and opening new policy discussions to new groups, as will be discussed in the following section.

4. Solutions: Non-Statist Areas of Power - Governance & Public Body

Instead of being directed by top-down government policies, new approaches are increasingly being developed by new actors in modern society. Multi-stakeholder policy approaches often allow voices to be heard from other parties that don't get a chance, usually with a more open and transparent policy dialogue in order to stop influences of larger organizations' strong-arming smaller groups. According to the Office of Government Commerce website typical governance framework tools for policy have been embraced by many states and promote ideas such as public dialogue, responsibility, management, accountability and control over organizations (OGC, 2010). Jenkins (2008) defines governance as: “any mode of public decision making that helps to advance human welfare” (Jenkins, 2008: 516). Similarly, according to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) website, governance is defined as “the process of decision-making and the process by which decisions are implemented (or not implemented)” (UNESCAP, 2010).

For basic governance models to succeed in a policy and decision making forum it has been argued that public opinion must be incorporated to the fullest capacity; by the public body being incorporated into the decision-making process itself - thus needing to be well informed. If not, the fundamental purpose of the governance model could and should be questioned.

In Ontario, the problems associated with risks linked to e-waste have created a need for the province to choose between many solutions to deal with problems. The most recent solution involves more actors coming into play and an EPR based recycling program; with each actor offering input on an ongoing basis. The program in Ontario is labelled a 'stewardship' program, called 'Do What You Can', and is being led by the manufacturers and producers of electronic equipment themselves, along with other actors involved in the electronics industry in Ontario.

4.1 Corporate Responsibility and Governance

Many of the world's leading trans-national corporations (TNCs) have stepped up to take the lead in devising policy solutions to modern problems; as they hold great power and an increased financial authority in modern society. According to Clausen et al. (2005), approximately 2/3 of the 100 largest units of economic power in the world today are corporations (Clausen et al., 2005: 176). As a result of their dominating presence and in modern society, TNCs are increasingly expected to be more responsible for their respective ecological and social footprints as an outcome of their activities (ibid: 176). Some TNCs are in fact often quite proactive, creating and revising current ideologies such as corporate governance, and corporate social responsibility (CSR), and increased corporate accountability as a result of societal needs for a new way of approaching environmental problems (ibid: 177). TNCs and multinational corporations are however often targeted as being the sources of many environmental problems - so it could be argued that they should therefore take more responsibility in devising solutions that take the public body into consideration when it comes to policy solutions.

4.2 State failure, Civil Society's Role and the Corporate Body

Failure to perform on the behalf of government is not a new issue; according to Rucht (2005) it is becoming more frequent and serious in many cases. He believes the failure of the state involves its inability to properly make and/or implement policy advancements and decisions that are both:

1. Adequate: that is, solve or ameliorate the problems at hand as well as consider and address important consequences of the decision itself.
2. Considered legitimate: that is, they are widely respected or at least do not raise open dissent.

(Rucht, 2005: 220)

Further problems in policy implementation is noted at the international level according to Habermas (1998), who calls the meeting of international bodies to discuss matters on a world stage 'global domestic policy without a global government' (Habermas, in Rucht, 2005: 220); saying he believes they are simply a waste of time with a goal to look out for

each countries' own affairs, without any governing authority to enforce fairness and equity.

Should decision making for policy be devised by other entities apart from government such as civil society or industry? It has been argued by Beck that with the ever-presence of technology and automation in every-day life, modern states must internalize technology in order to preserve power (Beck, 1995: 35). By doing so the state would pursue its usual state goals less and less, becoming a 'technological state' of sorts (ibid). In this sense, the civil, business and expert roles in society become empowered, becoming feasible sources for solutions instead of state-led directives.

Rucht argues that civil society needs first to be established, and only then can exist alongside individuals in society; "in orientation of a common good or, like communities, connected via mutual solidarity" (Rucht, 2005: 229). According to Rucht the nature and role of civil society is a complex one. Based on increased incompetence of the decision making power by many states and societies, he believes one crucial role civil society should play is identifying areas of knowledge where gaps exist, and "perform objective functions such as problem indicators, critics and accusers, as allies in case of conflicting interests between and within governments; as well as lending legitimacy in the context of making and implementing decisions and being sources of advice – to execute and implement sectoral policies" (ibid: 226). These complex functions in civil society require organization and adherence to many rules and moral codes. As a result many non-governmental and civil society groups have emerged with a more formal character and adherence to regulations and guidelines such as in the case of legitimate NGOs for example.

4.3 NGOs

Born out of possible limits to policy making, or limits of the state (ibid: 219), NGOs often comprise knowledgeable, well-intentioned individuals, and are often considered to be of utmost importance when it comes to helping getting voices of smaller populations heard at crucial junctures such as policy development. Increased trust and reliance on NGOs at the international level becomes more necessary for unbiased decision-making and other important issues in political matters. According to Rucht, through the development of NGOs, civil society has been granted greater status recently on the world stage. To illustrate, he lists the two following examples:

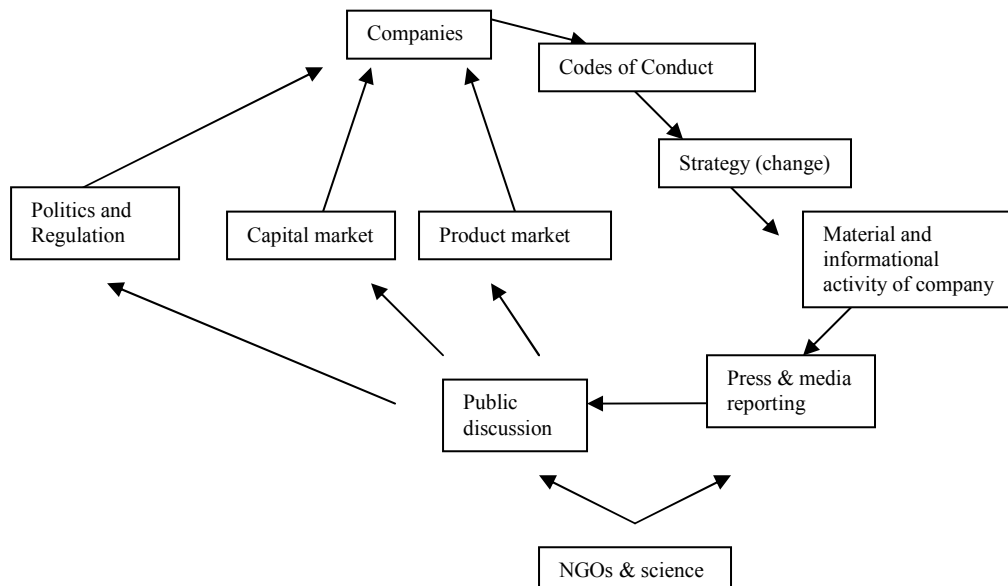
- NGO representatives are granted observer status at conferences and they are being included in international delegations and groups of experts (as of Rio, 1992)
- NGOs perform as initiators and executive bodies in a multitude of projects of international administrations; in official statements, for example by the Secretary-General of the UN and by the European Commission.

(Rucht, 2005: 220)

In many cases NGOs serve as forums for public opinion and debate that bring up lesser considered viewpoints and are often considered a priority in many decision making arenas. Civil society's voice in governance-oriented systems is sometimes considered invaluable to avert potential harm to society, environment, and/or well-being of smaller groups in an international setting.

The Kolk Model below shows how civil society in the form of public discussion is essential and has great influence on the decision making process in a governance-modelled web of agents, with reference to corporations or companies.

Figure 1. The Kolk Model: Civil Society and Governance of Companies



(Kolk, 2000: 78)

The Kolk Model highlights the main actors involved in a governance-led corporate system and shows how information travels between them. After development of potential policies by NGOs and science, all information first travels through the important stepping stone of public discussion and to other groups to create policy. The feedback from these groups and stakeholders soon circulates and feeds back, adjusted by a system of checks and balances.

Kolk's diagram allows us to view these actors in sequence; and depicts how important a governance model for public discussion is as it receives knowledge and influences policy creation and implementation that can change the way businesses operate. Clausen et al. (2005) posit that the model essentially "constructs a link between strategic management of corporations, society and the problem of governance of voluntary initiatives" (Clausen et al., 2005: 180).

Many experts agree that state regulatory power is quickly eroding, leaving in place stronger pillars headed by organizations like NGOs that aid policy and decision making processes. Unfortunately, NGOs have not held a consistent voice in international stage; they were demoted to a type 2 group at the Johannesburg summit, separated from the type 1 main players (Rucht, 2005: 226). Positive historical policy changes to NGO voices are numerous and include the International Whaling Commission, the London Dumping Convention and the anti-landmine campaign (ibid: 227) to cite a couple of examples. If NGOs and civil society hold such a more important position today than previously, the importance of keeping society up to date on policies and regulations could be considered mandatory.

4.4 Public Perception of Risk and Policy Change

A brief discussion on the topic of public influence on environmental regulation may be of use here to add context to the e-waste discussion. As Bernauer and Caduff mention, it can be difficult to change environmental policy through bottom-up (public) measures: “theories of competition in regulatory laxity and public choice theory assume that industry interests tend to dominate over consumer (or public) interests”. In order to stay competitive, firms often choose “laxer” regulations that allow them to increase profits (Bernauer and Caduff, 2004: 104). In Mancur Olson’s ‘Logic of Collective Action’ study, larger groups’ collective action has seen increased success in terms of policy swaying. Publicly involved policy groups in the form of NGOs often focus on issues that firstly are perceived to have a greater risk, and secondly that are more easily assessed through means such as fundraising, (especially if group membership is larger). The more membership and support generally tends to facilitate success in policy change, seems to be an underlying consensus.

According to Bernauer and Caduff, public concerns regarding risk only become relevant and taken seriously in the political world if they are perceived to be a risk at a large scale – which depends largely on the political “problem solving capacity of regulators particularly as expressed by the effectiveness of previous risk management policies” (Caduff 2003, in Bernauer and Caduff, 2004: 104). Exactly at what point risk should be handled and managed can be said to be largely influenced by public perception of it, as public perception and concerns tend to amplify NGO membership and push for stronger regulations of issues (such as environmental risks, more generally) by experts in a given field. When public opinion of environmental risk is strong, NGO membership tends to be higher and taken more seriously (ibid 105). The higher public opinion is, the stronger NGO membership is, as the risk is usually higher and more seriously considered in the political world (ibid, 105) – and presumably easier to enable change that suits public interest.

In the case of e-waste management in Ontario, the understanding of the informants’ opinion of risk vis-à-vis e-waste is of interest for this thesis. Whether the consumer public has some understandings about the current policies in place to deal with e-waste at the present time is a question, which will be addressed through the use of interviews.

4.5 Multi-Sector Groups in Charge of E-waste Policy in Ontario

In the case of e-waste policy and management in Ontario, non-governmental organizations are taking the reins with a program led and operated by manufacturers alongside many of the other stakeholders in the electronics industry in Ontario. Multi-stakeholder and co-operative approaches such as these are useful in addressing issues that involve various areas of expertise, and join knowledge gaps that surpass national borders “between each of the sectors: public sector and civil society”. (Witte et al., 2005: 144). According to Witte et al., multi-sectoral networks are described as “able to reflect the changing roles and relative importance of each of the actors involved in combining resources to solve a particular problem” (ibid: 144). It is these kinds of partnerships are being used in Ontario to deal with e-waste - however with producers seemingly with a heavier hand and more responsibility than other actors.

Before looking at the policy situation in Ontario and EPR; which is largely used to deal with e-waste, it is important to look first at the issues surrounding e-waste on a more general level to obtain a clearer picture. This will provide the needed context for the following chapters.

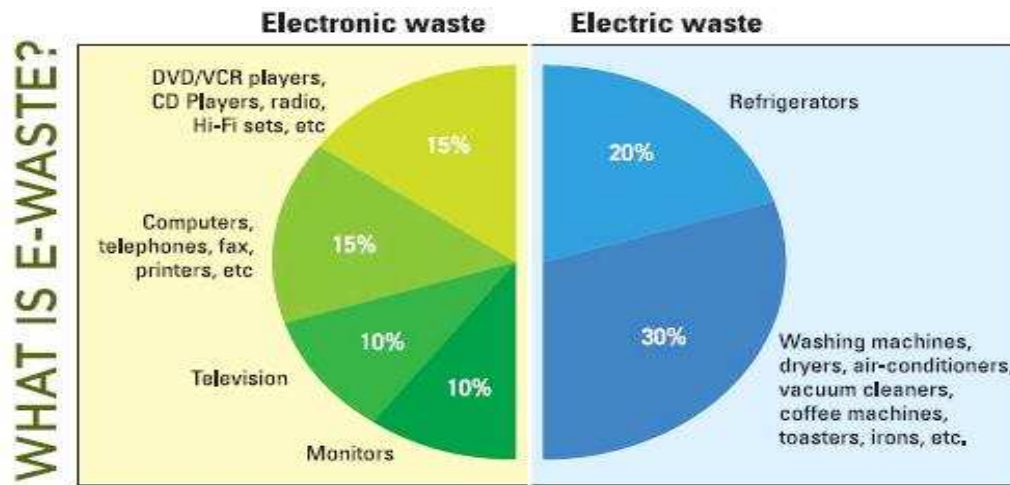
5. E-waste: Statistics and Issues

Problems associated with e-waste occur mainly in more developed countries of the world where forces of consumerism have penetrated fiercely, such as North America and as the member states of the EU; more industrialized countries that produce goods predominantly for export. Many cities in these developed nations have used well functioning recycling programs for many years, but few have had “great” success recycling e-waste. The majority of e-waste policies involve take-back programs in retail outlets; however the majority of these have little control over what is done with the devices once taken back. The obvious choice for many consumers becomes one of discarding the device in the trash with the rest of their household waste for city pick-up.

What exactly is E-waste?

E-waste is an issue that can lead ultimately to many social and environmental problems. It has grown quickly over recent years, and is said to be one of the fastest-growing types of waste. Although the definition is quite vague, according to most definitions any electronic device may be labeled as ‘e-waste’. According to Mahmood (2009) the definition essentially encompasses various devices that are typically seen in the household: “unwanted, obsolete or unusable electronic products such as computers, computer peripherals, televisions, VCRs, DVD Players, stereo equipment, hand cell phones are commonly referred to as ‘electronic waste’ (Mahmood, 2009: 3). The following chart breaks up the various types of devices that comprise e-waste, and gives an approximate percentage value to the sections as are seen in society:

Figure 2. Devices that Comprise E-waste

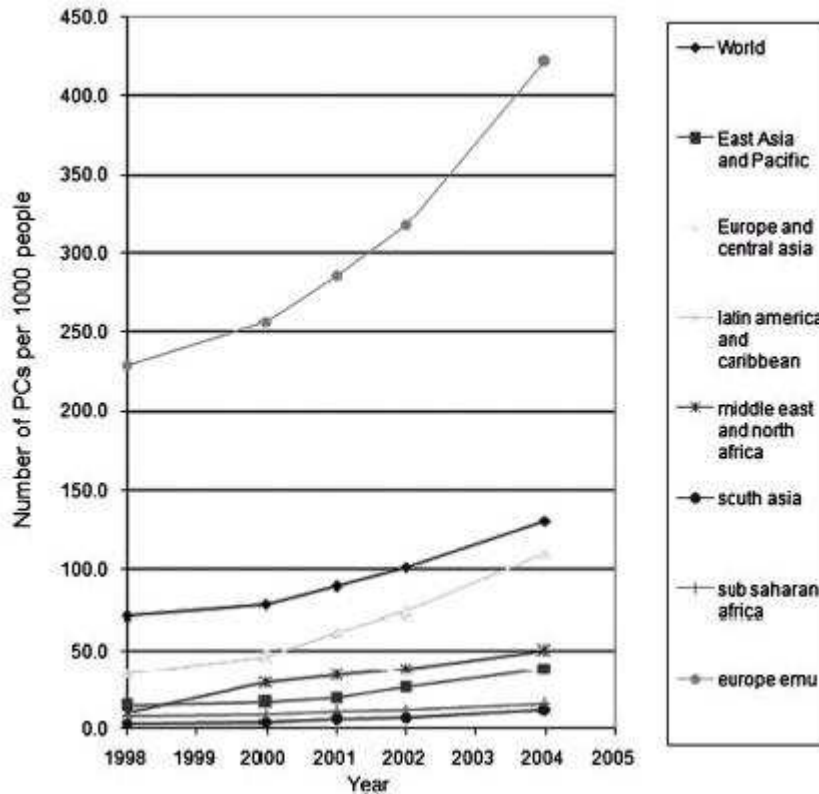


(Frembes, 2009)

5.1 Scope of the E-waste Problem

According to Widmer et al. (2005), the most common variety of e-waste consists of PCs; where approximately 20 million (about 7 million tones) were discarded in the US in 1994 (Widmer et al., 2005: 437). From the nine year period from 1994 to 2003 approximately 500 million PCs reached end-of-life in the US (ibid). This amount of e-waste contains 2 872 000 tons of plastics, 718 000 tons of lead, 1363 tons of cadmium and 287 tons of mercury (Pucket & Smith, 2002: 437). A similar problem exists in the UK, where Goosey et al. (2009) note that “almost 2 million tonnes of e-waste are generated each year” (Goosey et al. 2009: 4). Similar figures are seen consistently looking at many developed countries in the West. The following chart shows the growing problem vis-à-vis computer use per capita by world region, between 1998 and 2005:

Figure 3. Growth in Personal Computers (per 1000 people) by world region since 1998



(Goosey et al., 2009: 214)

In Canada, 34 000 tons of PCs were disposed in 2000; 16 000 recycled, 25 000 reused and 6 000 tons placed in storage (Rattle, 2010: 103). This equates to 81 000 tons of personal computers coming to end-of-use in Canada, some not yet having reached end-of-life (ibid). Rattle (2010) estimates that 14-20 million computers are scrapped each year in Canada; functioning or otherwise (ibid).

If we include all e-waste (any electronic device), and localize the problem within Canada, according to the Recycling Council of British Columbia, the amount of e-waste produced approximately per year is approximately 140 000 tonnes disposed (RCBC, 2003).

5.2 E -waste's Harmful Chemical Makeup

The general physical make-up of e-waste is a harmful and complex cocktail of toxins, chemicals and heavy metals. Typically, e-waste contains many of the following: printed-circuit boards, cables, wiring, plastic casing containing flame retardants, display

equipment, including cathode-ray tubes, batteries and accumulators, capacitors, resistors and relays, and connectors; which all contain hazardous substances (Goosey et al., 2009: 212). The hazardous substances are toxic constituents contained within in various parts of the device – circuit boards and wiring for example, which are of particular concern at the end-of-life stage. Personal computers have been reported by the Silicon Valley Toxics Coalition to contain the largest source of heavy metals, toxic materials, and organic pollutants in municipal trash, superseded only by pesticides (SVTC, 2000). If not treated properly at the device’s end-of-life, the chemicals within can seep out and pollute air, water and soil, and the health of individuals nearby.

The following figure shows the average contents of chemicals contained in one personal computer, and the weight in kilograms of each part if two million were to become obsolete:

Table 1. E-waste Chemical Hazards

Average PC of approx. 31.5 kg contains:		Two million Obsolete PCs would mean:	
7.24 kg	-	Plastics	- 14,427,000 kg
1.98 kg	-	Lead	- 3,962,700 kg
0.693g	-	Mercury	- 1,386 kg
0.4095g	-	Arsenic	- 819 kg
2.961g	-	Cadmium	- 5,922 kg
1.98g	-	Chromium	- 3,969 kg
9.92g	-	Barium	- 19,845 kg
4.94g	-	Beryllium	- 9,891 kg

(Mahmood, 2009: 8)

Irresponsible Solutions: The Landfill

In 2009 it was estimated by the US National Safety Council and researchers at Carnegie Mellon University that approximately 60 million PCs have been buried in US landfills (Royte, 2009: 10), and that “250 million computers will become obsolete between 2004 and 2009, or 136 000 per day” (ibid: 10). Much has indeed been done in the US to treat e-waste in a more sustainable manner, however most unwanted e-waste still ends up in landfills, where harmful chemical leachate can ultimately seep into soil and groundwater, polluting nearby watersheds, threatening to contaminate local communities and damage public health.

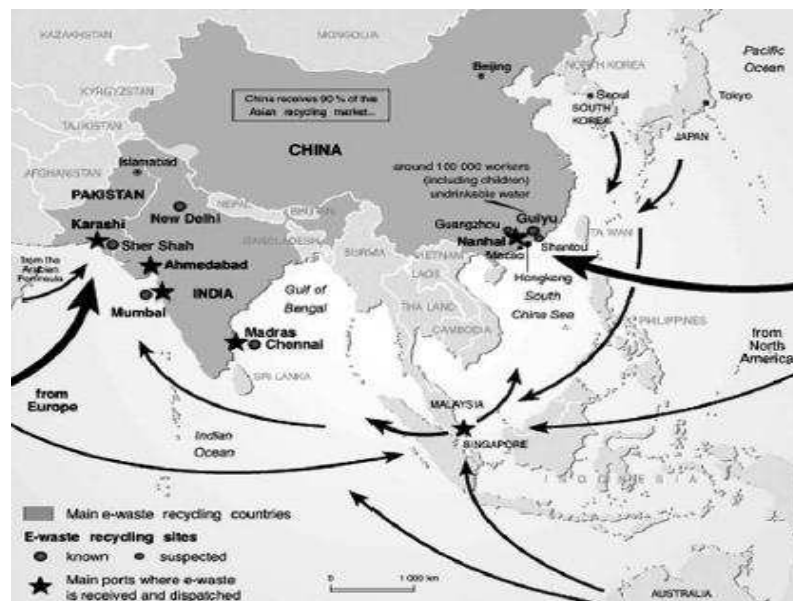
5.3 The Development Perspective: E-waste Shipped to LDCs

Often e-waste is shipped to developing countries for re-use or resale, which is considered a large problem on different levels. According to Derek Stephenson, CEO of Stewardedge, a company hired to sustainably manage much of the waste and e-waste products in the province of Ontario: “more than half of the E-waste in Europe is illegally exported” (D. Stephenson, telephone conversation, 15/04/10).

This illegal shipping takes place despite the recently implemented Basel Action Network (BAN) Waste and Electronic and Electrical Equipment (WEEE) Directive that has been in place within most EU countries since 2002 to help deal with e-waste sustainably by means of an EPR program. E-waste shipped to less developed countries is either resold illegally, or dismantled so smaller parts may be used for other devices. It has been estimated by Environmental Health Perspectives magazine that nearly 75% of the electronics shipped to Computer Village (a second hand, repair market for electronics and computers near Lagos, Nigeria) are nothing more than irreparable junk (Schmidt, 2006: 233); making much of the e-waste recycling business there quite wasteful, in the sense of the time and energy taken to deal with these devices.

The routes that most e-waste takes when shipped from both Europe and North America respectively - and the approximate destinations within Asia are localized mainly at major ports. Well known e-waste routes are found largely in Singapore, Madras in India, Karachi in Pakistan, and Guiyu, China, as can be seen below.

Figure 4. Flow of E-waste From Developed to Developing Countries in Asia



(Schwarzer et al., 2005)

A city of particular relevance in China is Guiyu – the largest center for discarded e-waste area in the world, where 80% of e-waste is shipped in from overseas (Chung, 2010). According to Time Magazine, the region of Guiyu dismantles 1.5 million pounds of junked computers, cell phones and other devices each year (Walsh, 2010).

When e-waste is exported to areas such as Guiyu for stripping and re-sale the copper or gold that is contained in the wires and circuit boards are usually melted off through the use of strong acid baths. This process, often performed in unsafe environments without the use of protective gear (i.e. goggles, gloves and masks) puts workers under a major health risk. Estimates from India too are shocking: “in New Delhi alone, some 25 000 workers – including children – boil, burn or crush between 10 000 tons and 20 000 tons of e-waste annually” (Chopra, 2005: 29). This can result in major health problems for these workers such as severe respiratory problems and other long-term diseases.

These illegal e-waste recycling businesses are successful in some areas and attract many individuals in dire need of work. As Widmer et al. (2005) point out, “an entire new economic sector is evolving around trading, repairing and recovering materials from redundant electronic devices” (Widmer et al., 2005: 438). While it is a source of livelihood for many of the urban and rural poor, with 5 500 e-waste businesses in Guiyu alone according to Time Magazine (Walsh, 2009), the negative trade-off is the severe risks to human health and harm to the environment.

5.4 Localizing the E-Waste Problem in Ontario, Canada

According to Menzies (2009), “each year Canadians throw away 184 000 tonnes of computers, monitors, TVs, DVD players, camcorders and assorted other types of e-waste” (Menzies, 2008). Solutions to deal with e-waste in Ontario have been under scrutiny by critics, as consumerism has taken a strong grip there with massive amounts of e-waste being produced. As one of Canada’s biggest provinces with 13 210 inhabitants (Statcan, 2010), Ontario produces a very large amount of e-waste. According to VanderPol (2007), Ontario produced an astounding 259 000 e-waste items – generated solely in 2004 (Vanderpol, 2007: 14)

Given the severity of the situation in Ontario, in 2008 the province started its own WEEE Directive similar to the one in Europe. Utilising EPR, whereby manufacturers pay for collection and recycling of e-waste from the consumer market at the end-of-life stage, the Ontario program is up and running, but has already run into controversy and is questionable whether it will be able to meet stated collection targets for the province. Before looking at the specifics of the program in Ontario, a brief overview of EPR is needed, described in the following section.

6. Popular Policy for E-waste – EPR

EPR policies and legislation such as the WEEE Directive, according to Van Rossem (2008) have been somewhat effective in maintaining efficiency at a cost-effective and rational manner in some Europe countries, however with mostly overall with disappointing results (Van Rossem, 2008: 9). Its producer-driven framework has been met with success in some countries in Europe, but many questions arise regarding take-back costs associated with e-waste handling.

The WEEE Directive was developed by the European Commission (EC) under which a few different sub-policies exist, all within Europe and with EPR as a framework (Goosey, et al., 2009: 4). The program ensures that the producers e-waste are responsible for the recycling of each of their products (ibid: 4). The directive has had minor success in different member states in the EU depending on infrastructure and current policies. The WEEE Directive as its core ultimately aims to “reduce the volume of electrical and electronic waste consigned to landfill, increase the recovery and recycling of electrical and electronic waste and minimize the lifecycle environmental impact of the electrical and electronic equipment sector” (ibid: 4). The Directive is essentially broader in scope than others that fall under it and is used largely to provide information and educate all involved in the lifecycle of the products (producers, customers, recyclers etc) about recycling and design of products to enable ease of handling at end-of-life (ibid: 4).

6.1 EPR: A Deeper Look and Understanding

EPR places the responsibility to deal with the problem of e-waste in the hands of stewards - consisting of private organizations that organize, and sort (essentially forming a business for their e-waste recycling and reuse). The framework of EPR is one with “a means of creating design incentives for manufacturers, as well as requiring producers to take responsibility for the end-of-life costs of their products” (ibid: 213). The idea is that if a producer designs products with easy-to-disassemble parts and components, the recycling process can be sped up and costs can be saved and passed to the consumer. In this way the producer is also able to design “greener” products, and help conserve natural resources.

EPR for e-waste can entail many different mechanisms with one goal in mind: to curb the flow of unused e-waste. The following chart shows different approaches to e-waste, ranging from mandatory to voluntary take-back programs, to various economic instruments such as recycling and disposal fees - and bans on dumping or improper disposal. It lists some of the mechanisms that have been used to date in many countries in the EU since the implemented of the WEEE Directive:

Table 2. Possible Approaches to EPR and Examples

Type of EPR approach	Examples
Product take-back programs	<ul style="list-style-type: none"> • Mandatory take-back • Voluntary or negotiated take-back programs
Regulatory approaches	<ul style="list-style-type: none"> • Minimum product standards • Prohibitions of certain hazardous materials or products. • Disposal bans • Mandated recycling
Voluntary industry practices	<ul style="list-style-type: none"> • Voluntary codes of practice • Public/private partnerships • Leasing and “servicizing” • Labelling
Economic instruments	<ul style="list-style-type: none"> • Deposit–refund schemes • Advance recycling fees • Fees on disposal • Material taxes/ Subsidies

(OECD, 2001)

6.2 The Solution for Ontario, Canada: Recently EPR-based

According to a report done by the Canadian Council of Ministers for the Environment, Canada ranks as one of the highest producers of solid waste in the world (Canada-wide Principles for EPR Report, 2007: 1). In 2002 over 32.4 million tones of waste were managed in Canada with only 25% of this being recycled or reused (ibid). This statistic has created a need for Canada to step up with recycling policies to deal with waste produced consumed. The Electronic Product Stewardship Canada (EPSC) and the Ontario Electronic Stewardship (OES) are two organizations that are using EPR - involving producers and different actors in the electronics industry in Ontario.

EPSC is an industry-led organization that member electronic companies in Canada need to legally register with before having products sold on the Canadian market. Outside agents and organizations directly involved with EPSC implement standards that producers in Canada have to meet before gaining access to the Canadian retail electronics market. If they are not produced with these standards in mind, the products will not make it on the shelves for retail sale. At present, EPSC and OES are the only organizations in charge of e-waste handling in Canada and the province of Ontario.

Multi-stakeholder approach

By utilizing EPR for e-waste, EPSC is a multi-stakeholder organization that comprises and unites retail, information technology, and consumer electronic companies with a stated goal of “responsible management of the environment and its natural resources, requiring governments, industry and consumers to assume a greater responsibility for

ensuring that the products we manufacture, use, reuse or dispose of have a minimum impact on the environment” (Canada-wide Principles for EPR Report, 2007: 1). The following figure lists the member companies with EPSC, all of whom have a say in organizing the program, and need to ‘pay to play’ so to speak, in the Ontario consumer electronics market.

Table 3. List of member companies with EPSC

Apple Canada Inc.	LG Electronics Canada
Brother International Canada	Microsoft Corporation
Canon Canada Inc.	Northern Micro Inc.
Dell Canada	Samsung Canada
Epson	Sony of Canada Ltd.
Hewlett-Packard (Canada) Co.	Sun Microsystems
IBM Canada Ltd.	Toshiba of Canada
Lenovo Canada Inc.	Lexmark

(EPSC, 2010)

According to the Ministry of Environment, Ontario has recently been very vocal about going through a “green transformation” under the guidance of the Waste Diversion Act (WDA) designed to reduce greenhouse gas emissions, now relying heavily on EPR with an aim to create a zero-waste future for the province (Ministry of Environment, 2008).

6.3 Ontario’s “Do What You Can” Program

After perhaps learning from the WEEE Directive in Europe to see what the unintended side-effects might be, the OES has recently launched the *Do What You Can* program under the Waste Electrical and Electronic Equipment (WEEE) Program as part of Canada’s Waste Diversion Act, as an intended solution for Ontario’s e-waste problem. The program has been implemented by the provincial OES group through the larger governing federal EPSC program, involved many multi-stakeholder groups with a transparency policy to keep information open.

Do What You Can is an EPR program similar to the WEEE Directive implemented in Europe, where according to the OES home page: “companies that make and market electronic products in Ontario are the stewards of OES and are obligated under the *Waste Diversion Act* to register report and pay fees to operate the program across Ontario” (OES, 2010). According to a customer service representative from OES, the program applies not only to manufacturers and producers but also to first importers in Ontario, and the assemblers and franchisers of electronic equipment who all have to pay into the program, and ensure its smooth operation over time (Roxanne Bogle, 04/10/10). It is marketed and designed as a flexible program that is able to change regulations depending on variables that they assume will arise. It is also a not-for-profit program, with the primary framework for the program being EPR, and to “minimize both environmental

impact of a product and minimize ‘economic dislocation’ in society” (Canada-wide Principles for EPR Report, 2007: 3).

With the second phase of the program in place as of April 2010, things seem promising - as the program boasted the capacity to deal with 44 different pieces of electronic equipment at the end of life stage, and set high targets. Hopes that e-waste in the province can be securely collected to meet desired targets with little to no cost at the consumer level, and dealt with in facilities owned and operated by manufacturers in the electronics market in Ontario were set a little high, as the targets for the first year were far short of many predictions.

6.4 OES’s EPR Program Already Falling Behind

It has been recently reported that since the inception of “Phase 1” in April 2009, that Ontario’s OES *Do What You Can* program has unfortunately only met one third of its stated collection target (AHN, 2009). Reasons reported for this mishap lies mainly with the problem that the price paid by OES for devices is lower than what recyclers can earn by selling the devices overseas, thus shipping overseas makes sense from a financial perspective for some. Furthermore, the lack of regulation and clear directives about how to deal with e-waste in general even for those involved in the program currently allows for recyclers to dump the unusable parts in landfills (ibid). Time will tell if the program can recover from this failure and meet targets for 2011.

This current upset is another in a long line of problems the Canadian environmental scene has been met with in recent years. The non-action of the government has had a negative affect on individual consumers’ trust in government to implement pro-active changes in policy to deal with anything involving environmental issues. It is therefore reasoning to assume for this thesis that the outside, objective factor of government structure as a barrier that affects individual consumers’ understandings about e-waste policy. The Canadian government’s two-tier provincial and federal structures, past failures, as well as the generally bureaucratic nature of the state itself act as barriers to policy implementation.

From this point of departure; this thesis takes interest in the following: how does the lack of proper (government or non) programs to deal with e-waste affect consumer understanding regarding e-waste in Ontario? Has the non-existence of a proper program affected their knowledge of e-waste policies, rendering their actions unsustainable (i.e. dumping their e-waste in a landfill site)? How does this affect their views of e-waste and related policies? How does the two-tier federal and provincial system in Canada affect the views of individuals pertaining to policy implementation and general environmental responsibility? Do environmental failures affect individual trust in government for further environmental policy implementation?

The answers to these questions are essentially the guiding framework for the interview section in this thesis. Before delving into the interview specifics, it is essential to look at

the governmental problems that are barriers in Canada: essentially its two-tier federation structure, and the problems government has had in meeting targets and implementing environmental policies in recent years.

7. Government in Canada & Ontario: Potential Barrier to Consumer Knowledge and to a Solution to E-waste

As mentioned earlier in the methodology section, the intention in this study is to seek out not only the subjective viewpoints from consumers about e-waste but furthermore to examine the external and objective structures that play a part in forming people's understandings and actions about e-waste handling. According to Bourdieu, objective structures need to be considered when performing research involving individuals in society. It was of interest in this thesis to try to understand not only the subjective reasons the respondents give their answers but also understand more about a major objective external factor; Canadian government which affected past and present environmental policy in Ontario, and has likely steered individual beliefs and actions about e-waste.

The interview questions used will be based on the objective external framework of government in Canada that has undoubtedly had great bearing on shaping respondent's answers and ideologies they ascribe to about e-waste, environmental problems and policy; and questions regarding EPR in Ontario. It will be assumed that the lack of progress the Canadian government has made regarding policy development in the area of e-waste will affect the understanding of the respondents. The lack of progress and failures in environmental policy in Canada has much to do with the bureaucratic, two-tier federal and provincial structure in Canadian government that has been known to cause delays in political progress in Canada, especially environmentally. Since there has been no program in Ontario for e-waste until 2009 I assume that respondents might not know as much as respondents living elsewhere that has had a program in place for e-waste; and perhaps might then know more about e-waste in general and how to deal with it properly.

7.1 Canada's Governmental Structure: a 2-tier Federation

Canada relies on a two-tier government system of federal and provincial governments; and as a result complicates matters, as this situation devolves power from both groups and further to a third level of municipal level government. This affects decision-making negatively, as the process can become stalled in this type of non-centralized governmental situation. As Roger Gibbins, a Calgary-based political scientist and president of the Canada West Foundation points out in an article in *The Ottawa Citizen*, *The Future of Canadian Federalism*: "federal and provincial governments have become so entangled in each other's business that nobody takes responsibility for anything anymore" (Ottawa Citizen, 2006).

The federal system in Canada deals mainly with affairs that concern the entire country under the leadership of the prime minister; whereas the provincial government makes decisions based also on a democratic system that elect additional leaders in each province. This system can be effective and likely makes good sense in a country the size of Canada; however according to Janice Stein, director of the University of Toronto's International Studies this situation also acts as a major barrier for effective decision making due to powers becoming increasingly atomized and fractioned (ibid). Stein too has pointed to a potentially problematic relationship that exists between federal and provincial parties in Canada as strongly linked to indecisiveness regarding policy issues; for example: “the 2 federal and provincial state powers increasingly seeing one another as enemies rather than partners” (ibid). The situation of warring and feuding political parties trying essentially reach agreements on certain issues certainly makes the process of decision making more difficult.

Further problems associated with responsibility in Canada’s federal system are illustrated by Graham (2006), who notes that from the perspective of governance in Canada, “the accountability relationship between provincial and federal governments has become increasingly problematic” (Graham, 2006: 9). In citing a 2006 Speech From the Throne, Graham goes on to explain that “All too often, the strength of our federation is compromised by jurisdictional squabbles that obscure accountabilities and prevent governments from working together in the best interests of Canadians (ibid: 9). This statement even acknowledges the fact that the federal system is often working specifically against the desires of Canadians, which surely creates a situation of distrust by the Canadian public for the government.

Other weaknesses of the federal system have been outlined as lacking authority in certain areas that when needed – are rendered incapable. A leading Canadian political education web-site notes that the provincial governments are rendered useless at certain junctures when their decisions are needed because a highly federalized state “may not act as a check government power or protect regional interests, due to the fact that most powers (or at least, the most important ones) are given to the central government” (Makarenko, 2008). Makarenko notes that a federal state can strengthen the deep divisions a country has, and furthermore “contribute to ongoing political instability between groups; and paralysis [usually the smaller government] and an inability for government to deal with national issues (ibid).

Possibly the most problematic situation to arise from the strong federal state according to Caron et. al. (2009) is the highly secretive characteristic of decision making for constitutional matters. This bars any sort of outside participation by the public body, rendering their voice useless. As Caron et al. point out: “a major consequence of the hegemony of executive federalism in the business of intergovernmental relations in Canada has been the mostly private character of constitutional discussions and the absence of any meaningful citizen participation for most of the 20th century”. (Caron et al., 2009: 150). This issue has been criticized highly by many who call for much more input by the public body into affairs that are related to public policy.

Finally, and specifically to the environmental scene, the harmonization of environmental matters under both federal and provincial jurisdictions under the Canadian Council of Ministers for the Environment (CCME), has created a ‘policy of proximity’, whereby the “government closest to the problem is in charge of policy regulation and implementation” (Simeon & Papillon, 2011: 14). This practice has become problematic according to many critics as it simply devolves the responsibilities of the federal government down to the provincial ones (ibid).

The situation of a loss of power by the opposition or smaller provincial government leading ultimately to sacrifice of policy implementation and compromise in that region is illustrated by Pierre (2003) quite well: “Local interests are sometimes sacrificed on the altar of federalism. When federal government has more powers, local interests have no priority over national interest. An example where local interest was compromised was in the formation of Canadian federalism, where Quebec province was unwilling to join the central government due to their minority but had to compromise” (Pierre, 2003).

7.2 Canada Generally Falling Behind Environmentally

Canada’s lack of assertiveness in important environmental policy talks has been an ongoing theme and problematic issue since environmental problems began gaining importance on the world stage. The UN Framework Convention for Climate Change (UNFCCC) in Kyoto, Japan in 1997 for one has been considered a catalyst moment and a landmark moment for failure for Canada in the environmental realm. In spite of being one of the first nations to sign the Kyoto Protocol in 1998, there was continued aversion and ignorance by Canada to the protocol in the years after additional environmental bills were being considered. According to the Canadian Broadcasting Corporation article, *Kyoto and Beyond – Canada / Kyoto Timeline* - in adopting Kyoto, Canada pledged to a “2002 climate change plan committing the country to cut greenhouse gas emissions by 240 million tonnes a year by the end of 2012” (CBC, 2007). According to the article, Canada’s environment minister Rona Ambrose in 2006 reported sadly that “greenhouse gas emissions are [in fact] up by 24 per cent – a far cry from the previous government’s commitment to meet a target six per cent below the 1990 levels” (ibid: 2007). This is arguably perhaps due to the non-assertive stance of the Harper government for environmental issues. More recently in an article concerning big business and recycling in Ottawa, Canada’s capital city in Ontario, Maria McRae – chairwoman of the Environment Committee stated that Ottawa Ontario has actually failed to live up to its status as the capital of Canada when it comes to environmental issues, and that it is lagging far behind environmentally in comparison to other nations (Adam, 2011).

Solutions for Canada’s waste collection are devised by decisions made by the provincial government, and as well as the federal Ministry of Environment; a situation which vastly complicates the decision making process. Current legislation for e-waste collection and handling in Canada is now delegated and essentially guided by the EPSC, reuniting relevant stakeholders and forming a producer-led system for e-waste handling, as has been described above. One of the top challenges for environmental sustainability in waste

recycling however, according to Environmental Committee chairwoman Maria McRae is to “build a collaboration of government and big business to find a way to tackle environmental problems” (Adam, 2011), so whether this solely producer-led system will work is questionable; as according to this statement it seems Ms. McRae is already unsupportive of a solution that doesn’t involve government on some level.

The governmental situation has made it so that any state policy related to e-waste has not materialized compared to other developed countries (such as the WEEE Directive in Europe). Having to contend with opposition party disagreements and environmental policies being pushed, denied or backlogged by different levels of government have created a definite factor against implementation of any sound government-run program for e-waste. Priorities for spending and attention are also conflicted between the 2 governments in Canada and take too much time with regards to policy implementation.

Since there has been no real policy to date for e-waste (until the WEEE plan recently), the sample of individual consumers in this study will likely not have much knowledge about the situation in Ontario with e-waste, environmental issues, or EPR policy regarding e-waste management. As mentioned, Bourdieu has been a strong advocate for this train of thought; that in social research methods it is not only is the direct research with individuals themselves that is important, but also the outside structures in society that tend to hold great influence upon the individual: “conversational analysis reads in each discourse not solely the contingent structure of the interaction as a transaction, but also the invisible structures that organize it” (Bourdieu, 1999: 618). As a result, and as mentioned in the methodology of this thesis - the interview process will not only focus on the responses given by consumers on the subject of e-waste, but will also take into consideration government structure in Canada and Ontario, and the lack of success in dealing with environmental issues. In this light, the objective variable of government structure in Ontario is one that has had major flaws with policy formation which will likely affect respondent’s subjective answers, thoughts and actions.

8. Informant Understanding of E-waste

The interviews in this study were primarily carried out in order to aid in answering the research question by gaining insight into individual’s subjective notions on the concept of risk and e-waste in modern Canadian society, their understanding of the environmental problems that exist, and their belief in EPR as a potential solution to the e-waste problem. The questions posed were chosen based on issues concerning risk and to gain a deeper understanding about the respondents’ thoughts and actions regarding e-waste, and EPR use in the province of Ontario.

Interview themes

The questions and subsequent discussions with respondents revolved around 4 main themes that were discussed throughout each interview which that guided my research and analysis on a constant basis:

- Respondent knowledge of environmental problems and e-waste
- Respondent view of production/consumption and risk society, and if they consider e-waste a potential risk
- Respondent view about agent responsibility and a solution to e-waste build-up being led by government or private sector
- Respondent knowledge about the current approach in Ontario to deal with e-waste and trust in the concept of Producer Responsibility as a solution to deal with the problem

In the following section the main themes listed above will be described in relation to the interview responses and the main findings will be pointed out with regards to the responses given; and in some cases quotations used to illustrate the respondent's opinions more clearly.

N.B. The names of the interviewees have been changed in order to respect the respondent's anonymity. False names have thus been used instead for the following section.

Respondent knowledge of environmental problems and e-waste

Interviewees were asked firstly the basic question of what they thought e-waste was. Only a couple of the respondents didn't know what e-waste was, another respondent didn't know but guessed, and guessed correctly. The remaining respondents knew at least of the concept of e-waste.

Respondents were then asked about their general knowledge of e-waste and the problems deriving from it, which revealed that quite a few respondents had very little knowledge about e-waste. One respondent admitted to having much knowledge about "problems deriving from e-waste"; he however knew nothing about the policies related to e-waste specifically in the province of Ontario. This individual considered himself to be an 'aware' consumer - as he admitted to often researching each of his major purchases (such as electronics) thoroughly. This individual builds his own computers, thus I thought he might have considerable insight into policies related to e-waste in Ontario, and had this to say:

"I only buy new devices after researching carefully and only buy occasionally. For example: my recent computer build resulted from 4 years of studying and researching before I committed to purchasing the components for the project." - Mr. Jones

In hopes that respondent' responses might reflect into their actions and/or knowledge about the problem I needed to understand whether or not they were heavy or light users of electronic devices. Most respondents answered that they didn't consider themselves to be heavy users at all, contrary to what I might have thought. A couple of them responded that they were light users of electronic equipment, but most answered that they waited until their previous device breaks before buying a new one.

One respondent replied that he definitely felt that consumerism was a heavy force in society, and specifically thought that it was geared towards men. He felt the urge to buy the new products when they come out on the market but chooses instead to hold off as he finds it difficult to justify spending the money on new gadgets:

“I think there’s a situation of huge electronic consumerism in North America, especially marketed towards men. I admit that part of me definitely “wants” these things but I can never truly justify buying them, I’d much rather spend the money on something else like travelling for instance.” – Mr. Burns

In hopes of getting a deeper understanding of respondent’s actions regarding their e-waste habits, I simply asked about the manner in which they handled their e-waste when it came to the end-of-life stage. This I hoped would highlight whether the respondents knew about e-waste policy in Ontario. Or perhaps on the other hand highlight whether they even knew about improper handling of e-waste that can potentially lead to a host of environmental, health and social problems.

Some respondents admitted that they kept their e-waste in their basement or they gave devices to their brothers or to homeless shelters to be re-used. One respondent said that he essentially felt a fear of bringing e-waste to a take-back shop could result in personal data on the hard disc falling into the wrong hands, and personal passwords for bank files being stolen, for example. Perhaps for the same reason, this same respondent had taken his cell phone back to the company he bought it from; when asked, he did not seem to know the consequences of his actions, such as if this company chose to ship it overseas for example to be taken apart inappropriately:

“The last cell phone I had I took back to Bell World, because they’ll take it and distribute it to whomever...” - Mr. Zanni

Another respondent had used a shop that took back used electronic devices; namely computers, where he had gone before, but didn’t have a good feeling about it due to having heard or seen a documentary about e-waste in India and the problem of related child labour there being a problem.

I was surprised to hear that the individual who had the most knowledge of the problems associated with e-waste - mentioned that barring being able to re-use some equipment in his computer build projects, he will discard of his equipment by placing it in the city garbage pick-up:

“I typically will try to recycle it, sometimes salvaging some of the components out of the product to use in another electronic product. However failing to find a source to recycle the product I place the piece of equipment in the city’s garbage pick up” – Mr. Jones

This struck me as quite an unusual answer, as it seemed that someone with who answered 10/10 for knowledge about e-waste should probably be one who would look into a more

responsible way of dealing with e-waste at end-of-life, such as a take-back shop that might have some sort of guarantee, for example.

Once the interview had gotten underway with a few questions, even those respondents who didn't know what e-waste was – now knew generally what it was, and could likely imagine at what some of the resulting problems with build-up of e-waste might be. I decided to ask the respondents a very open question to get a very subjective and reflective answer; simply: *what they think should be done about the problem of mounting e-waste*. Not many of the respondents had a clear understanding about this question, I assume due to the fact that they simply didn't have the necessary knowledge about the issues involved. Some individuals mentioned that more government legislation was likely needed and/or raising of taxes; whereas another respondent just sidestepped the question entirely, and talked about the problem in general, seemingly in an uncomfortable position with not knowing much about the problem.

Some respondents thought that proper e-waste management would be a very difficult problem to approach due to the strong forces of marketing and consumerism that exist in today's commodity-based society. I was happy to hear that one respondent mentioned they believed that refurbishing products at their end-of-life phase to be the ideal solution; thus showing some keen knowledge on the subject. Another also had some words to say about how difficult a problem it would be to solve due to the quick pace of consumerism and she also mentioned that companies should thus be involved in some way, thus she surprisingly (knowingly or unknowingly) acknowledged an aspect of EPR:

“Equipment should be refurbished ideally but I think the speeds of recycling materials vs. the speed of consumption are probably not very even, so there's probably a long way to go. I think companies should be responsible for how much, and how often they put products on the market and what the products are made of – the material they're using.”– Mrs Vargas

It was a bit surprising that she thought of these ways to deal with e-waste before any others as she was one of the respondents who initially had no idea what e-waste was based on her answer to the very first question in the interview.

First theme quick-analysis

In this first theme of interview questions then, that were meant to introduce the respondents to the subject of e-waste so they would get a feel for the coming questions, respondents expressed a lack of knowledge. It is difficult to attribute this to the external objective factor of lack of policy in Ontario due to government lag on the issue, or whether it is simply due to a poor or unlucky selection of interviewees in my sample. Despite almost all respondents knowing what e-waste was based on the first question, as the second question indicated – many respondents had admittedly a lack of knowledge. I believe this could easily be due to Ontario not having a proper plan to deal with e-waste in previous years however. Additional questions to come that have more to do with government in Canada, responsibility and EPR will be asked to ideally further reinforce this hypothesis.

Respondent view of production/consumption and risk society, and if they consider e-waste an actual potential risk in society

To relate to the former part of this thesis about contemporary society and how the pace of modernization is pushing us towards unintended risks, I asked interviewees to respond to questions about their view about production and consumption in society in order for them to think about how these issues could be related to e-waste and ultimately risk in modern society.

Mr. Jones had apparently “been in the business” of production, and thus claimed to know a lot about issues related to consumption and production in society. Another respondent, Mr. Burns mentioned that he believed individuals in North America are prone and have been wired to simply purchase new products instead of instead repairing our old ones, he said, however that in some cases such as with lifecycle programs at certain workplaces in Canada for example, there is a need for this to happen and that he condoned it in this case:

“In North America consumers are prone to buying new products, instead of repairing the old ones, which simply increases the numbers of discarded products, creating more to recycle. At my workplace they have a lifecycle program where every few years they need to upgrade their computers due to needing to be up-to-date with new technology. As a result they (supposedly) have a recycling program. But the upgrades are never going to end so how to deal with the resulting e-waste is an issue.” - Mr. Burns

Similarly, Mrs. Vargas expressed concerns about consumption in that there seemed to be a new device increasingly on the market to replace earlier models; more so in contemporary society than in the past, she said. She mentioned the problem of naïve consumers in today’s society not ‘knowing how to control themselves’, and she thought they were potentially victims who lacked self-restraint when it came to purchasing attractive new devices.

It seemed that here Mrs. Vargas showed quite a bit of knowledge into the driving forces involved in problem formulation for environmental problems in society:

“We as consumers don’t seem to know how to handle the situation because we always seem to be buying the newer models of these devices - people believe they are ‘required’, and in this sense the equipment is much more disposable. This is probably due to marketing creating a ‘need’ for consumers to buy, buy, buy, and a capitalist desire to make money”. - Mrs. Vargas

It was only Mr. Jones who mentioned ‘new features’ as being a driving force for consumerism.

Mrs. Chatterworth mentioned that what she knew about these issues was brought to her attention from her workplace, at the Canadian International Development Agency

(CIDA) at the Government of Canada. Her work there as an international development officer granted - does not deal with the likes of environmental issues that I was asking about, however her response and subsequently what she knew about e-waste admittedly came from what had been passed to her at work – a YouTube video, with a short cartoon film about production and waste of all sorts in general.

Mr. Zanni had virtually no idea about issues related to production, consumption, and e-waste. He had seen issues on television on e-waste and landfills, but didn't know much about the process behind it that creates much of the problem.

Mrs. Chatterworth mentioned the pressure and need that society feels to buy new products when they come out on the market and the situation of an almost social exclusion that exists concerning individuals when personal devices such as cell phones become out-of-date, due predominantly to factors such as media hype:

“I definitely think there is an environmental risk involved, and that we're “pressured”, or at least I feel that individuals feel the need to constantly be upgrading...I get wrapped up in daily life, and with the media bombarding you with commercials you feel like you need to upgrade and buy more ‘stuff’ otherwise you're not really ‘accepted’ in society. This mentality may not be a problem tomorrow, but will definitely lead to problems in the future.” – Mrs Chatterworth.

Regarding expressing a belief that the characteristic of 'risk' could be applied to e-waste, and thus in the process deem it to be more serious, most respondents thought that e-waste could be considered a risk in society. Contrary to what I had initially thought, few respondents thought there could be a risk link made between e-waste and consumption society. Mr. Zanni thought perhaps an environmental risk could be inherent there, but he failed to make the link between society and environment, and simply said “there probably is one (a risk to society) but I'm just not aware of it”.

The other respondent who thought there was no risk inherent in e-waste for society was Mr. Jones, who immediately said no, he saw virtually no risk, and was quite adamant about it being quite a normal process in the development and progress of society.

“No I don't see consumption to being linked to risks in society. I see it as a part of the industrial development and the continuing progress of civilians in society.” – Mr. Jones

As I expected, all other respondents saw a definite link between the basic concepts of production, consumption and risk in society. Mrs. Vargas was one who noted a link immediately to a health risk coming from prolonged use of cell phones causing cancer (she was in fact the only one who brought this up).

Second theme quick-analysis

In this section, my intent with these questions was to again further understand respondents' knowledge and actions about e-waste was in general by seeing if they

thought the problem to be serious or not. Those who deem the issue serious and as a 'risk' I believed were likely to have a deeper understanding about it. Although these questions were perhaps not as poignant as they could have been, using "softer" terms such as 'consumerism' and 'marketing', they served as a build-up to the more straightforward and to the point questioning that came at the end of the interview concerning e-waste management specifics concerning who should be involved in the solutions.

In this section I was surprised mostly by Mrs. Chatterworth's responses when asked about e-waste, production and consumption in Ontario society. With the problems associated with e-waste having been around for some time, the respondent only knew about the issues associated with e-waste from what she had seen in a YouTube video on the subject, and not from other sources such as media or the current take back program in place in Ontario that deals with e-waste.

Respondent view about agent responsibility and a solution to e-waste build-up being led by government or private sector in Ontario

The third and fourth themes of questions were more specific in nature at finding out the responses that would ultimately help answer my research question - as they were more specifically geared towards finding out respondent's views and understanding of government and/or private sectors. Then secondly the questions sought to preliminarily uncover respondent's views on EPR (without asking at this point, as I thought EPR would be a more 'advanced' topic that should come at the end of the session) by probing whether or not respondents thought private sector could/should be responsible for managing e-waste in Ontario.

These questions were also useful to understand more about the respondent's thoughts about government policy about of e-waste. Questions were aimed at discovering what the interviewees thought about the situation with e-waste in Ontario, Canada and to see where they thought proper policy or legislation should come from: the private sector or from the government side. Due to the problems associated with government in Canada my initial thoughts guided me to believe that many of the respondents would be of the opinion that a private sector plan to deal with the problem of e-waste. As my initial hunch predicted, the initial reaction by two respondents to this line of questioning confirmed this to be the case; Mr. Zanni replied:

"Private sector, definitely. Because governments (in Canada/Ontario) tend to be too slow to react on any sort of environmental issue, I think it should be definitely up to the private sector to deal with the problem. It's too slow and too difficult for new laws to get put through in the governmental system, perhaps due to opposition parties and whatnot." - Mr. Zanni

Mrs. Chatterworth had similar feelings, a belief that a private entity should be in charge of a solution to e-waste in Ontario. She further elaborated and showed knowledge in the

civil society area by talking about corporate social responsibility in the private sector of the economy; she said:

“Definitely private sector because on the government side it takes a while for anything to happen; so yes therefore I definitely see it as a private sector responsibility, especially since they’re the ones producing the problem. Corporate social responsibility should be always come from the private sector, along with support from the government and tax breaks for companies that adhere to corporate social responsibility.” - Mrs. Chatterworth

Another interviewee felt strongly that private companies should have little to do with the take back of electronic devices unless it be for the purpose of refurbishing. He saw no reason for the manufacturers of electronic devices to be involved in the end-of-life; little did he know that most producers have had their own take-back programs in place for years, and that Ontario had recently chosen to go the route of PR for its waste handling.

“I see only refurbishing plans to be adequate for producers to get involved – due to the price of new components and technology for example they could offer some sort of take-back plan...but other than that producers ideally want to make as much money as possible so he didn’t know why they’d bother with PR”- Mr. Burns

Some respondents thought it should be up to both government actors and private corporations to work together to come up with some sort of sound plan that made sense for Ontario.

Third theme-quick analysis

These questions revealed that some respondents, including the one who was employed by the Government of Canada, believed the government to be incompetent to the point that someone else - and in this case a private corporation should be involved. Some people some believed in government’s capabilities, while others not at all. Some believed private sector was best suited as long as government was there as an overseer to make sure the program is run properly. It is difficult to understand whether respondents are basing their answers on the information they have in their minds about the government in general (being dysfunctional) or whether they actually knew enough specifically about the subject of e-waste policy and e-waste in general. Nonetheless, some of the respondents mentioned distrust in government specifically in this and the fourth sections.

Respondent’s knowledge about the current approach in Ontario to deal with e-waste and trust in the concept of Producer Responsibility as a potential solution

These questions were asked in order to gain a deeper understanding of respondent knowledge of the situation specifically in Ontario with reference to policy. Some respondents didn’t know about the industry-led, EPR policy called the Do What You Can stewardship program, recently started in Ontario, and I assumed that respondents would not have heard about this EPR based program due to the fact that it had only just started 2 years before; so it seems little to no marketing has been done to promote the program (i.e.

billboards in the city of Ottawa for example). Furthermore as from the responses I had received thus far in the questioning it seemed even the most basic knowledge about e-waste was generally quite slim. I'd hoped these questions would highlight more knowledge into the respondent's opinions of the basics of how some of the EPR programs work in general, and even some increasingly specific details about EPR and whether or not they agreed with its premise and fundamental theories. But unfortunately I couldn't obtain much information and understanding in these areas.

Mr. Zanni thought EPR could be a move in the right direction for dealing with e-waste; he was apprehensive however that it could be an all-in solution for the problem. He believed that it would however force producers to think about their actions, and create products that were more environmentally friendly in their design:

"I think it (PR) could be a good solution, or at least a step in the right direction. I think it would get producers to think about what they're producing and the impact it would have...thus taking design of the product into consideration – by making the product more environmentally friendly from the beginning." - Mr. Zanni

After mentioning that EPR was being used now in Ontario to combat the problem of e-waste, to which he seemed surprised - he mentioned he had heard of EPR being used in other areas of Canada in other industries, namely in the Alberta Oil sands. After I had explained a little bit about how the program is working in Ontario for electronic devices, he then changed his mind and went from thinking that producers shouldn't be involved at all (as was his opinion in the previous questions) to thinking that producers could have a positive involvement with e-waste handling. However he did express concern with PR and the costs for recovery, recycling and reuse being passed on to the consumer:

"No I haven't heard of PR, but it sounds familiar in other industries like in the oil sands in Alberta; but there it is heavily regulated by the government, taxing the industries for whatever they produce, so in that respect then yes. I think a problem is often that the costs ultimately get transferred down to the consumer, so how to meet the client's needs while not increasing costs is an issue I think." - Mr. Burns

Mr. Jones was quite critical about private corporations dealing with policies for e-waste, saying that he thought anything that has to do with environmental issues in policy should *only* be dealt with by government. He believed that lobbying on the behalf of private companies could make a PR policy or e-waste legislation fraught with complications and that contrary to the other interviewees' opinions, he said that private enterprise policies are often the ones that take longer:

"Anytime you involve private enterprise it's going to take a long time and it will be full of issues that result from each corporation doing their lobbying. I have had lots of experience with this process. There is always a compromise that is in favour of private enterprise." – Mr. Jones

Fourth theme quick-analysis

My findings from this more specific set of questions were essentially that some respondents have heard of EPR in general, but as expected, some interviewees understood very little about e-waste and the organization for stewardship that is taking the initiative to deal with e-waste in Ontario and in Canada. Nor had they heard of the program that has been recently (Phase 1 - April 2009) in place to deal with e-waste in Canada let alone in Ontario.

Despite not having heard of the situation of producer led programs for waste in place in Ontario, other respondents such as Mrs. Vargas thought that a PR led program would potentially be a good initiative, and that government could simply step in if and when needed.

Another respondent thought that private enterprise being the key holder could be a good initiative due to the problems Canada has seen on the world stage with issues related to environmental policy; citing Kyoto as a big problematic example of meeting hard targets set by government and world leaders. Thus he thought that contrary to his previous stance of producers not being involved to thinking it would be a decent idea, once I had explained it to him. His mentioning of Canada's incompetence on the world stage and the difficulty Canada has had in meeting environmental targets.

8.1 Comparing, Contrasting & Addressing the Research Question

This section tries to assess the most important points from the qualitative interviews process concerning e-waste and related policies, and puts information into context that relates to the research question addressed in the following section.

The general outcome of the group of interviews was more or less indicative of a small sample of consumers and their opinions and knowledge about the concept of risk, e-waste and the policies concerning e-waste in Ontario, Canada. Their views were somewhat mixed, although in regards to the scope of knowledge about the situation in their own province of Ontario – in general most respondents did not have the knowledge that I would expect out of a chosen sample population, which was indeed surprising. The respondent's responses generally indicated firstly a serious lack of knowledge about e-waste and the current EPR policy to deal with it in Ontario. Secondly, the responses indicated a distrust and ambivalence regarding the capabilities of the provincial Ontario government and/or the federal government to do anything about e-waste in Ontario. Reasons given by a couple of respondents were – as was expected, based largely on prior fumbling on the world stage and at home due often to juggling responsibilities between the provincial and federal parties. Therefore this reasoning has seemingly been a main barrier to implementation of e-waste policy in the nation's capital of Ottawa and all around Ontario, and further on moulds individual actions and ideas about social subjects that go on around them.

The main finding from the interview process was that it strongly seems there to be unclear knowledge on the behalf of Ontario consumers when it comes to the general concept of e-waste. This could easily be considered a driving force for the lack of competent action on their part when dealing with their end-of-life devices, as the actions and beliefs expressed by many of the respondents during the interview process indicated care for the environment when dealing with electronic devices was rarely taken into consideration.

According to most interviewees the reasons for their distrust in government and thus knowledge gap include the lack of a sound program in place in Ontario to deal with consumer e-waste as well as concrete take-back programs – the EPR program that is in place in Ontario now is not being used well enough, with targeted collection figures well below the initial forecast as mentioned above, and as well the lacklustre performance of Canada on the world stage environmentally. Furthermore the program was not well known by many respondents – therefore it seems that information on the program has been sparse at best from a marketing perspective.

Respondents generally were not sure who they thought should be responsible for the implementation of a solution to the problem of e-waste in Ontario. This further highlighted the interviewees' lack of knowledge in regards to the issue. In some cases they indicated that they believed government should be the only group involved, but in some cases once they found out Ontario had already implemented an EPR program in place many of them changed agreed that this was the right path to follow, (indicating an inability to choose a specific answer initially). Some thought that a producer-led solution was a good idea but would ultimately fail without some government assistance.

8.2 Discussion and Revisiting the Research Question

This thesis seeks to determine whether consumers in Ontario Canada think EPR would be a good fit as a solution to the relatively new problem of e-waste build-up. The intention with the interview section has been to understand more about the knowledge consumers have about e-waste in Ontario and to understand whether they think EPR could be a good fit to tackle the problem. As such the guiding research question for the study has been:

To the degree that environmental risks in modern society at least partially stem from the physical build-up of electronic devices, thus creating problems associated with e-waste; do consumers of electronic devices see Extended Producer Responsibility as a possible option to overcome the problem in Ontario, Canada given the current situation there? Why or why not?

Firstly, in addressing the research question above, an issue immediately presents itself: that the individuals in the sample in this thesis were not well enough informed on the topic of e-waste - not to mention EPR. In this sense – some with such a lack of understanding of even the basic premise of e-waste and the basic issues related to EPR, it is definitely impossible to say based on this study whether consumers in Ontario believe

EPR could be a sound solution to the problem of e-waste. However, the respondents however generally expressed distrust with government capabilities in Canada due to previous slow implementation of important polices and as well a lack of action on important target and initiative driven protocols such as Kyoto and recently the Cop 15.

Ultimately some respondents thought EPR could be a good option based on the poor track record of the government. However, individuals had very little understanding about the program in Ontario as is being used, which leads me to believe that this program is flawed from a marketing perspective at very least. If more knowledge about the program was known to them through marketing and advertising, then perhaps their confidence in EPR might have been a little stronger. Thus pertaining to whether consumers believed EPR to be a good option to overcome the problems derived from e-waste, apart from the vast lack of knowledge - there were mixed and conflicted opinions and subjective understandings. This results show that this study needs further investigation with different methods to develop a stronger data and investigate a stronger causal connection between these individuals' beliefs vis-à-vis state policy.

However, some respondents seemed to agree that EPR could work and was generally a good idea. Therefore, in this case, the answer to the first part of the research question: *“do consumers of electronics see Producer Responsibility as a possible option to overcome the problem in Ontario, Canada given the current situation there?”* is somewhat at least, ‘yes’.

Due to problems with the Canadian government in devising solutions to many environmental problems, some respondents thought that another entity such as a private business could be involved with of policy to deal with e-waste. In other words, since government has failed in this area, many respondents believed that private business should be involved to pick up the slack. Most of the respondents mentioned either the past failures of government in the environmental realm, or the complex bureaucratic structure of the provincial and federal system in Canada as being a barrier to swift policy implementation in any sector of Canadian society.

9. Conclusion: Lack of Knowledge

The advance to modern society has been argued to have brought forth many benefits that we all enjoy as individuals in contemporary society, but it has also brought with it many unintended risks. The characteristic of what constitutes a current risk in today's society has made it necessary to adapt, finding new ways to overcome new problems to these new risk characteristics. The new traits in today's modern society are characterised by increased individualization involving a lessening of state aid and control, amounting to an essentially increased reliance on non-governmental expert roles to solve societal problems. The current risks in society are more often than not ‘man-made’, such as environmental problems characterized by increased mobilization ease of movement, and danger. New risks have penetrated and plagued modern society to such an extent that it

has been argued that we in fact live in a ‘culture of risk’ that permeates directly and increasingly affects our everyday lives.

E-waste is just one new environmental problem which we are faced with today. With the many advances in technology combined with forces of consumerism at an all time high, e-waste build-up creates social, environmental and developmental problems for many groups in society through improper handling and/or recycling of toxic substances in an unsafe manner. Different policies to deal with e-waste are currently used in various parts of mostly the developed world, but none with what could be called a ‘strong’ success ratio. EPR as an industry-led policy to deal with environmental risks is being increasingly used worldwide in dealing with the risks caused by build-up of electronic devices. How exactly to manage e-waste properly invariably involves knowing the complex amount of chemicals within the devices being recycled, thus in this respect the reliance on producers to deal with these devices at end-of-life perhaps does make much more sense than a government-run program that might hold less knowledge about the product. At the policy level however and indeed in practice, EPR has shown to have many flaws that still need addressing. It has been used in Europe and now Canada’s WEEE Directives to be an alternative to many of the state-run programs to date, and arguably one of the most successful ways to deal with e-waste despite the drawbacks and complexities seen so far. The program in Canada is not however performing up to par and meeting desired targets currently, as especially the program in Ontario has shown; but perhaps with time this can be ameliorated, as the program in Ontario is flexible and room for changes have been designed in to the projects plans.

In this study, individuals in Ontario have been interviewed in order to primarily understand more about their knowledge on the subject of e-waste subjectively and also in relation to the meta-theme of government policy about that influences and plays a strong part in their knowledge. The use of individual consumer knowledge for this study was essential in hopes to answer the guiding research question – however unfortunately – as stated, not enough information and knowledge about the current policy for e-waste in Ontario existed, which has led to an assessment that more needs to be done to understand the stronger links and relationship between policy and consumer behaviour in the e-waste area.

The Ontario EPR program for e-waste, *Do What You Can*, run by the OES is no longer in its infancy, now having reached 2 years from its inception. Individual consumers in the province of Ontario still however continue largely to deal with their e-waste in irresponsible manners. Such little knowledge about e-waste existed in the sample of consumers utilized for this thesis that it was impossible to achieve a clear understanding as to who consumers thought should be in charge of a solution to e-waste with regards to policy. It was clearer however that some respondents believed at least the entire responsibility should not be run by government, as the reputation with the problems it has had in the past are representative of just how long policy measures can take and to exactly what effect.

If a solution for e-waste is to be industry-led it seems that civil society needs to be involved to a greater degree, as many government-run programs have done very little to involve the public different levels. More research into individual consumer habits is needed. Complexities regarding the intricate EPR-based policy initiatives such as the one in Ontario have been met with mediocre success in Europe, and perhaps need simplifying in order to boost facilitation with programs. In addition it seems many other problems need addressing as well in order for the similar program to be run successfully in Ontario and ultimately find a proper solution to the e-waste problem.

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