Industry Stewardship Programs for Waste Management in Manitoba, Canada: An Evaluation

By

Ms. Sukhmanbir Kaur Bajwa

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Clayton H. Riddell Faculty of Environment, Earth, and Resources

Natural Resources Institute

University Of Manitoba

Winnipeg

Abstract

The present study is an evaluation of the Industry Stewardship Programs' (ISPs) performance and effectiveness over a 5-year (2011-2015) period in the Province of Manitoba. The specific objectives of the study were: i) to develop an evaluation framework for the assessment of program performance and effectiveness; ii) to examine the process of target setting, accomplishments in relation to targets, and the barriers and the opportunities for achieving them; and iii) to examine options for improving program performance to formulate recommendations for Manitoba's industry stewardship programs.

Required data were collected by reviewing 5-year annual reports and through 15 key-informant interviews to determine the programs' effectiveness, barriers and opportunities in program delivery. The findings indicated that the efficiency and effectiveness of waste management programs are highly dependent upon the convenience and awareness of them. The operations and collection of materials regarding each program could be improved further by setting clearly legislated waste targets, improving monitoring and auditing, and expanding programs in and to northern communities.

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Abbreviations

CBCRA – Canadian Beverage Containers Recycling Association

CCME – Canadian Council of Ministers of Environment

EHF – Environmental Handling Fee

EPR – Extended Producer Responsibility

EPRA – Electronic Products Recycling Association

HHW – Household Hazardous Waste

HPSA – Health Products Stewardship Association

ICI – Industrial, and Commercial Institutions

IFO – Industry Funded Organization

ISP – Industry Stewardship Programs

MARRC – Manitoba Association of Resource Recovery Corporation

MMSM – Multi-Material Stewardship Manitoba

MSW – Municipal Solid Waste

NGO – Non-Government Organization

OECD – Organization for Economic Co-operation and Development

PRO – Producer Responsibility Organization

SOA – Special Operating Agency

TRP – Thermostat Recovery Program

WDO – Waste Diversion Ontario

Chapter 1

Introduction

1.1 Preamble

Manitoba Sustainable Development, a department of the Government of Manitoba, provides a number of waste management programs in partnership with the private sector and other organizations within the province. One set of activities has a focus on Industry Stewardship Programs (ISPs). Annual Reports and Work Plans are submitted to Manitoba Sustainable Development by each of the twelve operating Producer Responsibility Organizations (PROs) that deliver related programs. The present thesis research is grounded on the need for and an opportunity to evaluate the ISPs in the final year of a five-year (2011 -2015) work-plan based cycle. For the period 2011-2015, ISPs were overseen by the then Green Manitoba, which was a special-operating agency within Manitoba Government.

1.2 Background

A major challenge communities around the world are facing is the issue of safe management of wastes. Long-established "safe" management of solid wastes is defined as disposing of wastes in landfills. However, landfills pose long-term negative effects on the environment with the release of toxic substances into the environment; also, many recoverable products are lost, which is aberrant to the goals of sustainability (Nova Scotia, 2008). To meet this challenge, renewed waste reduction efforts that focus on reducing the amount of solid waste generated and increasing diversion to recycling, reuse and recovery are being adopted in many parts of the world.

Canada has the third largest ecological footprint in the world (Wilson, 2004), as people of this country "generate one of the highest per capita volumes of solid waste" (McKerlie, 2006). The amount of waste sent to disposal in 2010 was 25 million tonnes, and Canada is 17th in regards to waste generation based on international rankings of the OECD) (CCME, 2015). Despite efforts by

all levels of government over the last three decades, waste generation levels in Canada have continued to rise. With increases in urbanization and a shortage of suitable landfill sites, the costs of waste management is a major challenge being faced. In response to the continual increase in the amount of waste to manage and the rising cost of doing so, Extended Producer Responsibility (EPR) has emerged as an alternative approach to landfilling that has been the subject of extensive discussion in Canada for some time.

The OECD defines Extended Producer Responsibility as "an environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product's life cycle" (OECD, 2001, p. 18). This concept shifts responsibility upstream in the product life-cycle to the producers and away from the municipalities and other levels of government, thus providing incentives to them to incorporate environmental considerations in product design and manufacturing. EPR and product stewardship arrangements operating across Canada are approved by the provincial governments. Most of the programs in operation are, however, industry product stewardship programs, they are not EPR based programs. In contrast to EPR, ISPs do not target producers specifically, but rely on other stakeholders, including consumers and the vendors to pay and collect levy's to help pay, or pay fully, for waste management programs (Nicol & Thompson, 2007). In Canada, one such corporation is Waste Diversion Ontario (WDO), which regulates waste diversion programs in the province. To date, WDO is delivering four programs (Blue Box Wastes, Used Tires, Waste Electrical and Electronic Equipment, and Municipal Hazardous or Special Waste) through Industry Funding Organizations (IFOs) (Waste Diversion Ontario, 2012). In this regard, Inter Group (2013, p. 6) explains that:

> *"The approved stewardship plans form the commitment of the program to deliver services in compliance with the provisions of the plans and the regulation. Each stewardship plan*

include provisions for performance reporting. While the stewardship plans and regulation are different in each jurisdiction, the program recognizes there are advantages to a coordinated and harmonized approach to performance reporting where feasible and appropriate."

Sustainable Development Manitoba's involvement in waste management and recycling activities in the province has emphasized public awareness programs to encourage participation in recycling. Through engaging Manitobans in recycling programs, Sustainable Development aims for supporting a high quality of life to the residents of Manitoba and to design stewardship programs that are economically appealing and environmentally sustainable (Gov't of MB, n.d.).

ISPs are now delivered by twelve PROs in Manitoba established under the *Waste Reduction and Prevention Act* (WRAP Act) and associated regulations & guidelines geared towards reduction and prevention of waste in the province. The key features of ISPs monitored/regulated by the Province include: the amount of waste material collected, the number of collection sites, partnerships with municipalities, collection events in remote and northern communities, recycling, level of public awareness, number of stewards, processing and recycling in compliance with pollution prevention and the 3R hierarchy (Gov't of MB, n.d.). For example, the WRAP Act allows the beverage industry to collect a 2 cent levy from Manitobans on all beverage containers, which funds the operation of the beverage containers recycling program. Stewardship programs may also be delivered by organizations that are national in scope (such as the Canadian Batteries Association responsible for used batteries collection).

1.3 Research Purpose and Objectives

The purpose of this research was to assess Manitoba's Industry Stewardship Programs through analyzing available secondary data, interviewing stakeholders, and analyzing primary data for indications of improving performance.

The specific objectives of this research were:

- to develop an evaluation framework for the assessment of program performance and effectiveness;
- to examine the process of target setting, accomplishments in relation to targets, and the barriers and the opportunities for achieving them; and,
- to examine options for improving program performance to formulate recommendations for Manitoba's Industry Stewardship Programs.

1.4 Summary of Methods

The research methods used for this study involved both qualitative and quantitative approaches. In qualitative research for evaluation purposes, data are collected and analyzed from detailed, open-ended interviews with key-informant participants, and from published and unpublished documents (Patton, 2005). The quantitative research (document review) included detailed examination of the 5-year program plans and the annual reports submitted to the provincial government. Annual reports prepared and submitted by each PRO revealed information about the operations carried out for collecting and diverting household waste in Manitoba. The data extracted from the annual reports are presented in the form of a matrix in Chapter 4 to provide an overview of the ISPs in Manitoba.

The document reviews examined and identified the key performance indicators for the evaluation. The key performance indicators selected were discussed and verified by

government officials and my research committee members to ensure that they were appropriate to evaluate program performance. The data related to the waste targets in a 5-year work-plan based cycle were presented to government officials. The discussion session after the presentation helped me to understand the ISPs better. The discussion also helped me refine and further plan the interviews with the PRO participants.

In addition, the detailed evaluative research involved conducting interviews with key-informant participants. The participants for interviews were selected from two different categories – PRO operators and PRO clients. The assessment process involved comparing the views of respondents from the two separate groups, based on their experience and knowledge of the subject matter related to waste management in Manitoba.

1.5 Organization of the Thesis

This thesis consists of a total of 6 chapters. Chapter 1 offers the background and introduction of the research purpose and objectives. Following this introductory chapter, a review of the literature regarding waste management and ISPs in Manitoba is presented. Chapter 3 provides a detailed description of the research methods. Chapter 4 includes the data analysis and results. Chapter 5 consists of a discussion of the research findings in relation to the literature and research objectives, and Chapter 6 offers a summary, conclusions and recommendations.

Chapter 2

A Review of the Industry Stewardship Programs (ISPs): Their Evolution and Evaluation

2.1 Introduction

In Canada, ISPs are waste management initiatives leveraging private sector expertise to achieve public goals related to post-consumer household waste (Lifset et al., 2013). Under the current ISP model, efficient use of resources is promoted through the involvement of the private sector in the whole system. The private sector forms a major part of the system and aims to reduce the role of government. The literature review in this chapter attempts to provide a detailed description of the transition of waste management programs from the government to the private sector. Post-consumer household waste is regulated by government and managed by industry funded organizations both financially and mechanically. This attempts to shift the burden from government to industry.

In this chapter, I attempt to review the process of waste management in Manitoba. In Manitoba, regulations exist for managing different types of obligated materials. For the period 2011 - 2015, these waste management regulations were overseen by Green Manitoba, a Special Operating Agency of the Government of Manitoba. All household waste management initiatives were reported to Green Manitoba for the period 2011-2015. A review of the pertinent literature here has a focus on these programs to illustrate the waste management model in Manitoba, which is termed EPR. These programs are described in the following section.

2.2 Extended Producer Responsibility (EPR) and Product Stewardship

The ideas of "Extended Producer Responsibility" and "Product Stewardship" are often outlined differently, although both comprehend the same primary goal (Lifset et.al 2013) of the sustainable management of post-consumer waste (Wagner, 2013). EPR can be understood in terms of its scope as extending the responsibility of the producer towards the manufactured product at its end-of-life. The main difference between EPR and product stewardship programs lies in their funding mechanisms.

In Canada, both EPR and product stewardship models are implemented in waste diversion initiatives (Environment and Climate Change Canada, 2013). The principle of EPR is an approach of shifting the responsibility of product management at the end of life-cycle, which seeks to decrease detrimental environmental impacts (Lindhqvist, 1992). The driver behind the concept of EPR is to encourage manufacturers towards eco-friendly designing of products (Brouillat & Oltra, 2012), and shifting the financial responsibility from municipalities to the producers and consumers. On the contrary, product stewardship programs usually do not allocate financial responsibility to producers by extending management of products throughout their entire life cycle (Nicol & Thompson, 2007) by sharing responsibility among other participants, such as suppliers, retailers and consumers (Product Policy Institute, 2013).

Waste diversion programs implemented by provinces across Canada were initially designed as product stewardship programs. EPR Canada has been formed as a not-for-profit association delivering provincial and territorial desired environmental outcomes. EPR has become a widely used environmental instrument for the management of end-of-life products (EPR Canada, 2016). In response to waste diversion programs, different policy approaches were adopted by each jurisdiction across Canada. For example, in Ontario the blue – box program is 50/50 industry/government funded, in Manitoba the blue-box program is 80/20

industry/government funded and in British Columbia the blue-box program is 100% industry funded. Depending on waste categories and local circumstances, EPR programs differ across different jurisdictions of Canada. In the context of the present study, the focus of the research is elaborated in the following section.

2.3 Evolution of Industry Stewardship Programs (ISPs) in Canada

In 2002, Statistics Canada reported that on average Canadians generated 383 kg of household solid waste per capita, with an increase of 39 percent since 1998 (McKerlie et al., 2006). Such an increase in waste levels generated immense pressure on municipalities and local governments to manage their household wastes. As higher levels of waste were generated, financial responsibility increased; hence, the expenditure on waste management in Canada exceeded $1.5 billion in 2002 (McKerlie et al., 2006). At this stage, policy makers and economic agents looked for various policy options and approaches, including one that facilitates waste management by providing incentives to the system.

From studies conducted on experiences of European Union implementation and success in waste management initiatives, EPR evolved in Canada (Hickle, 2013). The governments recognized the importance of transferring the financial and operational responsibilities for managing waste systems to producers to achieve further efficiencies (McKerlie et al., 2006). The responsibility of managing waste at the end-of-life was transferred to the producers. Many pioneer companies were motivated to participate in adopting the EPR model for collection and recycling. But these voluntary participations were recognized to be insufficient to meet the desired goals (Hickle, 2013). The primary focus of these voluntary participation approaches lacked reporting practices and government intervention; however, they encouraged free-riders and the self-interest of improving public image and increasing market shares (Quinn & Sinclair, 2006). To ensure a level playing field for producers, Canadian

provinces developed and implemented producer responsibility measures for a wide range of products (Hickle, 2013). Subsequently, all the ISPs have been regulated and implemented at the provincial level, making Canada a global leader in terms of applying EPR to the broadest range of products. Given the reach of EPR, it has been serving as a transformative tool for transitioning waste management from a local government responsibility to brand owners and consumers (Hickle, 2013).

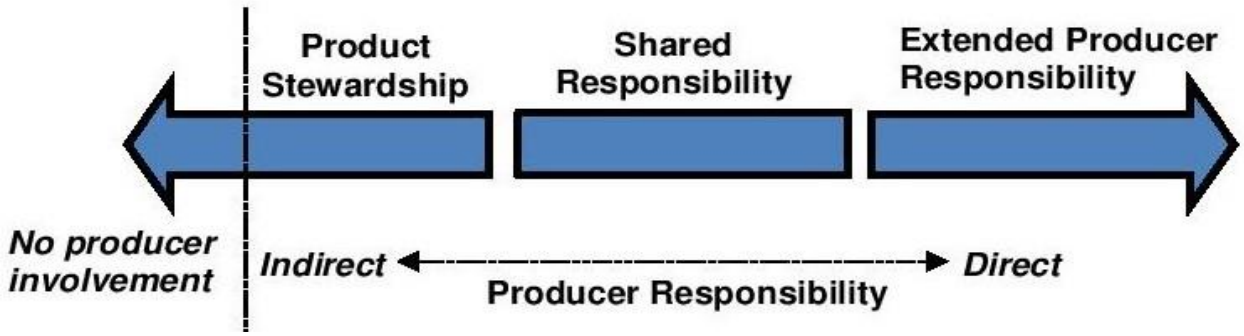
Under the context of EPR, jurisdictions have legislated waste reduction and recycling targets for most of the EPR programs; however, different targets might have been set through stewardship programs if government had instead taken that approach. (CCME, 2015). Government regulations for stewardship or EPR programs provide for: the clear definition of products with respect to designated products and stewards of designated products, high collection targets in compliance with environmental standards, funding mechanisms (which include incentives for all participants, point of collection/point of sale fees, environmental handling fees, special provisions for Industries, and Commercial Institutions (ICI) and other large volume waste generators), adequate collection systems providing easy access for participants to collection sites, setting performance indicators to drive environmentally responsible collection and processing methods, and a level playing field to promote equitability. To share the responsibilities and meet EPR obligations, these stewardship programs were delivered by PROs obligated by law to meet collection or recycling requirements (Lifset, 2013).

2.4 Canadian Context for ISPs by Province

ISPs in Canada were developed in response to the Canada-wide action plan for EPR released by Canadian Council of Ministers of Environment (CCME) in October 2009. According to the OECD (2001), under the EPR model the responsibility of waste management has shifted

from municipalities to all other participants, including manufacturers and consumers. Canadian EPR policies placed collection and sorting in the hands of local communities, whereas industries were supposed to cover collection and sorting expenses. Hence, the model is a "shared responsibility" framework (Lifset, 1993). Considering distinct geographical and infrastructural prospects, a uniform waste management approach has not been appropriate for all products or product categories across Canadian provinces and territories (CCME, 2014). Therefore, to achieve desired outcomes across all product categories, it was necessary to adopt different shared responsibility or product stewardship approaches. The primary difference in the waste diversion instruments lie in the varying degrees of producer responsibility as illustrated in figure 2.1.

Figure 2.1: A schematic diagram of waste diversion initiatives across Canada (CCME, 2014)



These waste diversion initiatives were implemented under the EPR framework for managing all municipal and hazardous wastes generated. For example, packaging and printed materials, mercury containing products, electrical and electronic equipment, and household hazardous and special and bulky wastes were included in such initiatives. Many ISPs were established and considered for specific designated waste products. In 2015, over 165 stewardship programs operate in Canada (2015 Conference on Canadian Stewardship, n.d). Some of the ISPs operating across Canada are worth discussing here.

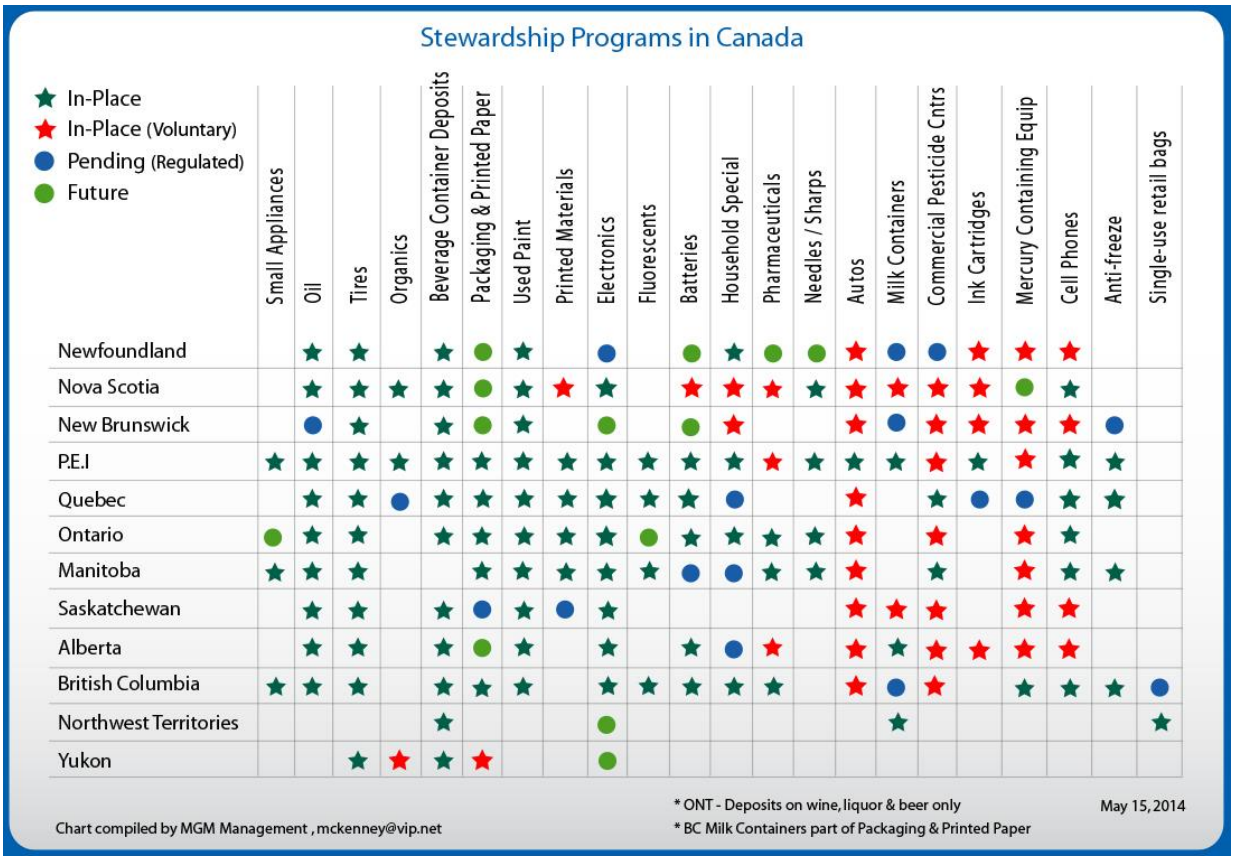
For electronics and electrical equipment, a national not-for-profit organization, namely Electronics Products Recycling Association (EPRA), was established and came into force in 2011, regulating electronics recycling programs in eight provinces across Canada (Electronics Product Recycling Association, n.d). In these provinces, EPRA recognizes the principle of EPR. Alberta's end-of-life electronics recycling program has been operated by the Alberta Recycling Management Authority (ARMA) (Electronics Product Recycling Association, n.d) following a product stewardship approach (CCME, 2014). Northwest Territories and Yukon are considering an electronics recycling program (CCME, 2014), while New Brunswick passed legislation in October 2015 regarding electronics recycling. EPRA is currently working with Recycle NB to develop an approved electronics stewardship program plan (Electronics Product Recycling Association, n.d).

For packaging and printed paper (PPP) stewardship, there are various forms of producer requirements across five provinces in Canada. Of these, four are shared responsibility programs (i.e., municipal/industry funded) and one (British Columbia) is a full EPR program (i.e., 100% producer responsibility). British Columbia's fully funded program was launched in May 2014 (Environment, M. O., 2017). Manitoba launched a PPP stewardship program in 2010, which is an 80/20 industry/municipal cost shared program (Multi Material Stewardship Manitoba, n.d.). Launched in January 2015, the Province of Saskatchewan introduced shared responsibility requirements for PPP, (75/25 industry/municipal cost share) (Multi Material Stewardship Western, n.d.). The Province of Québec has moved its program to 100% industry funding, operated by municipalities (Eco Enterprises Quebec., n.d.). Ontario's shared responsibility program remains at a 50/50 industry/municipal cost sharing, while new legislation is under consideration (Stewardship Ontario, n.d.). The Atlantic Provinces are currently collaborating on the development of a common framework for the implementation of a PPP EPR approach across the region. The Province of

Alberta is considering designating PPP to be managed under an EPR recycling program (Green Blue, n.d.).

For household hazardous waste, a number of EPR programs have been adopted by jurisdictions since 2009 (CCME, 2009). Manitoba adopted an EPR regulation in 2010 to manage designated household hazardous waste materials through EPR programs (Sustainable development, n.d.). Newfoundland and Labrador launched the province's first EPR program targeting paint; there are now legislated EPR or product stewardship programs or requirements in all provinces. Québec has established EPR programs for paint, batteries and mercury-containing lamps. Alberta is proposing to designate household hazardous waste under an EPR approach; currently a voluntary program operates for household hazardous waste in the province, funded by government and municipalities and a regulated stewardship program operates for paint (Conference on Canadian Stewardship, 2015). As can be seen in figure 2.2, there are different stewardship programs operating across provinces of Canada. An overview of these programs is presented in figure 2.2 – the programs that are mandatory are marked with green star (★), and voluntary programs are marked with red star (★). All other programs are still pending (as of 2015) to become operational. Overall, it is clear that most stewardship programs are operating, with only a few regulatory programs pending. There are also a few future stewardship programs awaiting implementation.

Figure 2.2: Stewardship Programs across Canada (2015 Conference on Canadian Stewardship, http://www.canadianstewardship.com/2015_conference/)



2.5 Role of Producer Responsibility Organizations' (PROs) in Industry Stewardship Programs

PROs play an important role in the delivery of ISPs by providing strategic direction to the collection and processing of household wastes (Mayers & Butler, 2013). PROs are founded by the group of producers to control and oversee the process while keeping the costs low to the public (Lifset, 2013). PROs are not-for-profit organizations funded by the producers and taxpayers. These organizations are responsible for running the programs by financing and/or operating programs. PROs collect fees from their stewards based on what they sell into the marketplace. The fees are used to pay the operating costs of collecting and responsibly managing waste and to improve public awareness of the program. The fees are used to run the collection operations, promote participation

and educate the public. Another tenet of stewardship is compliance with extensive provincial and federal regulations (Smith, 2015). PROs not only operate according to these regulations, but also streamline the compilation and submission of the required reports to regulatory bodies. PROs bear the operational responsibility of ensuring the proper management of wastes by managing the funding, collection, transportation and control systems (Khetriwal, 2009).

2.6 Evaluation Methods in ISP Literature

In order to meet the objectives of this study, it is important to understand the methods used by other researchers. In the literature, researchers who examined and evaluated ISPs relied on secondary sources such as policy and research papers from provincial and municipal governments and from industry associations and non-governmental organizations (NGOs). National, provincial and municipal newspapers, as well as trade publications, were also important sources of information, particularly for constructing a chronology of events and providing a snapshot of the debate on various issues (Meadu, 2005). Other sources of information that researchers drew from included: literature on stewardship; documents and annual reports from business and industry groups; conference proceedings; government statute, regulation, and policy documents; NGO reports and newsletters; and OECD documents. (Holmes 1999). Researchers examining ISPs and related programs also collected empirical data to complement their literature reviews and fill information gaps by conducting interviews, surveys and tours of recycling and disposal facilities (Nicol & Thompson, 2007). For surveys and interviews, researchers contacted professionals and other individuals involved in the Manitoban and Canadian packaging stewardship movement. The most valuable resources for data and information were documents such as annual reports and business plans, and the reports on expert interviews.

2.7 Industry Stewardship Programs (ISPs) in Manitoba

This section provides the background of Sustainable Development Manitoba, the WRAP Act, and the stewardship regulations followed and the strategies adopted by the department in response to its mission of reaching a target of zero waste while focusing on its sustainability framework. This section offers an overview of the ISPs delivered in the Province of Manitoba and a detailed explanation of the primary program elements.

2.7.1 Program Design

In response to the principles of product stewardship and EPR, ISPs were developed under the *Waste Reduction and Prevention Act*, 1990 (WRAP Act). The WRAP Act provides a detailed description of ISPs in Manitoba (see Attachment 2.A). The WRAP Act provides the legislative authority to implement waste reduction programs in Manitoba. The regulations under the Act have established special operating agencies that are accountable to Sustainable Development for achieving specific waste reduction goals and for operating transparently to the public and stakeholders. Manitoba's 2005 sustainability report recognized waste management as a potential indicator for sustainability. In response to the Canadian Council of Ministers of the Environment's (CCME's) Canada wide action plan on EPR in 2009, the Manitoba Government passed new regulations based on the principles of EPR. ISPs in Manitoba have been delivered by 12 PROs established to enhance material recycling in Manitoba. Each PRO works in compliance with provincial regulation and the WRAP Act. Program plans and annual reports demonstrating the deliverables and targets are prepared and submitted by PROs to the Manitoba Government. The programs delivered by PROs and regulated by Sustainable Development ensure a national harmonized approach where feasible.

2.7.2 Sustainable Development Manitoba's Mission Statement

The department's mission is to ensure a sustainable environment and reach a zero waste target through the 3R's (reduction, reuse, recycle) hierarchy. The framework within which Sustainable Development works focuses upon three key aspects of sustainability as depicted in figure 2.3.

Figure 2.3: Sustainable Development's sustainability framework and its components (From Green Manitoba Annual Report 2012/2013, Retrieved 23 February 2016, from http://greenmanitoba.ca/annual-report/)[1]

12 PROs work under the five stewardship regulations (listed in Table 2.1 below) for prescribed waste material stewardship, which requires producers (manufacturers, distributors, importers) to show responsibility for the life-cycle management of their products.

[1] Green Manitoba annual reports are no more publicly accessible (online). However, since those reports were submitted to government, the Leg Library as well as the provincial archive would have copies. Annual reports submitted by the PROs are now available through a government site: http://www.gov.mb.ca/sd/wastewise/annual-rpts.html

Table 2.1: Stewardship regulations and PROs in Manitoba

STEWARDSHIP REGULATION	PROs
• Electrical and Electronic Equipment Stewardship Regulation	• End-of-Life Electrical & Electronic Equipment Recycling Program • Recycle My Cell
• Household Hazardous Material and Prescribed Material Stewardship Regulation	• Call2Recycle • Manitoba Medications Return Program • Product Care Association • Recycle My Battery Program • Switch the Stat Program
• Packaging and Printed Paper Stewardship Regulation	• Empty Pesticide and Fertilizer Container Recycling Program • Recycle Everywhere • Simply Recycle
• Tire Stewardship Regulation	• Tire Recycling Program
• Used Oil, Oil Filters and Containers Stewardship Regulation	• Used Oil & Antifreeze Program

According to stewardship regulations, ISPs must have a stewardship plan demonstrating several specific features. These include financial and operational mechanisms for managing designated waste products, public consultation processes, and design of collection systems, establishing appropriate performance measures, dispute resolution procedures and annual reports. The regulations also require that industry proposals, program plans and annual reports to be made available to all stakeholders.

A detailed description of primary program elements and guidelines, following Government of Manitoba (2012) and CCME (2009), is given below.

Establishment and Administration of the Program

When a new stewardship program is introduced in Manitoba, it should be consistent with the CCME, including harmonization with other provinces. When the programs are developed in

harmony with other jurisdictions, it is much easier to provide a level playing field in the marketplace, deliver the program with the lowest possible cost while achieving maximum environmental efficiency and ensure consistent monitoring and reporting (CCME, 2015.).

PROs Structure and Management

The 12 PROs delivering programs in Manitoba operate under the direction of an Executive Director and Board of Directors. The board includes the president of the PRO and representatives of prescribed product manufacturers. This board oversees the operations of all waste collection and recycling programs in the province to ensure harmonization across programs. Harmonization helps to keep collection and processing costs down, while enabling clear and compelling communications to all stakeholders.

Adequate Collection System

Collection systems are designed with public convenience and accessibility in mind. Collection points and methods are determined through assessment of such matters as: proximity to population, cost-effectiveness, environmental health and safety, ease of access, facilities available, and environmental permits for hazardous products. Adequate collection systems include collection of waste products, special provisions for ICI and other large volume generators, waste categorization, partnering with existing collection systems wherever possible and free consumer access to collection facilities and recycling services.

Product Definition

The products from the residential waste streams recovered by the program are clearly identified, defined and specified in the stewardship regulations provided.

Financing Mechanism

Product manufacturers are fully responsible for the financing and the operation of the program. If the manufacturer is not local, the first importer of the product becomes responsible for the funding to the program. A licensee fee is assessed for units and/or weights sold into Manitoba and allocated to each manufacturer based on its market share.

Stewardship Plan

A Stewardship Plan sets out how the designated producer or producers and the PRO will meet their obligations. Generally, stewardship plans provide details on the essential elements to be considered, such as: how waste products will be collected and recycled, key program performance indicators selected for mapping annual performance, recovery rate targets, timelines for implementation and reporting protocols. The selected elements are specified in the program plan, reviewed and revised every five years by the PROs.

Information Requirements/Reporting/Communications

Documentation and public reporting of the program's performance is necessary and follows established key performance indicators and reporting formats. Each PRO prepares and submits an annual report on the program's performance to the regulatory body. ISPs operate using recognized and comparable key performance indicators in keeping with the recommended indicators cited in the 'Program Plan' on performance Measures and reporting for EPR programs.

Research and Development

Training and education of staff working for the EPR program's PRO is essential to ensure compliance with environmental and occupational health and safety requirements and best management practices.

Targets

EPR programs set measurable and quantifiable targets for products captured and/or recovered and reused and/or refurbished. Targets are designed to ensure measurable waste diversion and environmentally sound end-of- life management of household waste.

Design for Environment

Producers are encouraged to improve the life-cycle environmental performance of their products, to undertake the necessary research and development to improve their products and to voluntarily report on their progress for improved environmental product design.

Point of Collection/Point of Sale Fees

Costs associated with an EPR program are internalized as a factor of production – i.e. the costs for end-of-life management of products are treated similarly to other factors of production (such as manufacturing, distribution, market and sales) and incorporated into wholesale and retail product prices. Jurisdictions may or may not choose to regulate the visibility or non-visibility of such fees at the point of consumer purchase. According to regulations,

> "*fees should be differential and should be linked to material- and product- specific costs and designed to reward improved environmental performance. Fees should be structured with due regard to the nexus principle, which means those levied should be closely connected to the product offered"* (CCME, 2009, p.17).

Public Education and Awareness Programs

PROs deliver an extensive public education program to encourage all Manitobans to recycle their waste products and inform them how they can participate in the recycling programs. This provides the foundation for the promotion, education and awareness activities of the recycling programs in Manitoba.

Consultations and Surveys

Consultation is undertaken with all interested stakeholders and members of the public in the preparation of stewardship plans and regarding other program proposals. The ISP design is a step forward to promote waste diversion from the landfills by providing incentives to prevent wastes at the source, promote product design for the environment and support the achievement of public recycling and materials management goals.

2.8 ISP Literature Discussion – Manitoba and Canada

A comparison of different waste diversion initiatives across Canadian provinces provides some interesting insights. ISPs are operated under different business models in each jurisdiction to handle the end-of-life product in an effective and efficient way that achieves desirable environmental outcomes. Designated products have unique characteristics that require a separate programs in order to be effective in unique geographical and jurisdictional contexts. Despite similar motivations and policy drivers for implementing EPR that are shared by the Canadian provinces, such as shifting the waste management costs from local governments to brand owners and internalizing the costs to promote the design of more sustainable products, important differences exist in terms of how programs are implemented to achieve these outcomes.

Under packaging and printed paper stewardship, there is a recycling program for beverage containers in all the provinces, Yukon and Northwest territories. Some of these programs are EPR (Alberta, British Columbia, Ontario, Prince Edward Island, and Quebec); however, the Ontario and Quebec programs are municipal recycling programs 50% funded by the industry. While the programs in Saskatchewan, New Brunswick, Nova Scotia, New Foundland and Labrador, Yukon and Northwest Territories operate on a deposit return system where producers are not responsible for managing the program, in Manitoba, Multi-Material Stewardship Manitoba (MMSM) is an 80/20 industry/municipality operated program and the Canadian Beverage Containers Recycling

Association (CBCRA) is funded by a two cent levy paid on the purchase of every beverage container. Ontario's program is based on a municipal Blue Box program (with a very broad scope) with no deposits on containers, and with program costs shared between municipalities and industry.

In E-waste regulation, Alberta is the only jurisdiction using a product stewardship model; all others have legislated EPR programs. Compact fluorescents and mercury-containing lamps are not included in any EPR programs to date; however, they are listed in the second phase in Ontario and have been regulated in British Columbia since 2010. Used oil, oil containers and filters are included in all the provinces except in Ontario, where only containers and filters are included in the first phase in Ontario. Mercury containing switches and other products containing mercury, automotive fluids, paint, batteries, solvents, pesticides and fertilizers, and pharmaceuticals are included in the Ontario and BC's MHSW program.

2.9 Summary

ISPs are effective and cost-efficient methods of regulating post-consumer waste. It is clearly apparent that the popularity of EPR as a public policy tool is growing. Comparing different EPR policies for different waste streams helped provide answers as to why EPR policies are more suited to particular waste streams and why some jurisdictions have not been able to adopt and implement EPR legislation more effectively (Khetriwal 2009). A comparative study of the various provincial programs provided an interesting area of evaluation as to how these programs differ in their implementation of EPR and the lessons that can be learnt from them. In the interest of advancing ISPs in Manitoba and other provinces of Canada, measuring and monitoring success is important. The scope of the present study is therefore designed to monitor program performance and measure achievements in the Province of Manitoba.

Chapter 3

Methods

3.1 Introduction

Evaluation involves the systematic collection of information about activities, characteristics, and outcomes of a program in order for interested persons to make judgements about specific aspects of what those programs are doing, or not, and affecting (Patton, 1981). Qualitative evaluation data are usually in the form of raw, descriptive information about a program and people in the program. The evaluator visits the program to make firsthand observations of program activities. The evaluator talks with the participants and staff about their experiences and perceptions. Records and documents are usually also examined (Patton, 1987). The data from these interviews, observations, and documents are then organized into major themes and categories through content analysis.

Keeping to the goal of making an evaluation, this thesis aims to improve the program effectiveness of current waste management practices in Manitoba by means of a qualitative assessment. To serve the purpose of evaluation, data and information were collected both from primary and secondary sources. For primary sources, the research included detailed interviews with participants with identified expertise (key-informed participants) in the field. For secondary sources, published documents, unpublished reports, annual reports and program plans of the 12 PROs were reviewed. The following sections include a detailed description of the methods, including technical details necessary to understand the process of qualitative and quantitative evaluation.

3.2 Objectives and Related Methods

The methods that were incorporated in the research to fulfill specific objectives are presented in Table 3.1.

Table 3.1: Objectives and related methods

OBJECTIVE	METHOD
To develop an evaluation framework for the assessment of program performance and effectiveness by setting outcome indicators and describing outcomes over 5 years of program operations	Analyzing work plans and annual reports; and communication with experts in Government of Manitoba departments.
To examine the process of target setting, accomplishments in relation to targets, and the barriers and the opportunities for achieving them	Conducting interviews with program participants and stakeholders
To examine options for improving program performance and formulate recommendations for Manitoba's Industry Stewardship Programs	Comparing work plans with other jurisdictions

- In regard to objective one, the annual reports and 5-year program plans were reviewed to analyze the performance and progress over the 5 year period of 2011-2015. This information provided the overview of operations, explanation of operational results, key developments and trends in the activities.
- The interviews with the PRO participants and other stakeholders provided insight into challenges and opportunities to deliver the programs efficiently. Interviews served the second objective by providing a thorough understanding of the governance, which helped the researcher understand the industry better.
- Addressing the above two objectives provided results enabling an evaluation and the identifying gaps. The third objective, which includes recommendations from other jurisdictions to fulfill the mission of improving waste management in Manitoba, was attained by comparing work plans with other jurisdictions.

3.3 Data collection

3.3.1 Key-informant Interviews

A key informant interview is a loosely structured conversation with people who have specialized knowledge about the topic one wishes to understand. Key informant interviews allow the researcher to explore a subject in depth. In my research, the interviews with the experts in the field of study provided opportunities to understand the current waste management practices in Manitoba. From the interviews I learnt about various barriers and opportunities faced by the program operators and the strategies used in the implementation of the program. Thus, the interviews refined my data collection efforts and helped me understand the gaps, leading me to target my research to fill these gaps.

For the purpose of evaluation, two categories of participants were selected. One category was program operators delivering waste management services to residential consumers and the other consisted of the program coordinators of the institutions who work closely with some of the PROs.

Table 3.2: List of participants for interviews

Category	PRO Participants	Participants from institutions
Total	11	4
Acronyms Used	T1 –T11	A1-A4

The PRO participants were selected for interviewing from examining their annual reports, and were verified by contacting government officials who work closely with PROs. A total of 15 interviews were conducted including PRO and institutional participants (Table 3.2). 11 PRO participants were selected from the public domain, and the other four were recommended by my professor. The four participants were selected from these institutions as follows: one from a NGO, one industry steward, and two from commercial institutions.

Each participant was contacted through email well in advance to schedule an appointment. The availability and convenience of each participant was considered seriously throughout the process. Interview questions were also provided to the participants who requested these. **7** PROs have their head offices outside of Winnipeg, so a phone interview was scheduled with them. The informed consent form (see Attachment 3.A) was sent via email to these participants, which was signed by the participants and sent back to me. Face to face interviews were conducted with the participants who were located in Winnipeg. The informed consent form was read and signed by the participants prior to each interview. A copy of the signed informed consent form was provided to each participant. Most participants granted permission to use a digital voice recorder during the interview. When permission to use digital voice recorder was not granted, hand-written notes were made. The interviews lasted anywhere between 30 minutes and 2 hours.

Another set of participants were selected from PRO clients. One participant was selected from an NGO based in Winnipeg, one participant selected was a steward to the PROs and two other participants were selected from institutions who were direct clients of PROs. Similar procedures for scheduling the interview and getting the consent to use the voice recorder was followed with each of these participants for the interviews. One out of four participants was hesitant for recording the interview, and in that case hand-written notes were taken.

The interviews were carried out following approval from the University of Manitoba's policy designed by the Research Ethics Board for approval of research involving human subjects (see Attachment 3.B).

3.3.2 Review of Annual Reports and Program Plans

Annual reports are submitted by PROs each year to the Manitoba Government. The program plans are submitted by the PROs and reviewed and approved by the Minister of Sustainable

Development for a 5 – year period. The documents are also available on the respective PRO websites. For the purpose of evaluation, annual reports and program plans were compared as a secondary source of data. During the research, annual reports were compared with the program plans to determine the compliance of programs with their 5-year program plans. This approach also helped me to identify the performance indicators to complete the evaluation. The performance indicators were identified based on the stewardship plan review and evaluation by selecting the major themes that PROs focused on in program implementation and their yearly reported outcomes. The components of stewardship plan and evaluation included: a) mandatory program requirements, b) program plan evaluation, c) public consultation process, d) design of an adequate collection system, e) performance measures and targets, f) dispute resolution procedures, g) pollution prevention and best management practices, and h) reporting. This document (stewardship plan review and evaluation) provided the basis for identifying parameters for developing an evaluative framework (Table 3.3). A detailed stewardship plan for review and evaluation is provided as an attachment (Attachment 3.C). The identified performance indicators were: materials recovered, number of collection sites, collection events, level of public awareness, number of registered stewards and recovery rate.

Table 3. 3: Stewardship Plan Review and Evaluation **(**Derived from: Stewardship Plan for Review and Evaluation (Attachment 3.C)

Category for evaluation	**Conditions for evaluation**
a) Mandatory program requirements	Establishment and administration, system of revenue and payment, ongoing consultations
b) Program plan evaluation	Details of program operations
c) Public consultation process	Consultation with stakeholders
d) Design of an adequate collection system	Collection sites and partnerships

e) Performance measure and targets	Program performance
f) Dispute resolution procedure	Stakeholder conflicts and dispute resolution process
g) Pollution prevention and best management practices	Regulations and compliance
h) Reporting	Annual reporting

There was some disparity found in the reporting indicators among PROs because of the difference in program delivery and the designated products for reporting. To achieve maximum consistency, data was converted into similar units (e.g., converted units collected into kilograms of material collected) wherever possible. The targets and outcomes of each PRO were explored by reviewing and comparing program plans and annual reports of each individual 12 PROs delivering ISPs in Manitoba. The data gathered from the documents provided background information about the programs.

In order to meet the research objectives and purpose, it was important to understand how a program has been implemented, achieved targets and what other things were accomplished. The data collected helped in orienting the research and in gaining empirical knowledge about the ISPs.

The data and information gathered from key-informant interviews and the documents complemented each other and helped me clarify the findings, reveal strategic points for intervention, discover the gaps and generate recommendations to improve program performance across the province.

3.4 Data Analysis and Dissemination of Results

3.4.1 Survey Response

The information obtained from the key-informant interviews (Interview guide Attachment 3.D) was protected in the recorder. For analysis of the information, the responses were transcribed using Microsoft Office. Each transcription was saved with an anonymous name for the participant in a

password protected computer. After transcription of the data, detailed content analysis led to the emergence of some themes that were found repeated in different interviews in various forms. These similar types of data were linked and clustered under major themes. The results, data and themes were transformed into graphs, tables and charts to make it easier for the reader to understand.

3.4.2 Document Review

The data from the annual reports were arranged in the form of a matrix table, presented in Chapter 4. In presenting the data, I highlighted and compared the performance indicators of all 12 PROs. For a detailed assessment of each program's deliverables and targets, data for each PRO were presented separately in the form of bar-graphs, pie-charts and line-graphs to express the observed trends as a part of the evaluation. The graphs showed the progress of the ISPs in Manitoba over the 5-year period of 2011-2015.

Chapter 4

Industry Stewardship Programs in Manitoba

4.1 Introduction

In this chapter, I present my analyses of the data collected during the research. The section following the introduction is an overview of activities that PROs performed during the 5-year period of 2011-2015. The PROs' program performance are highlighted and presented in the form of a matrix. This matrix contains data related to waste targets and recovery rates, public awareness events, the level of public awareness, and the number of collection sites for each PRO. The observations drawn from the data are described in detail following the table.

My goal is to describe my knowledge and understanding of ISP in Manitoba, and to uncover the opinions of the respondents related to barriers and opportunities in achieving waste-related targets in the province. My analysis of the 15 interviews involved examining the responses of participants and comparing their opinions, and in this some themes emerged, which are identified and described in detail in this chapter.

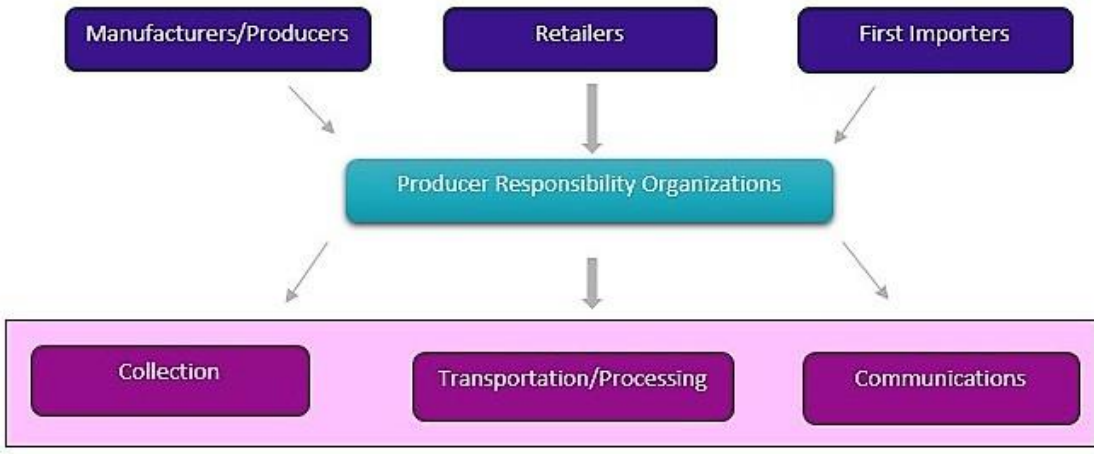
4.2 Description of ISPs in Manitoba

Figure 4.1 below provides an overview of the structure of the ISPs in Manitoba. The product manufacturers, retailers and first importers, termed stewards, formed non-profit PROs to manage the recycling and proper disposal of post-consumption products. These products are mandated by the Manitoba legislation. The role of the industry-funded and created PROs is to set up waste collection systems in the province. Based on the research findings, the waste management systems set up by PROs in the province include the following components:

- Collection facilities to serve the maximum range of communities and municipalities;

- Outreach to retailers, contractors and distributors informing them about the program and giving them an opportunity to be a collection site;
- Program training on collection site operation, certificates and licenses to the people involved in the program operations;
- Environmental risk reduction and compliance visits to confirm that the site is following program requirements;
- Recommending targets and environmental handling fees in annual reporting to the Province, and providing incentives to the program operators;
- Controls for free riders in the system;
- Promotion and public education outreach through brochures, events, media etc.;
- Contracts with the program transportation service providers to schedule pick-ups. The collection sites call up the transportation service provider when there is sufficient amount of material for collection; and
- Contracts with the processors and recyclers to ensure there are no backlogs of the collected material and that the material finds a suitable market.

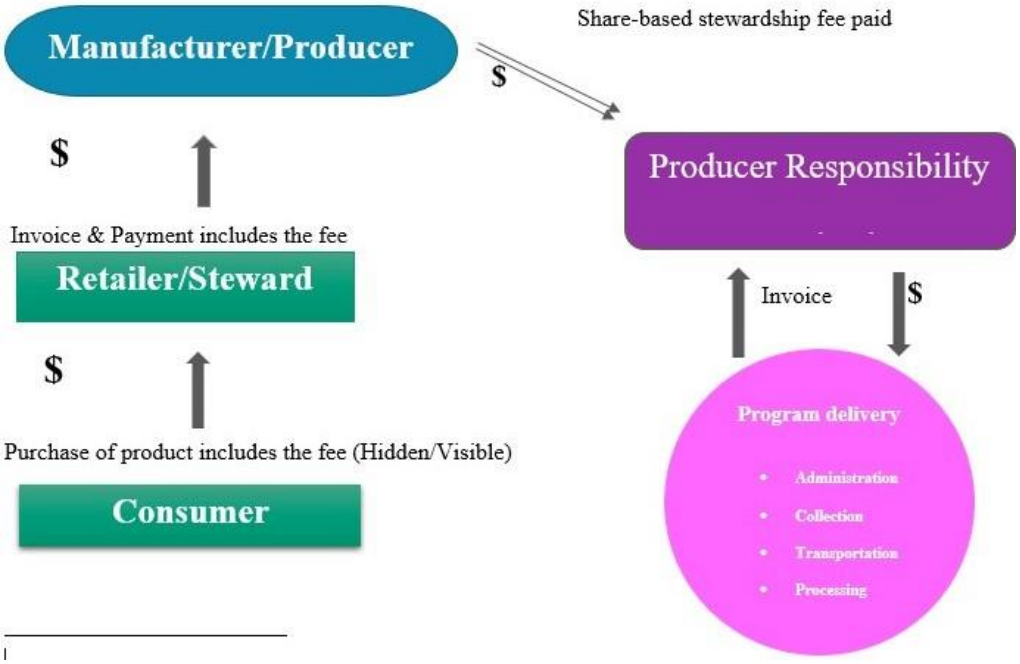
Figure 4.1: Infrastructure: Process Actors



4.3 Economics of Industry Stewardship Programs (ISPs)

PROs collect a stewardship fee from industry stewards on all sales of designated products to fund the program, which ultimately passes costs on to consumers. Figure 4.2 provides an overview of how the fee is transmitted between different actors in the program.[2] Producers report annual sales and pay the assessed fee directly to the PROs. The levy is passed through to a distributer or retailer who add the fee to the final sales price of their products. Retailers are responsible for collecting the fee from consumers and transferring to the producers, who are then responsible for paying the fee to PROs. The legislation provides retailers the option to show or to not show the fee on the consumers' sales receipt.

Figure 4.2: Flow of steward fees within the system



[1] If the manufacturer is not local to Manitoba then the first importer of the product is responsible to pay the fee to the PROs. For example, Manitoba liquor and lotteries is a steward to MMSM who pays annual fee for their share of waste generated in households

4.4 Overview of activities (2011-2015)

This section presents the work PROs have been performing over the 5-year period from 2011 to 2015. The programs' performance are reported based on identified key indicators: a) total materials collected by weight, volume or number of units collected, b) number of collection sites, c) collection events, d) level of public awareness, e) number of registered stewards, and f) recovery rate (recovery rate is the percentage of waste collected over material sold in the market, and/or the percentage of material collected over the material available for collection). The recovery rate is measured against the targets set by each PRO. The PROs follow different mechanisms to set the waste targets. CBCRA, which is responsible for the collection of beverage containers, has a legislated target of 75%. Tire Stewardship Manitoba (TSM) sets targets based on the number of tires sold in the market, the program works based on the assumption that for every tire sold there is a used tired available for collection. A similar pattern is followed for lead-acid battery and thermostat recovery programs. EPRA does not set any target; reporting is performed on the basis of the volume of electronics collected annually. For the medications return program, no specific target is set because it is difficult to estimate the amount of unused and expired medicines available for disposal. Most other PROs set their targets based on their collection levels over past years. Hence, PROs do not have any clear legislated targets and follow various mechanisms depending upon the type of material being collected. Detailed data on program operations for all 12 PROs are presented in the succeeding sections.

4.4.1 Electronic Products Recycling Association

The Electronic Products Recycling Association (EPRA) manages end-of-life electronics recycling in Canada. In Manitoba, EPRA launched its program in August, 2012. The graphs (figures 4.3 – 4.7) show the activities of EPRA from 2012 to 2015. EPRA reports on the amount of waste

collected, number of stewards registered, number of collection sites, level of public awareness and costs of operation.

Collection: As can be seen in figure 4.3, EPRA Manitoba collected over 830 tonnes of electronics waste in the first year of its operation. From 2012 to 2015, the amount of material collected increased fourfold. A sharp increase in the collection of e-waste is observed in the year 2013, which remained more or less constant in the later years. The report states that the trend towards smaller and more light-weight electronic devices might have had an impact on this increase.

Figure 4.3: EPRA Waste Collection

Public awareness and industry participation: Public awareness of the program is reflected in the percentage of people aware of the electronics recycling program in the province. In 2012, 33% of people were aware of the program, which doubled (68%) in 4 years of operation (figure 4.4). As of December 31, 2102 the program had 379 registered stewards, which increased to 511 in 2015 (figure 4.5).

Figure 4.4: EPRA Public Awareness (%)

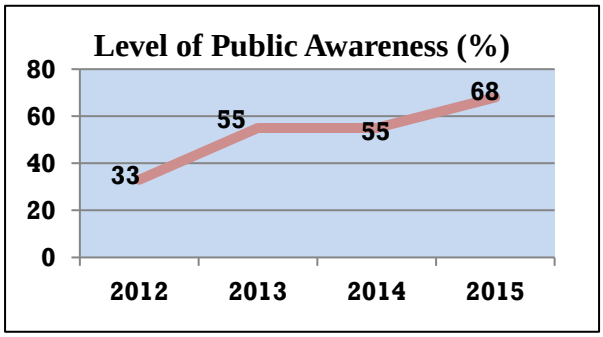


Figure 4.5: EPRA Stewards

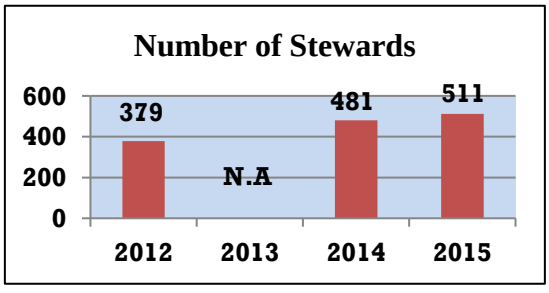


Figure 4.6: EPRA Operational Cost

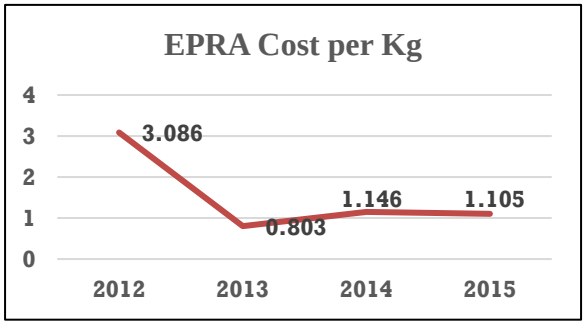
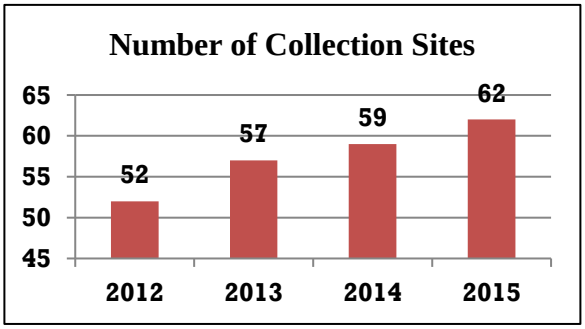


Figure 4.7: EPRA Collection Sites



Collection sites: EPRA has 62 e-waste drop-off locations across Manitoba (figure 4.7). As reported, these EPRA collection sites cover 90% of the population in the Province of Manitoba, which is defined by EPRA as accessibility to 90% of the Manitoba population within 50 kms (rural) or 15 minutes (urban) of an EPRA Manitoba drop-off location.

Operational cost: In 2012, the operational cost was calculated at $3.086/kg, which reduced to $1.105 in 2015 (figure 4.6). The drop in operational costs reflects progress in delivering the program effectively and efficiently at the lowest possible cost to keep environmental handling fees paid by consumers to a minimum, which is also in line with the stewardship plan.

4.4.2 Tire Stewardship Manitoba

Tire Stewardship Manitoba (TSM) operates an industry-funded program responsible for the collection and recycling of all used tires and tubes generated annually in the Province of Manitoba.

Collection: The bar graph (figure 4.8) shows the amount of total material collected from 2011 – 2015. TSM achieved a diversion rate of 100% in 2011 (figure 4.9). For TSM, the annual recovery rate is the ratio of material collected over the material generated.

Figure 4.8: TSM Waste Collection

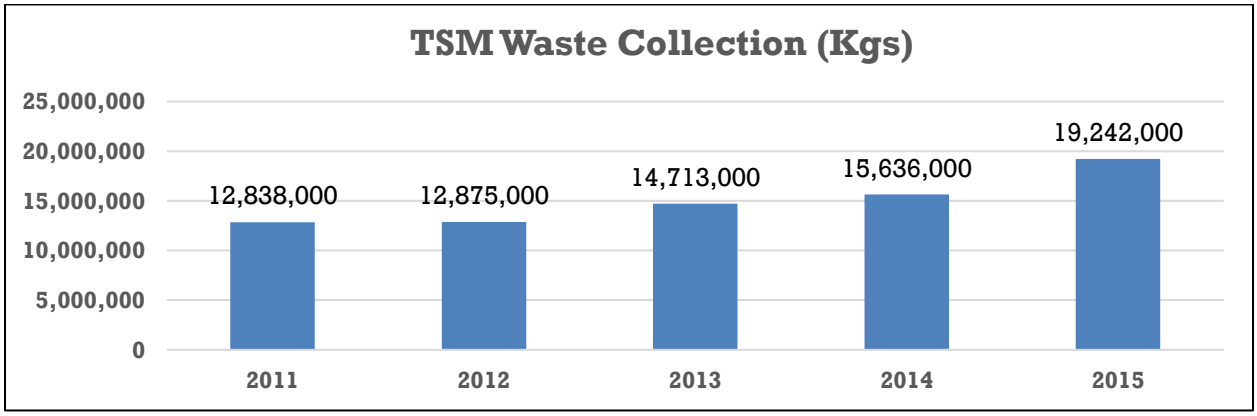


Figure 4.9: TSM Recovery Rate (%)

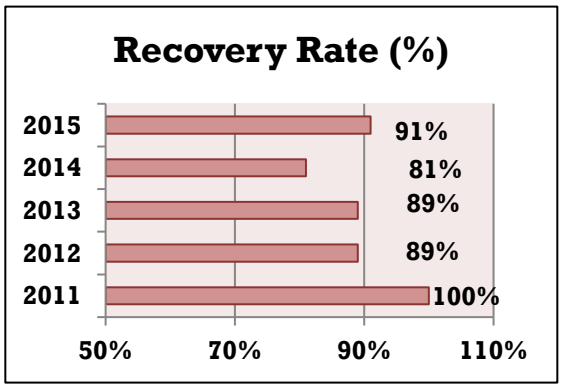
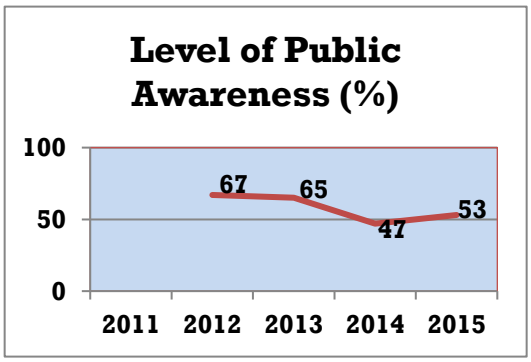


Figure 4.10: TSM Public awareness (%)



Public awareness and industry partnership: The line graph (figure 4.10) shows a declining trend in the level of public awareness about tire recycling in Manitoba. However, the program has been successful in expanding partnerships with municipalities to allocate collection points in municipalities (figure 4.11). Decreased partnerships in 2015 reflect the amalgamation of municipalities.

Figure 4.11: TSM Partnerships with Municipalities

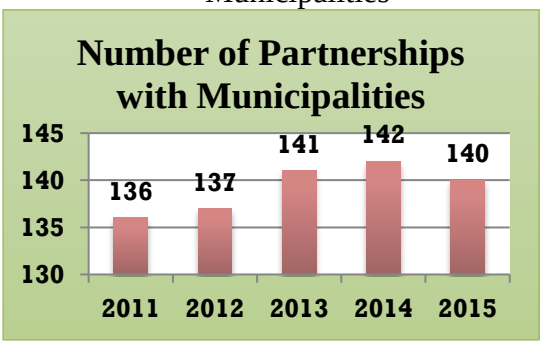
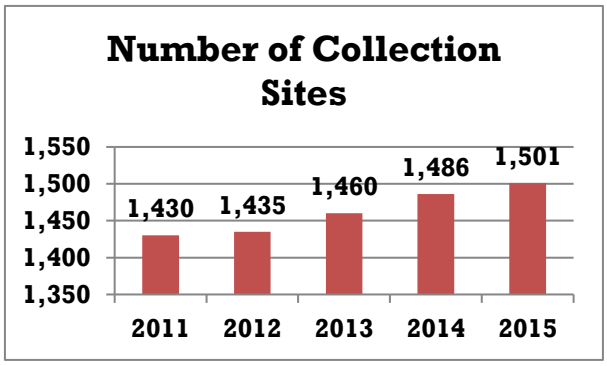


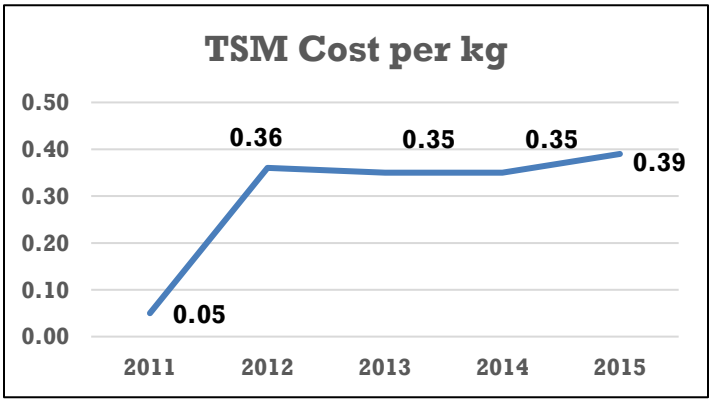
Figure 4.12: TSM Collection Sites



Collection sites: Collection sites include: retailers and municipal locations registered with TSM. The number of collection sites increased from 1,430 in 2011 to 1,501 in 2015 (figure 4.12).

Cost per kg: There is a sharp increase in TSM's cost per kg in 2012 (figure 4.13). Prior to 2011, monthly reports reported revenue from the prior month. Due to changes in reporting starting in 2011, income for 2011 was reduced. From 2012 onward, as the program's financial position remained positive, TSM was able to maintain eco-fees at a constant level, demonstrating the program's effort to operate effectively and cost-efficiently. The data from annual reports reveal that the program has been generally successful in the proper management of tires and in achieving program goals.

Figure 4.13: TSM Operational Cost



4.4.3 Canadian Battery Association

The Canadian Battery Association (CBA) is responsible for collecting lead-acid batteries (LABs).

Collection: CBA has been successful in achieving high recovery rates (figure 4.14), with an average of 97% in collection of LABs over five years of operation. The collection rate for the CBA was calculated on the weight of LABs recovered divided by the weight sold in the province.

Figure 4.14: CBA Recovery Rate (%)

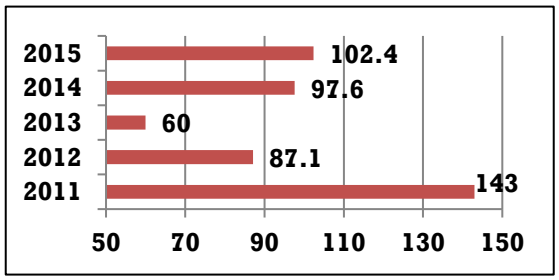


Figure 4.15: CBA Collection Sites

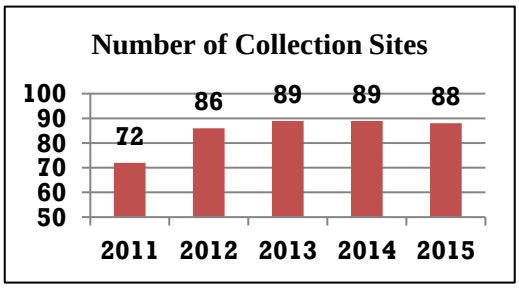
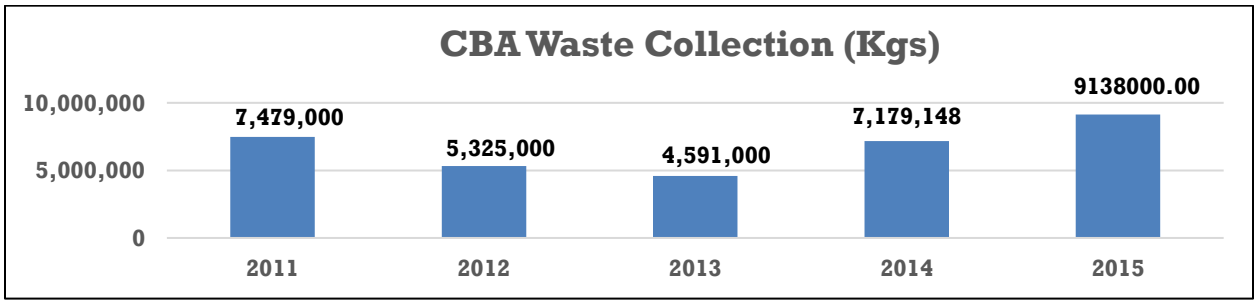


Figure 4.16: CBA Waste Collection



The collection rate of LABs is very high because of three factors mentioned in the report: 1) LABs are, for the most part, a product within the product (e.g., battery within a vehicle), and management of end-of-life LABs is primarily conducted at commercial businesses (e.g., repair shops); 2) LABs have a significant commodity value at their end-of-life, with an estimated economic value of $250,000,000 per year in Canada; and 3) There is a significant independent recycling infrastructure the recovers LABs from commercial and industrial operations.

Figure 4.15 shows the number of collection sites in Manitoba. The collection rate of 143% in Manitoba is skewed by the presence of several large "scrap recyclers in Winnipeg. These recyclers collect LABs from across the prairies and western Ontario and consolidate the product in Winnipeg for sale to CBA members. In 2012, data from Interstate Batteries Association (ISBA) was also incorporated to calculate the recovery rate. In 2013, data from private smelters was not reported.

4.4.4 Call2Recycle

Call2Recycle is responsible for collecting rechargeable and dry cell batteries under 5 kilograms.

Collection: The bar graph (figure 4.17) shows the batteries collected by weight (in kg.) over five years of operation. Call2Recycle has been successful in achieving an average of 57% recovery rate against the target. Calculating recovery rate as a percentage of battery sales in the province is problematic because of the complex sales chain. Expectations for single use batteries were not met because: 1) consumers are using fewer disposable batteries as more and more popular electronics are designed as rechargeable devices, and 2) Battery sizes are decreasing to accommodate smaller devices and thus battery weights are decreasing as well.

Figure 4.17: Call2Recycle Waste Collection

Collection sites and stewards: Collection sites are established around the province to maximize convenience and participation with a focus on greatest population density. By 2015, 81% population live in 15 km radius near the collection site.

Figure 4.18: Call2Recycle Stewards

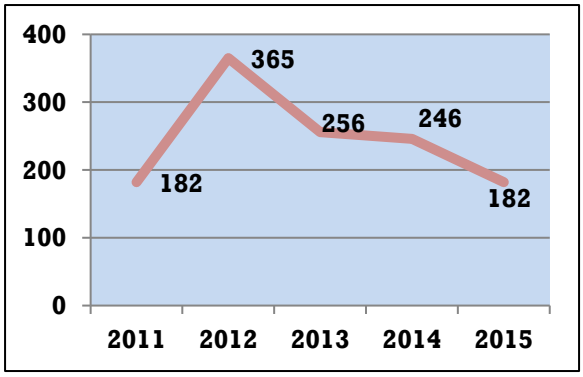
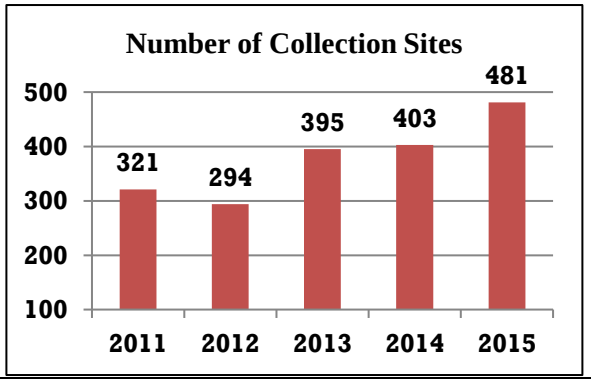


Figure 4.19: Call2Recycle Collection Sites



4.4.5 Recycle My Cell

Recycle My Cell (RMC) has been formally recognized as a cell phone steward within the province, and RMC currently participates in a data sharing arrangement with Call2Recycle. The Call2Recycle collection system employs a combination return-to-retail /depot model and works in conjunction with their battery recovery program. Recovery rate is calculated against the number of units distributed in Manitoba.

Collection and recovery rate: The recovery rate for RMC remains low (figure 4.21) because: 1) as third-party organizations increasingly see value in used mobile devices, there is an increase in the number of programs and groups collecting phones, 2) there are many not for profit organizations across the country that actively encourage Canadians to donate unwanted mobile devices in order to generate funds from recycling and reusing the devices, and 3) there are also for-profit ventures that collect phones by providing incentives – either directly to consumers or to their collectors – to do so, and data from these ventures is not currently being reported.

Collection sites and stewards: RMC collection sites (figure 4.24) include RMC branded locations and return-to-retail collections.

Figure 4.20: RMC Waste Collection

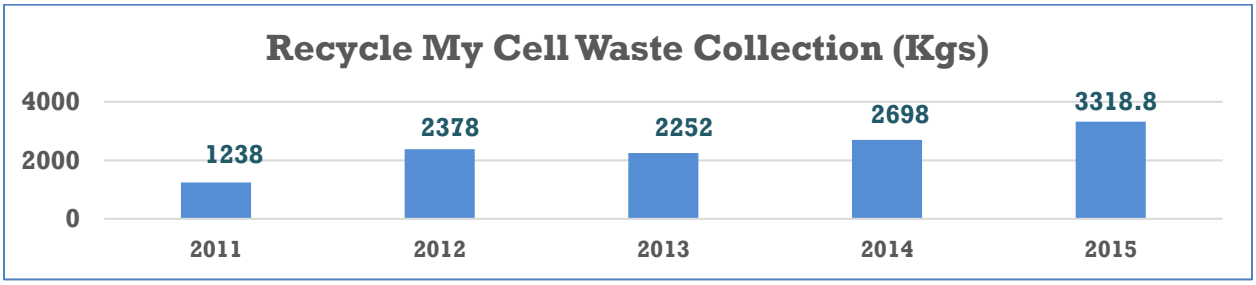


Figure 4.21: RMC Recovery Rate (%)

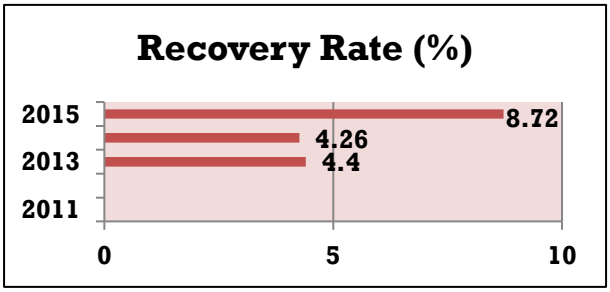


Figure 4.22: RMC Stewards

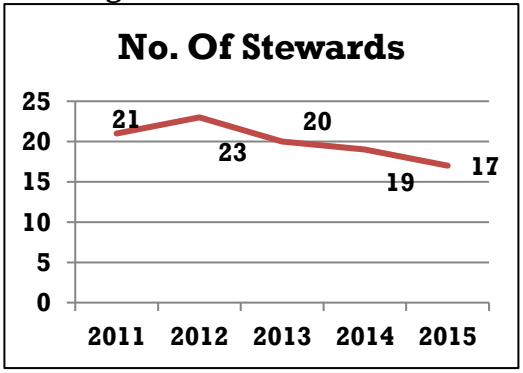


Figure 4.23: RMC Public Awareness (%)

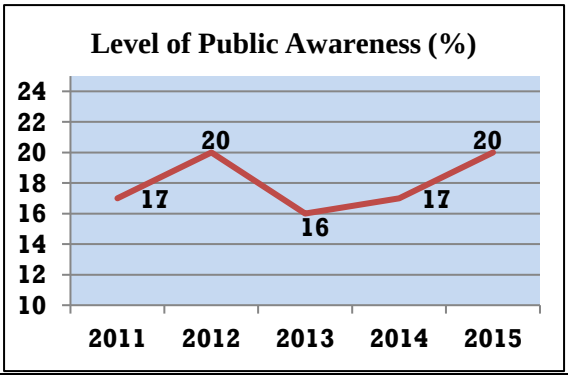
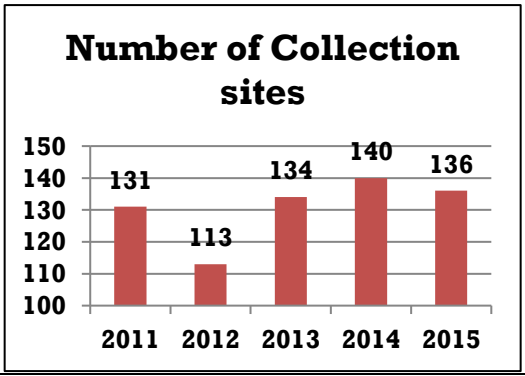


Figure 4.24: RMC Collection Sites

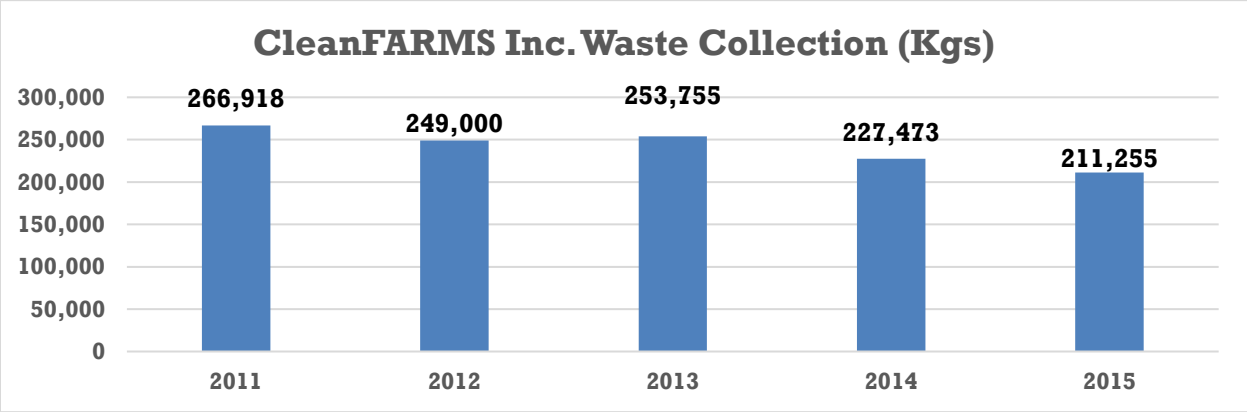


4.4.6 CleanFARMS Inc.

CleanFARMS is a non-profit industry stewardship organization committed to the management of agricultural waste.

Collection: The bar graph (figure 4.25) shows the collection of pesticide containers. The amount of collection decreased in 2012 because of weather-related issues on the prairies. A large amount of farmland could not be planted, thus reducing the need for pest control products.

Figure 4.25: CleanFARMS Inc. Waste Collection



Collection sites and stewards: CleanFarms was successful in increasing the number of stewards from 28 to 53 (figure 4.26), which means CleanFARMS has been able to raise the industry's commitment to minimizing agricultural waste. They have also served as a launching pad for new and expanded programming to meet the changing needs of the agricultural industry, such as the addition of livestock medications to the collection program and the empty seed and pesticide bag disposal program.

Figure 4.26: Number of Stewards

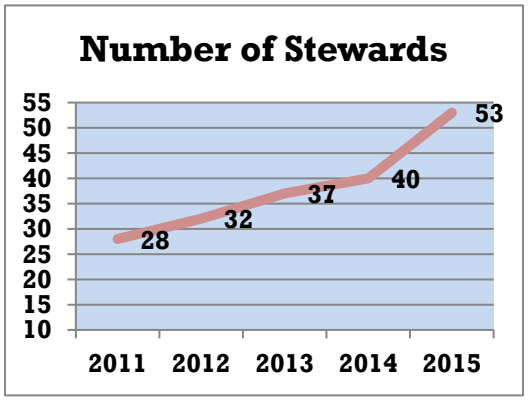
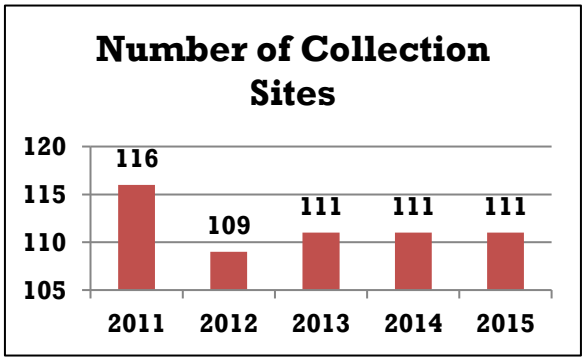


Figure 4.27: CleanFARMS Collection Sites



4.4.7 Thermostat Recovery Program

The Thermostat Recovery Program (TRP) is the designated program for recovering mercury-containing thermostats in the Province of Manitoba. The program is administered by the Heating, Refrigeration and Air-conditioning Institute of Canada (HRAI) on behalf of thermostat manufacturers. Based on estimates that 85 to 90 percent of thermostats sold in Manitoba are sold through contractors and wholesalers in the heating, ventilation and air-conditioning (HVAC) industry, this group logically makes up the primary channel for recovering mercury-containing thermostats. By engaging contractors throughout Manitoba to collect thermostats as they perform upgrades and service calls, the program expects to see a similar proportion of thermostats collected as sold through this channel. Because of this, a large portion of program activities in 2011 were focused on reaching out to contractors and wholesalers to become collection points.

Collection: In 2011, 31 mercury-containing thermostats were collected (figure 4.29), containing 85 grams of mercury (figure 4.30). Newer, programmable thermostats are more environmentally responsible as they contain no mercury. The official program reporting year runs from April 1-March 31, so the results of program year 2 and 3 are combined.

Figure 4.28: Thermostats Collected

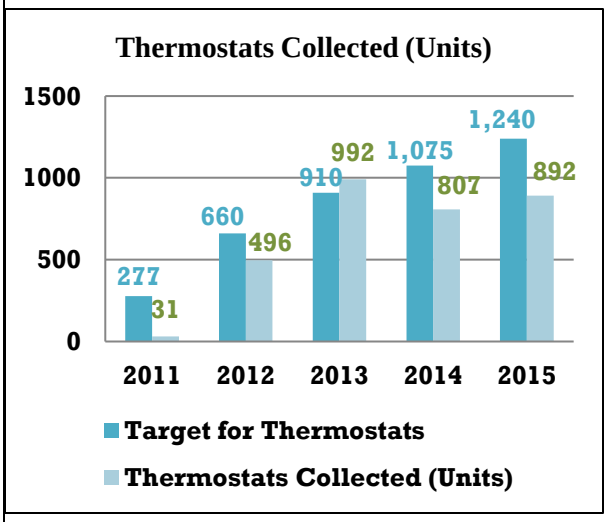
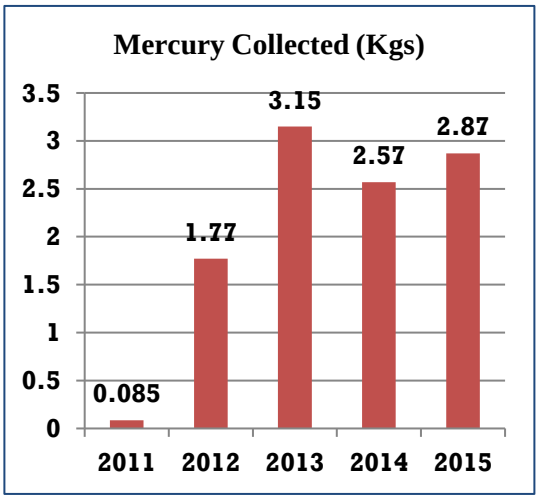
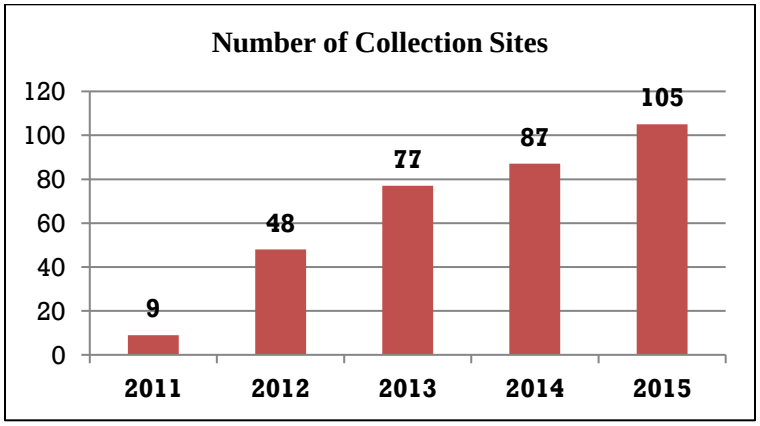


Figure 4.29: Mercury Collected



Collection sites: The program started with 9 collection sites, which increased in number to 105 by 2015 (figure 4.30). TRP's educational strategy is simply to promote awareness of the program to prevent inappropriate disposal of mercury-containing thermostats. The strategy is primarily targeted to contractors and wholesalers who are responsible for handling a high percentage of thermostats in the province of Manitoba.

Figure 4.30: TRP Collection Sites



4.4.8 Manitoba Association for Resource Recovery Corporation

The Manitoba Association for Resource Recovery Corporation (MARRC) is a non-profit corporation established by manufacturers and marketers of lubricating products in Manitoba. Its mandate is to develop, implement and administer a cost-effective, sustainable, user-financed, province-wide stewardship program for lubricating products (used oil, used oil filters and used oil containers) and automobile antifreeze. In 2012, MARRC started reporting separately for used oil containers and anti-freeze containers, therefore used oil collection for 2012 is the value after adjustments.

Figure 4.31: MAARC Used Oil Collected

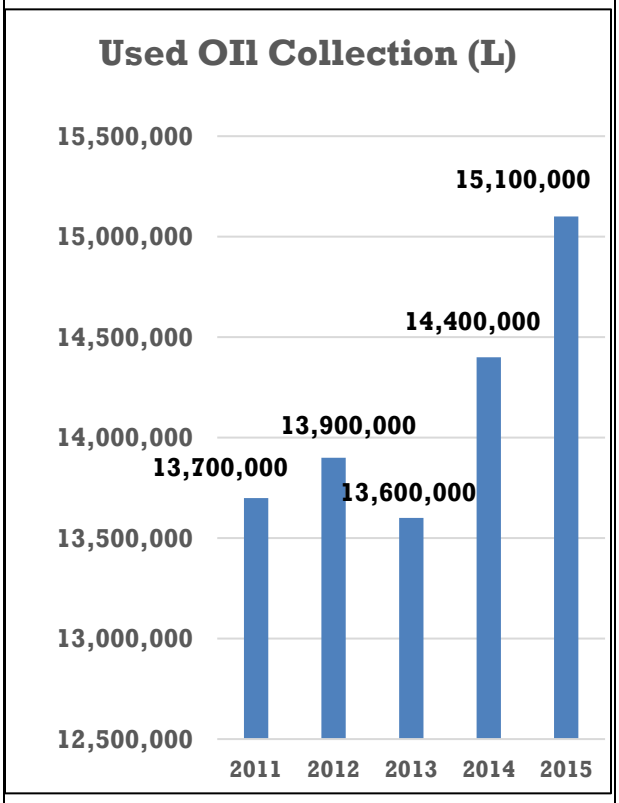


Figure 4.32: MAARC Used Oil Containers Collected

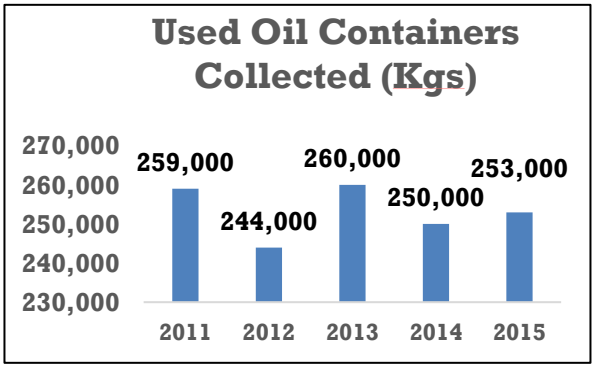


Figure 4.33: MAARC Anti-freeze Collected

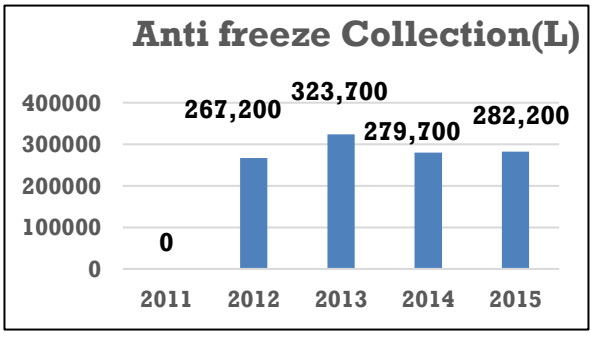


Figure 4.34: MARRC Antifreeze containers collected

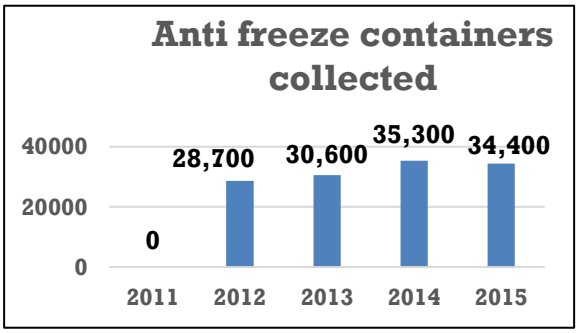


Figure 4.35: Public Awareness and Partnerships

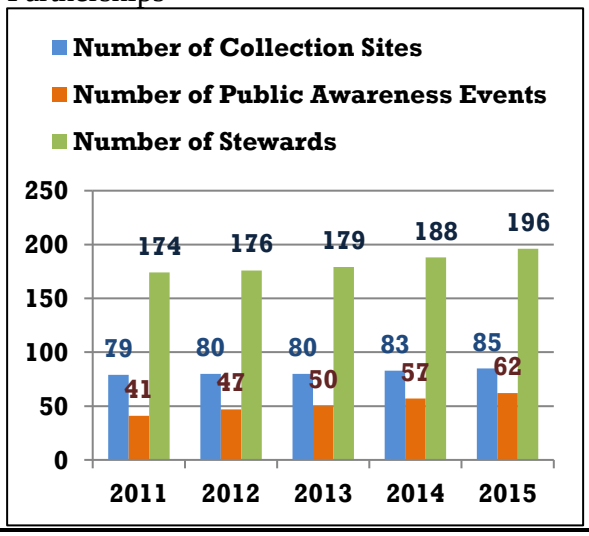
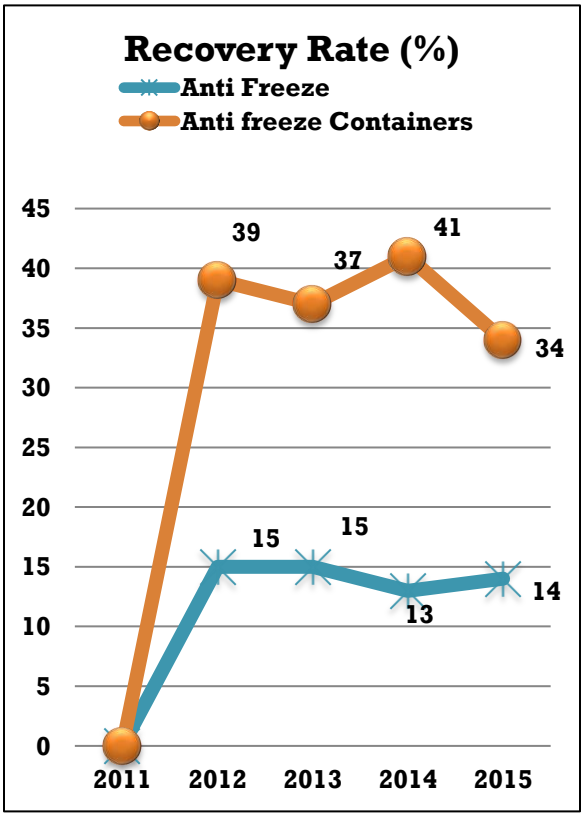


Figure 4.36: MARRC Recovery Rate (%)



4.4.9 Multi Material Stewardship Manitoba

Multi-Material Stewardship Manitoba (MMSM) is a non-profit, 80% industry-funded organization that develops, implements and operates waste diversion programs for designated packaging and printed paper in Manitoba. The payment rate is set each year to offset up to 80% of the cost, based on a three year rolling average of the net costs to participating municipalities within specific population categories.

Collection: The graph (figure 4.37) shows the total kilograms collected in the years 2011 to 2015. MMSM provides technical assistance to improve and enhance recycling programs and works closely with schools across Manitoba, which has resulted in an increased recovery rate. Fewer partnerships with municipalities in 2015 is the result of the amalgamation of 107 municipalities in 47 new municipalities across the province (figure 4.38).

Figure 4.37: MMSM Waste Collected

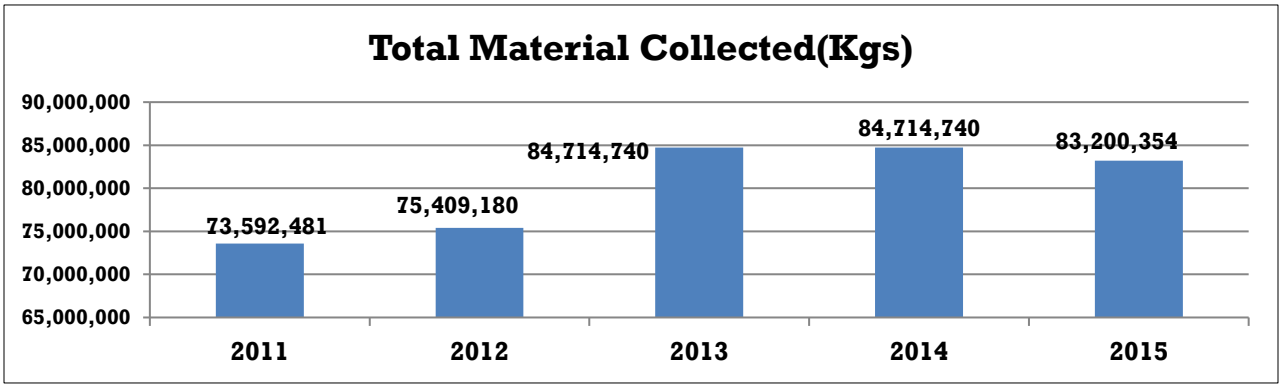


Figure 4.38: MMSM Partnerships

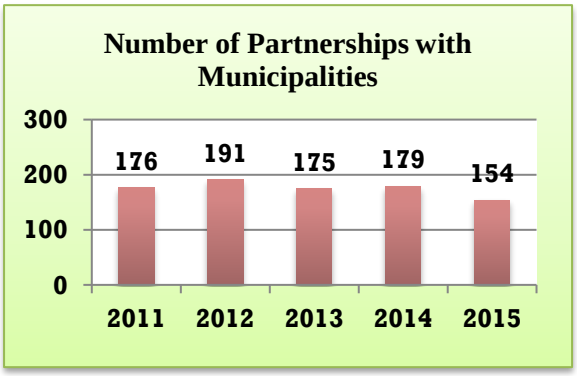


Figure 4.39: MMSM Recovery Rate (%)

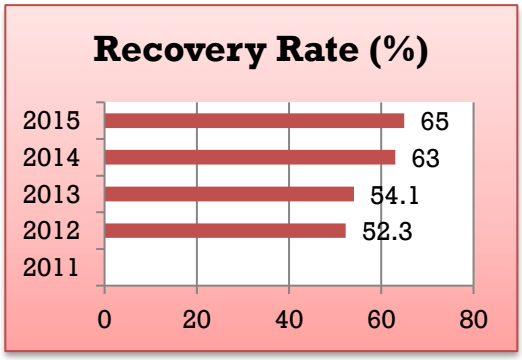


Figure 4.40: MMSM Stewards

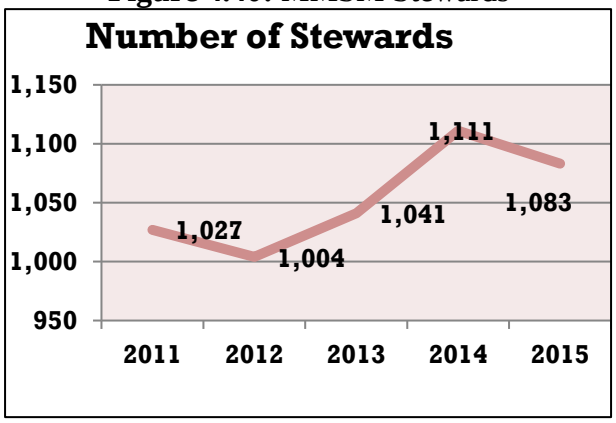
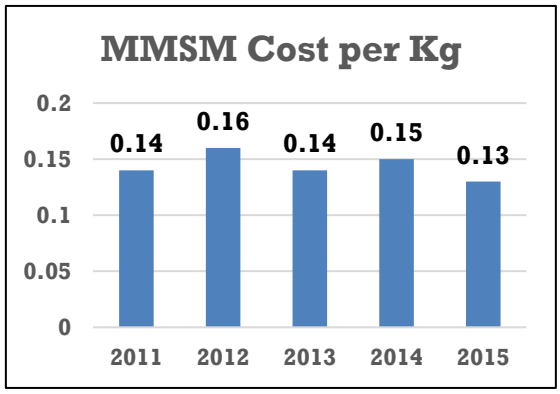


Figure 4.41: MMSM Cost per kg



4.4.10 Recycle Everywhere

The CBCRA is a not-for-profit organization formed by beverage container producers and distributors to recycle beverage containers sold in the province of Manitoba. The program is notable in being funded through a user pay system – container recycling fees. Recycle Everywhere strives to reach the government mandated 75% recovery rate by increasing away-from-home recycling awareness and promoting use of Recycle Everywhere bins. By 2015, CBCRA had distributed 45,000 bins across the province and conducted various collection events in northern communities. The Blue Box program covers Recycle Everywhere, and while separate annual reports are submitted, recovery rates for both remained nearly the same (see figures 4.39 and 4.42). Although Recycle Everywhere and MMSM are the same program, separate annual reports are submitted, but the mechanism for calculating recovery rates is not clear in the annual reports.

Figure 4.42: Recycle Everywhere Recovery Rate (%)

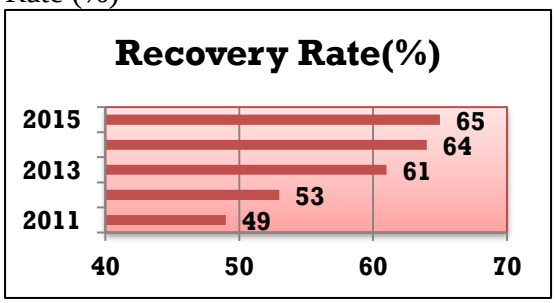


Figure 4.43: Recycle Everywhere bins distributed

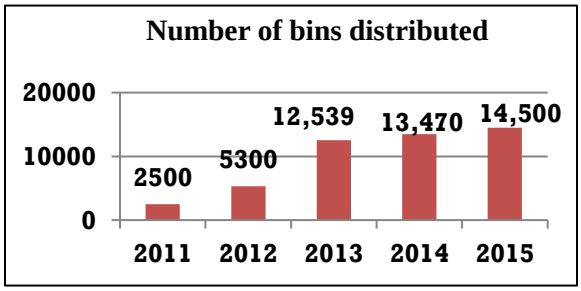


Figure 4.44: Level of Public Awareness (%)

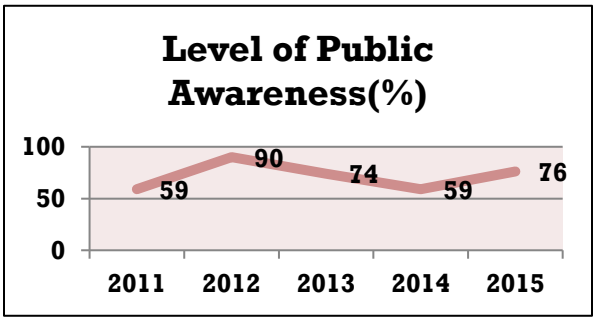
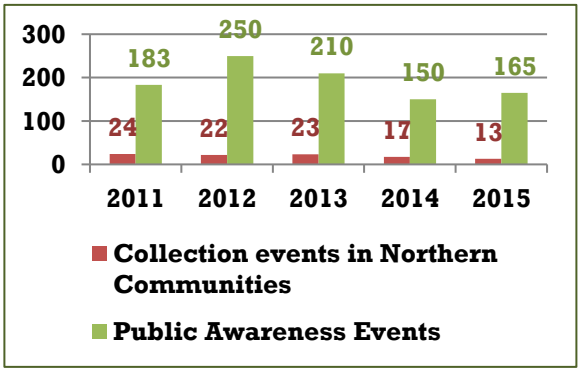


Figure 4.45: Recycle everywhere events



4.4.11 Health Products Stewardship Association

The Health Products Stewardship Association (HPSA), administered by the Post-Consumer Pharmaceutical Stewardship Association, covers the following product categories: all prescriptions drugs, all dosage forms, over-the-counter medications sold in oral dosage form, and natural health products. A correlation can be seen between the increased number of collection sites (figure 4.47) and the amount of material collected (figure 4.46). However, because of the practice of keeping medications for future use, there is typically a considerable lag time between purchase and eventual disposal. The program fees are set by the board to cover all the costs.

Figure 4.46: HPSA Waste Collection

Figure 4.47: HPSA Collection Sites

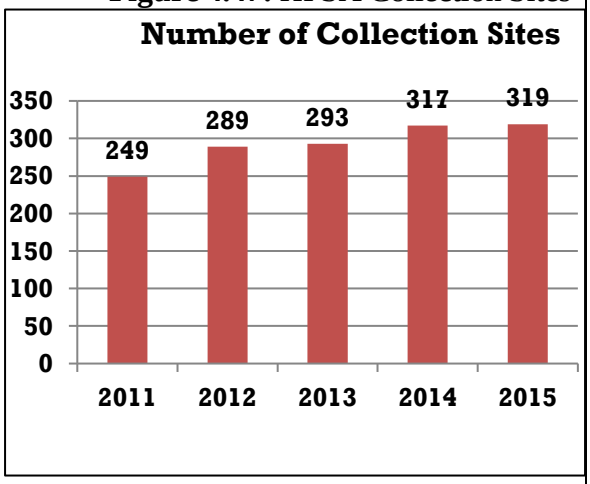


Figure 4.48: HPSA Stewards

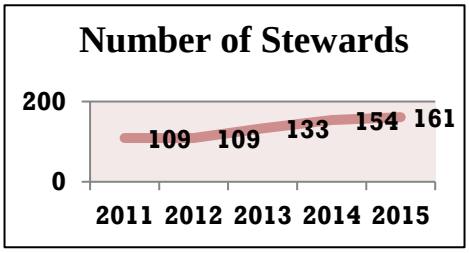
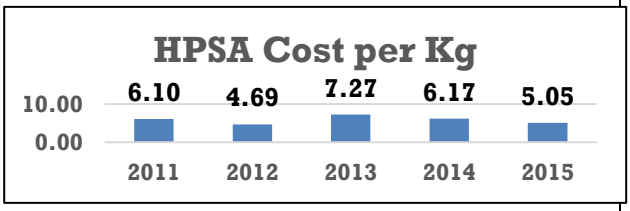


Figure 4.49: HPSA Cost per kg



4.4.12 Product Care Association

Product Care is a federally incorporated, not-for-profit product stewardship association managing Manitoba household hazardous waste. The waste materials include paint, flammable liquids, corrosives, toxics, pesticides and fluorescent lights. The program is funded by environmental handling fees. Figure 4.50 shows the volume of collected paint and household hazardous waste. The number of fluorescent lights collected is shown in figure 4.51.

Figure 4.50: Paint and HHW Collected

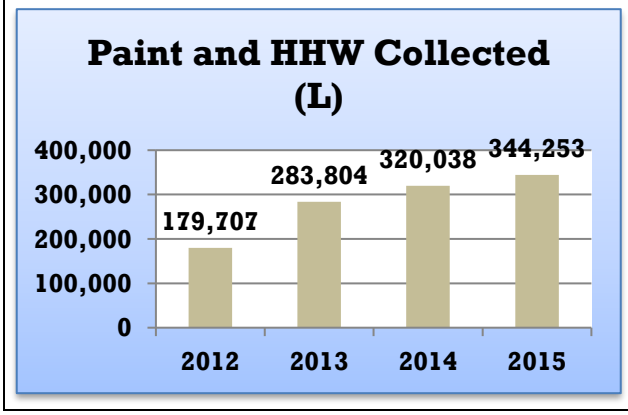
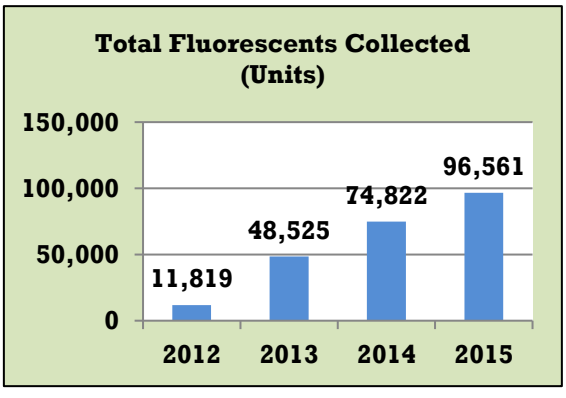


Figure 4.51: Fluorescents Collected



Collection sites: Product Care does not directly own or manage collection sites, but contracts with existing facilities. Due to the hazardous nature of some of the products, setting up permanent collection sites poses a challenge. Typically, collection sites are co-located at facilities such as local government recycling centers or transfer stations, non-profit societies and private businesses. One day household collection events are a supplement to the collection system. In the graphs (figure 4.52 and figure 4.53), it is clearly seen that with the increase in the number of year-round, permanent collection sites, the number of collection events decreased.

Figure 4.52: Product Care Collection Sites

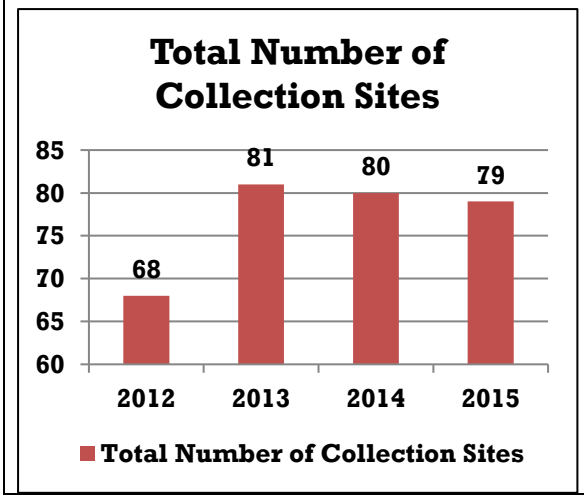
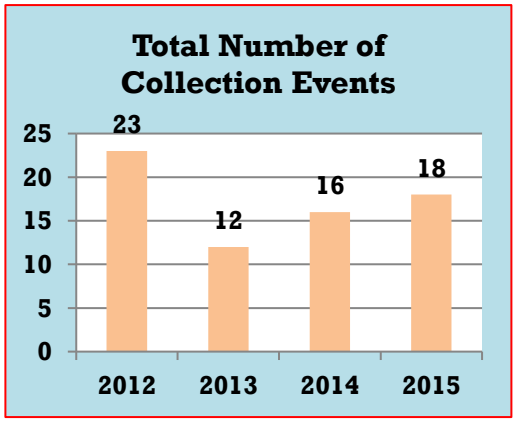


Figure 4.53: Product Care Collection Sites



4.5 Respondent Views of ISPs in Manitoba

In order to obtain insight into the various ISPs in Manitoba - as part of evaluating the effectiveness of the programs in Manitoba - interviews with leaders of PROs were undertaken as described in Chapter 3. I also spoke with organizations representing ISPs in Manitoba. As a result of the participants' responses, five strong themes emerged, which are discussed below.

4.5.1 Involvement of Government

Primary responsibility for the control of household waste rests with the provincial government, who has devolved this function to the PROs. PROs run programs for handling waste management

for a large number of items sold in Manitoba; the collection sites, transportation and processing are owned privately but must meet provincial requirements. The interview responses demonstrate administrative and organizational relationships between the collection and disposal of waste, and the inter-relationship between the practice of waste management and the structure of the provincial government. The Government of Manitoba has been increasingly active in undertaking initiatives, moving towards performance-based sustainable waste management and addressing the issues involved in the programs' implementation.

Based on the interviews, many distinct roles played by government agencies were highlighted as being important. The collection of household hazardous waste is controlled under hazardous waste regulations. For hazardous waste, regulations are enforced for collection sites by the government [T5, T6, T7, T8, T9 and T11]. Government legislation raises the importance of the hazardous element contained in household waste. Government implements measures to install collection sites in communities to mitigate the potential for leakage of chemicals into the environment [T6, T7 and T11]. Collection sites for hazardous products in smaller communities require licensing from government, which poses a challenge for achieving collection targets, especially in northern and remote communities [T11].

The provincial government is the key body regulating and managing waste management, approving 5-year work plans. Participants noted a gap in policy implementation, mentioning that revising stewardship plans every five years is a tedious task, and "requires time and money" [T3, T5, T6, and T9]. According to a respondent,

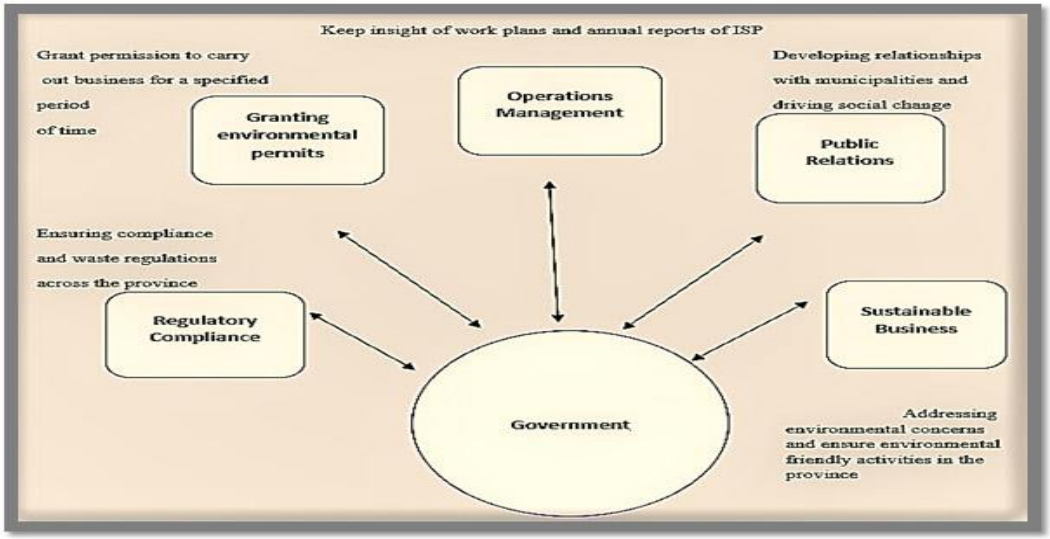
> "*there are challenges with the regulations, one challenge is, our program plans are for five years, we have asked them to remove the expiry, if we would need to revise our plans we would submit our new plans, if there are changes in the regulations, we can do it that*

way. It is a year and a half of work - resources, time, money can be used somewhere else where required. Legal fees, advertising fee, staff costs. We are submitting our annual reports, we are giving a summary of our programs, which should be sufficient. But, that is the part of the regulations, part of the Act so we have to do that. We don't get feedback on it so why we have to go through this process?"

The positive side of revising stewardship plans every five years is that they can be modified by comparing the operations of previous five year programs. The interview responses from participants also identify a gap in monitoring and auditing of program performance. The government lacks staff for auditing data reports and improving data reporting [A1 and A3]. A respondent conveyed, "*there needs to be much more happening on sort of auditing of data reports and on kind of improving data quality and all those three things require more staff and I think Green Manitoba does not have right now."* There exists a gap in annual reporting of PROs' performance, according to interview responses. Auditing and annual reporting remains inefficient because of governmental inefficiencies and lack of trained personnel [A1 and A3].

Government also plays a key role in regulating free riders in the system. Manufacturers, sellers and first importers of products in the province must have registration numbers under ISPs [T1 and T4]. If they are not in compliance, they are directed to the regulatory government agency Green Manitoba [T4]. Recyclers are required to meet the recycling standards [T4]. This suggests that a considerable amount of work at the government level is required if waste policy and strategies are to lead to the desired outcomes.

Figure 4.54: Government's role in Industry Stewardship Programs



4.5.2 Funding Mechanisms

ISPs are programs where all stakeholders play an important role in funding mechanisms. The interviews conducted and data from the annual reports revealed information about the financing mechanisms of these programs in Manitoba. Table 4.2 above shows the sources of revenue for program funding. 75% of the programs (9 ISPs) are funded by membership fees passed on to the registered stewards of the program. The manufacturers, retailers and contractors are the stewards of the program. 25% of ISPs are also funded by levies and eco-fees, which means 3 ISPs are funded by both membership fees and the levies/eco-fees. 3 ISP programs are funded only by levies and eco-fees. These levies and eco-fees known as environmental handling fees are charged at the point-of-sale to the consumers. In cases where programs are funded through steward fees, PROs set the fees based on different variables. The steward fee charged to the stewards is based on their share of volume sold in the market or collected. In the case of levies and environmental handling fees (EHFs), the fees are based on the cost of processing the material and the market value of the product at the end-of-life.

Keeping the costs low

The potential efficiency of ISPs lies in the economy of the programs. The programs are considered successful if the costs to the public are kept minimal. When asked about keeping the costs low to the PRO participants, respondents referred to strategies used to keep a check on the EHF. The EHF is calculated based on their share of volume sold in the market place (8 PROs), volume of material collected (1 PRO), size and material of the different products of same category (3 PROs). The PROs keep an annual surplus of revenue worth one year, predicting change in the volume of recovery and sales [T1]. The PROs keep the costs lower by adding new materials to the program. For example, CleanFarms collects and recycles pesticide containers, and in order to keep the costs low to the stewards, the program started collection of fertilizer containers along with pesticide containers. Adding more things to the program keeps the cost consistent, even if the market value of the collected material changes [T2]. The program operators keep a constant watch over the costs of transportation, collection and processing [T4]. The program costs are set with enough room to cope with changes in commodity prices in the market. The market value of the commodity cannot be controlled [T8], but the program operators find the best option to deliver cost-effective programs. The programs have not reached their full potential, and the costs might come down when the programs obtain their full potential. For example, according to a respondent,

"*For TV, when you buy a TV 29 inches or smaller, it has a $7 fee, 49 inch or larger, it is $28. The way that we have looked at it is come to set a fee, if you are buying a large screen TV, chances are you are recycling a large screen TV so this fee is reflected as a cost to recycle the TV today. We are still recycling the old CRT TV, those are extremely expensive to recycle because of the lead and the glass contained in it. So, the fees are dependent on what you are recycling today. Big screen TV means you are replacing a big screen TV and you need to pay the cost of recycling that*

big screen TV. So, if we fast forward say 8 years from today and they have not made CRT TV from 10-12 years and we will eventually go through them all. They will not be around anymore. The fees will be lower because it will reflected on what is coming in, and now you will be recycling those flat screen TV that is smaller and lighter but today you are recycling a TV that is very large and heavy glass."

The PROs are spending money on distributing more bins, expanding collection networks, and promoting education and awareness. Participants suggested that costs might come down once the province has fully matured programs [T3, T5]. A participant responded,

> "*We spend 4 billion a year on bins there is a cost to collecting it, in our case we don't collect the material, waste haulers collect it etc. but the recycler and the municipality all of them receive revenue from the material and so that is where the revenue of the material is really important. And at this point most our costs big portion of our costs are related to getting the bins out. Once the province is saturated the number will come down, the cost will come down."*

The responses from the interviews convey that program implementation requires capital investment, whether it is related to licensing of the program, investing in physical infrastructure, campaigns for public awareness, pilot projects or facilitating transportation. Each individual PRO has a different program design based on the type of obligated material, which demonstrates a lack of harmony between ISPs. Some products are disposed of as soon as they are not in use, such as beverage containers, while other products stay till their end-of-life, such as TVs, thermostats and tires. According to a respondent

> "*It is very difficult to get the sales because they are no longer in the market to be sold. So, we don't have current sales data etc. They are no longer being sold, they are just out there.*

So, our part is more for collection and recovery, which should have a tangible target. But, we don't know what is out there and sold in the market. And thermostats last for 30 years, very long lasting, but we work, we know there is a lot of work. I know, there are a lot of people having thermostats in their home. They are not ready to replace their thermostats, they won't replace it until their air conditioners are cold, so they are very long lasting, and they are not regularly replaced, so this is why our targets are lot different, we don't know how much of our product is out there. They were sold too many years back."

The products also differ according to their size, and the successful management of products varies depending on their size and the value of the product at the end-of-life. Therefore, the cost of operation is highly dependent on the type of waste material collected, infrastructure for collection and transportation costs. The PROs have their own methodology for setting fees, which cover the cost of the program while keeping the cost low to the public. Revenue is generated by PROs from EHF, levies, membership fees, producers and consumers at the point of sale. The PROs work to keep the costs constant by using different strategies. These include adding more materials, reducing transportation costs, etc. The costs may come down in the future when the programs are more mature and will have enough physical infrastructure.

Table 4.1: Source of revenue for programs funding

REVENUE FOR FUNDING THE PROGRAMS	MEMBERSHIP FEE	LEVY/EHF	CONSUMERS PAY
Call2Recycle Canada	☑	☑	☑
Canadian Battery Association	☑		
Canadian Beverage Containers Recycling Association (CBCRA)		☑	☑
Recycle My Cell	☑		
Clean Farms Inc.	☑		
Electronics Product Recycling Association (EPRA)		☑	☑

Health Products Stewardship Association	☑		
Thermostat Recovery Program	☑		
Manitoba Association for Resource Recovery Corporation	☑	☑	☑
Multi Material Stewardship Manitoba	☑		
Product Care Association	☑		☑
Tire Stewardship Manitoba		☑	☑

4.5.3 The Importance of Public Involvement to ISP/EPR Programs

The interviews with participants revealed that even though the waste management system in Manitoba has improved, this does not necessarily encourage citizens to actively participate in the programs. The "human behavioural factor" was cited many times by respondents as a limiting factor to achieving waste reduction targets in the province, due to the complex design of waste sorting and disposal. This was noted by 9 out of 11 participants [T1, T2, T3, T5, T6, T7, T8, T9, and T11]. Examples of the human behavioural factor include litter, overflowing garbage, illegal dumping and burning of waste. Waste management in Manitoba follows a product stewardship and EPR model where levies or EHF are included in the cost of the product at the point-of-sale; therefore, consumers do not have to pay when they drop off their used and unwanted products. This model controls illegal dumping to some extent. If the consumer were to pay to get rid of waste, illegal dumping would likely increase [T1].

Another situation where the human behavioural factor is evident is in cases where consumers extend the usage of the product even after the shelf-life and do not want to replace or change the product [T1, T8]. A respondent stated,

> "*We found that the tires from the farms are considerably down from that of the city because they drive on more gravel. And people tend to use the tires till they are pretty much exhausted as opposed to in the city. Most people would tell you legal remittance is 230*

seconds per tread on average. Manufacturers would recommend 430 seconds. Because 2 years are pretty much for the tires to bolt. Fall is not great, because if it is wet your stopping distance is incredibly longer but a lot of people wear them down to 535 seconds. They will have another 20,000 kilometers on it to switch them."

The practice of using the product for an extended period of time has another associated environmental impact, namely the consumption of more resources in the form of energy/fuel [T1, T10]. The residents of communities are provided with information brochures for household waste disposal [T3], but the contamination of bins was highlighted by participants for household waste [T3, T5, T7]. The information brochure provides information about proper disposal of all items. For each PRO, the City of Winnipeg and Green Manitoba have websites where information about all the items can be found. However, there is still a high occurrence of residents throwing items in bins not meant for that particular item [T3], for example, with food scraps in the box [T9] leading to the contamination of bins. This also devalues the collected material [T3, T5], and recyclable items placed in the garbage go to the landfill.

Improving public awareness and community participation in waste management was widely recognized by respondents as necessary to create sustainable waste systems and to increase recovery rates [T1, T2, T3, T4, T5, T7, T8,]. 64% of the PRO participants had a similar opinion on improving public awareness and education; outreach to communities is strongly encouraged by actively seeking out information about the waste management programs through brochures and toolkits. Public awareness activities depend upon the type of obligated material. For materials with high value at the end-of-life, public awareness does not have much relevance. People manage the systems for such materials to generate income [T5]. As part of public awareness and education, different strategies are used by the PROs to promote the culture of recycling. It was suggested that

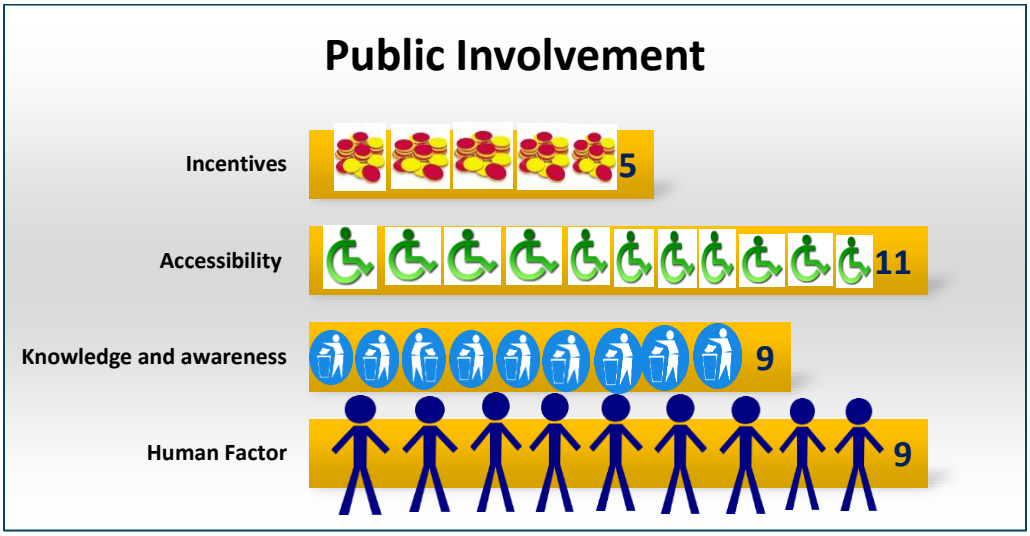
making people aware about uses of recycled material is important [T1 and T5], and increasing the visibility and accessibility of collection places should be a priority [T2, T3, T4, T5, T6, T7, T9, T10]. However, having easy access to collection sites does not help unless people are aware of the waste collection programs in the province [T2]. People need constant reminders [T2 and T4]. There is always a need for awareness among the public about the real challenges involved with waste products at their end-of-life, especially hazardous wastes [T7]. Public awareness is also enhanced through stewards [T8]. The stewards inform and convince people to replace their old products with newer ones that are more eco-friendly, consuming less fuel/energy.

The various programs use different means to reach the public. The products that are returned to the retailer are advertised through the contractors, manufacturers and retailers. Three participants mentioned that the PROs also participate in public events to spread awareness of their programs, in addition to using media for awareness building [T1, T5, and T7]. According to one participant PRO client [A1], promoting public awareness is complicated in the way it is approached.

The findings from the interviews identify the powerful impact of incentives on residents' attitudes toward recycling. When people do not see any incentive to recycle their used material, they are likely to be involved in illegal practices, such as the burning of waste [T2] or illegal dumping of waste in bushes [T1 and T5], although no evidence of illegal garbage dumping was reported in the annual reports. One PRO participant mentioned that the transportation company gets high incentives to go up north to collect waste material [T7]. The collection sites get incentives in the form of financial assistance [T1, T7] and other support, for example funding and other support to help with the setup of collection sites [T7]. If the waste has a positive value at the end-of- life, people set up a closed-loop system because they generate income by selling or returning

their product for recycling [T6]. 5 out of 11 respondents had similar comments regarding incentive-based waste management systems. One PRO client participant [A2] discussed incentives given to the collection sites. According to the participant, the incentives are given in the form of financial assistance for setting up collection sites or a specified amount of funding depending on the amount of material collected by municipalities. For example, TSM gives 50 cents for each tire collected and stored by the collection site, and the Used Oil & Antifreeze Recycling Program provides 50% of capital needed for setting up and operating collection depots.

Figure 4.55: Factors influencing public involvement in waste management activities



4.5.4 Understanding and Developing a Sustainable Recovery System

Waste management does not only include recovering waste products and diverting recyclables from landfills, but includes the system as well that involves the flow of material making the programs self-sustaining. PROs' efforts to minimize the material going to landfills depend on a sustainable system. To develop the measures of self-sustaining programs, the respondents confirmed that they monitor and assess the flow of the material to ensure there is no backlog and

stockpiling of the recovered material [T1 and T6]. In order to achieve higher recovery rates, the PROs promote awareness about their programs. One PRO participant mentioned that in order to increase public awareness, they target people by their age-group [T5], while another PRO participant mentioned that when necessary they promote their program by advertising about their PRO to raise awareness [T2], which means that different strategies are used by PROs to promote their programs in the province.

The emphasis of the education and awareness programs is on making the people aware of how and where to take products for recycling [T1, T4, T6, T7 and T10]. Consumers in Manitoba can drop off their end-of-life products, such as electronics, tires, batteries etc., free of charge at any drop-off centre. Residents can call 311 or go online to locate the nearest authorized collection point by entering their postal code. PROs also have their websites linked to the City of Winnipeg website. The aim is to make it convenient for the residents of Manitoba to dispose of their used and unwanted material. Aside from improving the solid waste infrastructure, the PROs collaborate to make the best use of their resources. In northern and remote communities where transportation of products is a challenge, PROs work with the communities to support logistics [T1]. Collected material is moved out together [T7] in clusters including tires, batteries, electronics etc.

Apart from having the ability to engage citizens and to collect and transport material, a number of PRO participants suggested adopting a closed-loop system [T1, T4, T5, T6 and T7]. For example, a burning station is set up in northern Manitoba where used oil is used for heating buildings -- a closed-loop system. This is done not only in the north, but a heating station has also been set up by the PRO at a Canadian Tire store in Winnipeg. Investigating new markets and responding to changing markets will help to ensure there is no backlog. Finding a suitable market for the collected material is critical to make the program self-sustaining [T1].

Programs are not only actively involved in finding ways to achieve higher recovery rates, they also study and understand the flow of used and unwanted products. Participants had different responses based on their research, including that citizens are not ready to replace their items very often [T8, T11], or they find alternate options for products with positive value instead of recycling [T11]. For example, consumers re-sell their used cell phones, or trade-in with new cell phones in the market. In case of used oil and anti-freeze, the vehicle owners top-up the oil and the anti-freeze. The PROs have also discovered that the contamination of bins is a big challenge [T3, T5, T7 and T9]. They believe that the sorting and disposing of waste at the source is an important element of sustainable waste management and recycling. The PRO leaders view the human behavioural factor as a major challenge, and emphasized attempting to change behavior around the sorting and recycling of used products.

However, clients who use the waste management system in the province have contrary opinions. They believe that the already implemented system in the province is far too complex [A1, A2, A3, and A4]. The public does not really understand what the infrastructure is [A2], bins for beverage containers can be seen all over, but it is difficult to understand "what goes where" [A1, A2]. There are no bins for hazardous products like dry cell batteries or fluorescent lamps in the households [A1, A3], which leads to the contamination of bins. Although the Province's solid waste infrastructure may be working in fair condition, it does not offer enough in terms of public convenience for preventing and reducing waste [A1 and A2].

4.5.5 Managing Waste from Top to the Bottom to Ensure Environmental Safety

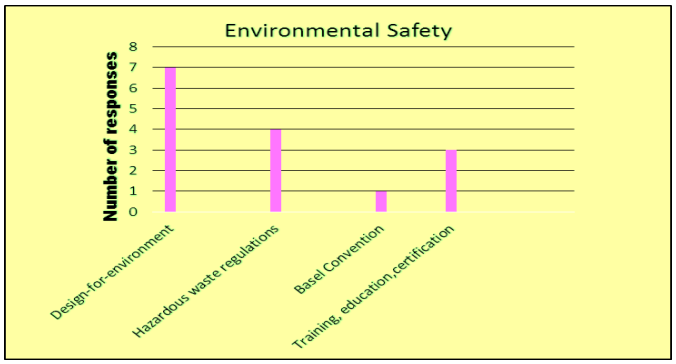
Interviews with the participants showed that post-consumer waste is managed by all the actors involved in the programs to ensure the safety of the environment. Depending on the type of material, different actors have different roles to play. ISPs are delivered to ensure recovered

material finds a suitable market in order to be converted into useful and valuable products. The program operators find opportunities to recycle recovered material into value-added products to extend the life of the material [T1]. The materials in the products coming to the market are changing [T1, T3, T4, T5 and T8]. For example, materials are lighter in weight, products are more environment-friendly, and new products are designed to minimize the environmental and health hazards with fewer or no toxic substances in them [T8]. All of the new products coming to the market are not recovered today, they will be available for collection after a few years when people discard them [T4, T8]. On the other hand, one-time use products are recovered daily from household waste. A respondent described that as a result of changes in product design, the weight of material collected has been reduced [T3]. These transitions in product design are not only the result of the manufacturers' efforts to reduce the amount of waste going to the market, but is also the result of responses from the public.

People are becoming more comfortable turning to the internet for everything, including reading newspapers [T3], shopping online, banking online, emailing etc. This has resulted in a reduction of waste going to landfills. Similar responses were found from the participants regarding hazardous waste regulations. The collection sites are required to comply with these regulations in order to meet the criteria and run the business [T7 and T9]. Figure 4.4 above shows that 7 out of 11 PRO participants responded that ISPs have led to changes in designing products. Light-weight and more eco-friendly products are increasingly coming to the market. The programs are also run under regulations and conventions to promote environmental safety. For waste products that require special handling, such as used oil, batteries, and household hazardous products, special training and education is given to the staff involved. Staff involved have to go for annual medical checks for the detection of hazardous metals such as lead [T4]. Hence, the responses from

participants conveyed that the waste management system in Manitoba is well-developed and regulated in compliance with the environmental and hazardous products regulations.

Figure 4.56: Practices adopted to improve environmental protection



4.6 Summary

The research data indicates a strong relationship between community benefits and sustainable waste management. It has also been determined that people who see waste as an immediate threat to them are more likely to engage in waste minimization behavior. For example, LABs have a higher recovery rate due to the positive value of the lead, and tires have high recovery rate because of their large size. In contrast, products that are less than 5 kilograms in weight, such as dry cell batteries, have almost half the recovery rate of LABs. Individuals do not find any, or find limited direct benefit to recycling dry and rechargeable batteries. Another example to consider is pesticide container recycling. It was noted that the recovery rate of pesticides and fertilizers containers has decreased over time, and this is primarily because there is no incentive for farmers to recycle their empty pesticide containers. Another factor in lower recovery rates is the lack of public access; citizens have to go to the collection sites to drop-off their unwanted products. A few examples of products with low recovery rates include leftover or unused paint, compact fluorescent lights, and dry cell batteries. The waste management programs have come a long way, but there is still a lot to be done to improve the recovery of used or unwanted product.

Chapter 5

Discussion

5.1 Introduction

ISPs in Manitoba are diverse and have come a long way in their development and implementation, but much more work is required to reach a satisfactory level of operation as indicted in the self-reported data presented above and reported in the interviews I carried out. The Government of Manitoba and PROs have employed various measures to divert household waste from going to landfills by developing a waste reduction and prevention framework for the province, including setting individual waste diversion goals, reaching out to residents to promote recycling education and awareness, expanding waste collection networks and introducing environmental fees for the commodities. There are certain identified gaps in delivering these programs. This chapter focuses on discussing what has been done so far and what the limitations are of the waste management system in Manitoba. In this chapter, I discuss the current programs framework and the various factors that influence effectiveness, describe current issues and trends in the waste management system based on the data presented above and explore what the missing factors are in increasing recovery of household waste products.

5.2 Industry Stewardship Programs in Manitoba: Reflection on Program Design, Goals and Effectiveness

In Manitoba, ISPs were developed when an EPR program was formalized by all the provincial, territorial and federal governments in 2009 (CCME, 2009). The currently operating product-specific programs in Manitoba have shown improvements in diversion of wastes from 2011 to 2015. EPR Canada's report card, which was released in October 2015, awarded Manitoba the third highest mark of B, in line with Quebec and British Columbia. This mark is based on waste

diversion rates and harmonization of the programs. Because PROs play an important role in implementing and deliver programs under the notion of EPR, the discussion of the structure of these programs could address the identified gaps in program implementation and development (Bury, 2013).

ISPs in Manitoba evolved under the EPR model with a mission to divert solid waste from going to landfills while realizing several interrelated waste management goals. According to Lifset et. al (2013), four broad goals are realized within the EPR model: first, promoting improved product design by creating incentives; second, incorporating the private sector to achieve public goals related to waste management; third, internalizing the costs of waste management into product prices; and fourth, shifting the financial responsibility of waste management from municipalities and taxpayers to all stakeholders and consumers. Throughout the analysis in Chapter 4, it is evident that ISPs in Manitoba are almost exclusively focused on shifting the financial responsibility for the collection of household solid waste. The ISP system is designed and implemented in a way that passes the costs of managing waste products to the consumers at the point of sale through a EHF/user-pay system for a variety of household wastes. The incorporation of the private sector (i.e., PROs) plays an important role in the implementation of program plans: they organize and/or deliver the collection and processing of end-of-life products managed through take-back systems. The products coming to the market are changing by weight and material.

Ideally, EPR as a notion of sustainable waste management has been applied as an instrument for shifting the economic and physical responsibility to producers for the recycling of products they have manufactured, including packaging, electronics and a variety of household hazardous wastes, such as used batteries, leftover paint, and unused pharmaceuticals. Evidence and findings indicate that the presence of EPR policy has favored improvements in product design

(Tojo 2004; Sinclair and Fenton; Fenton and Sinclair), for example, light-weight products coming into the market such as TVs, and light-weight newspapers. Changes in thermostats and other household products, such as compact florescent lamps, also demonstrate these sort of changes in product design. The reduced recovery rate of material by weight as a result of product design (see Chapter 4) is also considered an important factor in reporting in Manitoba, but results show little or no progress in this regard. However, in most cases, EPR systems have not been designed or implemented in a way that incentivizes the (re)design of products to achieve environmental improvement (Dempsey et al. 2010). For example, for goods with long life cycles, such as electronics, the PRO typically sets a uniform contribution fee, regardless of the materials used in the product. As the correspondence between fees paid and the waste produced at the end-of-life is weak, the incentives for green product design are also weakened for products with long life cycles (Dubois, 2012).

Effectiveness of Industry Stewardship Programs in Manitoba

Table 5.1: Summary of activities delivered by PROs over a 5 year period (2011-2015).

Producer Responsibility Organizations	Materials Collected/ Recovery Rate	Number of Collection Sites	Collection Events in Remote and Northern Communities	Level of Public Awareness (%)	Number of Registered Stewards	Recovery Rate (%)
Call2Recycle	279257 kg.	481	No collection events reported in remote and northern communities	No reporting on level of public awareness	182	57.45
CBA	25487948 kg.	88	No collection events reported in remote and northern communities	No reporting on level of public awareness	No reporting on number of stewards	102.4
CBCRA	Collection reported in terms of recovery rate	45,000 bins	13/165	No reporting on level of public awareness	No reporting on number of stewards	65

Recycle My Cell	11,885 kg.	136	No collection events reported in remote and northern communities	20	17	8.72
CleanFARMS Inc.	1,208,401 kg.	111	No collection events reported in remote and northern communities	No reporting on level of public awareness	53	Recovery rate not reported
EPRA	10,409,000 kg.	62	No collection events reported in remote and northern communities	68	511	Recovery rate not reported
Medications Return Program	75,932 kg.	319	No collection events reported in remote and northern communities	No reporting on level of public awareness	No reporting on number of stewards	Recovery rate not reported
Thermostat Recovery Program	2326 Units	105	No collection events reported in remote and northern communities	No reporting on level of public awareness	No reporting on number of stewards	Target Achieved= 72%
MARRC	**Used Oil**: 70.7 Million Litres **Used Oil filters**:7,916,510 Units **Used Oil Containers**: 1.27 Million Kgs **Antifreeze:** 8,075,600 Litres **Antifreeze Containers:** 346,700 kg.	85	No collection events reported in remote and northern communities	No reporting on level of public awareness	196	Recovery rate not reported
MMSM	3,18,159,152 kg.	No collection sites. Bluebox distributed to households	No collection events reported in remote and northern communities	66.66	1,083	65

Product Care Association	**Paint and HHW:** 783,549 Litres **CFL:** 38,088 Units **Fluorescent Tubes:** 85,259 Units	79	18	No reporting on level of public awareness	No reporting on number of stewards	Recovery rate not reported
Tire Stewardship	59,668,000 kg.	1,501	No collection events reported in remote and northern communities	53	No reporting on number of stewards	91

The following inferences are drawn from the data presented above and summarized in Table 5.1:

- The table shows that 12 programs are functioning in the province for the various types of designated materials, and different modes of collection are used to recover waste products.
- For waste material with high volumes and higher generation, garbage bins are distributed. Collection bins are distributed for packaging and printed paper in households (blue-bins), beverage containers (CBCRA) at public spaces, dry and rechargeable batteries at libraries, offices and institutions. Waste materials that are hazardous and have small volumes are collected at registered collection sites. The items dropped off at collection sites include electronics, used oil, batteries, pharmaceutical products, thermostats, pesticide containers, paints, lamps and scrap tires.
- The waste collected is reported annually in terms of units, weights, targets achieved and recovery rates, depending on the category of waste collected. Thermostats, used oil containers, and anti-freeze containers are reported in units. Used oil and antifreeze are reported in terms of volume collected, while all the other waste products are reported by weight.

Overall, results of this research show that there was an increase in quantity and quality of wastes recovered and recycled for the period 2011-2015 in most sectors. ISPs in Manitoba have certainly provided improvements in terms of collection, recycling and recovery performance for household waste products (see Chapter 4). In this context, it is worth saying that PROs and the waste management systems that they run are a step forward towards developing a "recycling society" in the province. However, the data from annual reports show that there is room to improve the performance and impact of current EPR-based systems in the Province. For example, the programs' annual performance is evaluated in terms of collection rate. The programs report annually about their recovery rate, the targets vs achievements, the financial statements and the number of collection events, but very little reporting is done on what happens to the collected material, for example, how much collected material is recycled, sent to incinerators or to landfills and across borders, which is a big gap in the waste management system.

Cradle-to-grave reporting of the collected material, auditing and reporting about replacing virgin materials with recycled materials and its positive impact on natural resources could all have a positive impact on increasing waste diversion from landfills (Hanisch, 2000). The main goal of any environmental policy should be to reduce all impacts simultaneously rather than focusing on one aspect of reduction of postconsumer waste (Dubois, 2012). Instead, the primary achievement of ISPs has been to fund, create, or expand infrastructure for postconsumer recycling.

Economic Analysis

In the ISPs that are operating in Manitoba, the costs are internalized and the prices are charged to consumers. However, the majority of programs operate using a visible EHF added at the point of purchase. Bury (2013, p.2) asks, "*whether programs that use EHFs are in fact truly EPR. If there is an explicit EHF, this is paid by consumers and remitted to the producer responsibility*

organization, but producers, while managing the funds and the program, do not directly contribute." He suggests that producers may inform consumers that the price of a product includes an EHF, but they should not explicitly add it as a separate line item on an invoice or receipt under the EPR model. In addition to this, there is a need for assessment of program costs. In general terms, a comparison should consider all costs, while the only easily available information is that on financing needs of PROs (EEA, 2005a).

The economic model describes that PROs are created by producers to achieve collection targets by making necessary expenditures, including incentives to the municipalities for collecting the used material. For example, MMSM provides up to 80% funding for residential recycling services, CBCRA provides free recycling bins, TSM pays 50 cents per tire to the registered communities, and MARRC shares the cost of setting up and operating a collection depot (Green Action Centre, 2017). The findings demonstrate that PROs run their programs using the eco-fees paid by consumers, who in return can dispose of their unwanted products at the collection depots free of cost. A controversial debate arises on the low-cost of household waste collection. When there is no immediate cost to citizens for the amount of waste generated and disposed of by their households, it leads to system failure: for example, irresponsible disposal and contamination of bins undermine the goal of waste management. Unfortunately, raising the price of consumer waste collection is difficult because illegal disposal by households is hard to control (Dubois, 2012). Illegal dumping of waste could increase as people try to avoid any extra cost for disposing of waste products. The economic model and the pricing of disposal has a great influence on the successful implementation of the programs, but household attitudes related to waste separation and disposal are also affected by the physical infrastructure and proper knowledge and information (Guerrero, et. al, 2013).

Making Recovery Happen: Physical Infrastructure and Public Education

The ISPs operating in the Province have a focus on expanding physical infrastructure to increase accessibility and public convenience in drop-off locations. The effectiveness of the collection system for household waste products can be determined only by knowing the perspectives of the citizens. It is important to know the amount of waste products coming out of the households that are actually dropped-off by individuals. Also critical to know is what percentage of people actually take their unwanted products, such as expired medicines or discarded electronics, to the collection depots to drop-off free of cost. There are many other household hazardous products, such as dry cell batteries and lamps, that lack disposal facilities. Large and bulky waste, such as household appliances, need special pick-up with associated charges of less than $20 per item (Green Manitoba, n.d.).

The lack of well-developed collection infrastructure and the pricing of collection services compounds the human behavioural factor. If this is the case, it is important to understand the various associated gaps, such as: reporting of the recovery rate and the funding mechanism; and what percentage of unwanted products are actually dropped off at the designated collection sites, because only products dropped off at the sites are not charged, otherwise bulky waste are collected from households with applied charges. This is indicative of a lack of clarity in the reporting data. Further expansion of the collection network needs a separate evaluation from households in order to meet the zero waste targets of the province and enhance public involvement.

Another keen focus of PROs' activities is public awareness and education. Although PROs report about public awareness programs in the province, an identified gap exists in relation to the difference between information and knowledge. There is a need for research on the degree of public awareness about the recycling programs in Manitoba. The PROs provide information about

their recycling programs to the public, but presenting the information without prior knowledge may be ineffective in creating change. However, if prior knowledge of waste management was met with new information, communities may be more willing to embrace and implement these changes (McAllister, 2015).

Another means used by the PROs is the internet. PROs have their own websites where information can be accessed. These websites also help locate the nearest collection depot by just entering the postal code on the dropdown list. These waste management initiatives applied today might be beneficial for the young and future generations. The trend of digital world – locating collection sites using mobile apps and websites are of little help to the elderly generation. There is a need for a more simplified mechanism that is accessible to every citizen.

5.3 Can Waste Management be more Sustainable?

The recovery of solid waste is required not only by the legislation but also by the public (Aarnio & Hamalainen, 2008). Ideal ISP goals need an ideal structure. Under the current system, the responsibility that is extended to producers is responsibility for achieving numerical targets for re-use, material and or energy recovery of products at the end of their life-cycle. The ISPs set explicit collection and sorting goals by material every year that must be met. In order to advance the waste management system in Manitoba, there is a need for an integrated approach involving all the key stakeholders in the waste management system – recovery targets should be combined with the environmental regulations and management (Lifset, 1993).

It is clear that ISPs are a 'shared responsibility' based model where every individual has a role to play in diverting wastes from going to landfills. Integrated approach for ISPs could be structured in a way where each player from producers to consumers, processors and government agencies must take more than just the financial responsibility for the products when they become

wastes. ISPs operate under EPR, so the main responsibility is extended to the producers; that is, the products are collected by the PROs as a matter of usual business and sent to recycle, incinerate or landfill. The relevant government agency should set risk, emissions or related standards, for example for incinerators operators, which would encourage the operators to analyze whether or not the combustion of various types of waste would cause the facility to exceed regulatory standards. The facility operator could then, in turn, refuse to accept wastes that they deem problematic or could charge producers higher fees for wastes that require more elaborate pollution controls (Lifset, 1993). Similar obligations and policies could also be imposed on municipalities. The rationale behind extending the responsibilities and broadening the scope is to facilitate behavioral change. The data and analysis already demonstrate that the current model, by making producers responsible for the waste management of their products, has strongly influenced the producers to design products that facilitate source reduction, re-use, recycling, composting or safer disposal. As a key message, there is a need to develop policy approaches that can promote the same behavioral changes both upstream and downstream. For example, quantity-based user fees imposed on waste generators (i.e., households, institutions and businesses) can provide a financial stimulus to change purchasing decisions by consumers, because the more of their trash that can be recycled leaves a smaller quantity for which they will be charged. By buying recyclable products, consumers can reduce the fees that they ultimately pay for waste services. These purchasing decisions translate in turn to altered demand for consumer products, which influences producers to design less waste-intensive products.

In more concrete terms, if a community adopts quantity-based user fees, households and businesses would have financial incentives to engage in source reduction and recycling. The EPR model implies skepticism that either consumers will change purchasing behavior to maximize their

savings “at the curb” or that consumers’ attempts to purchase more recyclable, re-usable or source-reduced products and packages will lead to a sufficient change in the type of goods produced and offered for sale. Changing consumer behavior is a long-term goal; for sustainable waste management, other factors involved are advanced collection networks and enhancing public awareness about the existence of recycling programs in Manitoba.

There could be increased convenience if the waste products are picked up door-to-door from households instead of people going to collection depots. The Manitoba Climate and Green Plan 2017 proposes the establishment of new EPR programs for appliances with refrigerants (e.g., refrigerators, air conditioners, water coolers) and small appliances. Household appliances with a long life cycle are not discarded daily. A pilot program could be started to pick-up such products quarterly free of cost. Communities could be informed well in advance about their pick-up day. Depending upon the need, the initiative could be re-programmed and the pick-up schedule could be increased or decreased. This initiative would not only provide convenience to the public, but also enhance awareness about the recycling programs, reduce illegal dumping of waste products and support the Manitoba Climate and Green Plan 2017’s proposal for implementing landfill disposal bans on materials currently managed by product stewardship organizations, starting with electronic waste, batteries, tires, household hazardous waste, beverage containers and cardboard boxes. Another key area to focus on is public education and awareness. Instead of promoting the recycling programs individually, awareness efforts should promote overall recycling programs. One good example is the “one stop access” for information about all waste management programs, which is available online (Waste Wise) under Sustainable Development Manitoba.

5.4 SWOT Analysis: Current Trends and Issues Related to ISP in Manitoba

Using a strengths, weaknesses, opportunities and threats (SWOT) analysis (Table 5.1), this

research aims to identify opportunities and gaps in existing waste management practices and ways to improve them.

Table 5.2: SWOT Analysis of ISP in Manitoba

STRENGTHS	WEAKNESSES
• Shared responsibility model. • Annual reporting of the overall activities. • Innovative ways to divert more waste. • PROs work in collaboration with each other to deliver services in remote and northern communities. • Self-regulation of EPR in institutions.	• Strong collection network does not exist for all PROs. • Lack of public awareness about recycling programs in the province. • Policy interventions are weak. • Illegal disposal of waste products. • Improper monitoring and auditing.
OPPORTUNITIES	**THREATS**
• Manitoba could act as a role model to start quarterly door-to-door collection of bulky waste free-of-cost. • Policies to penalize illegal disposal. • Incentives to alter consumer behavior. • Communities to adopt weight-based user pay systems. • Increasing public awareness.	• Chances of increased illegal waste disposal practices. • Mixing of wastes devalues the collected material. • Weak implementation of new schemes and strategies. • Effect of economic mechanisms. • The government and PROs have different ideas and ideologies.

Strengths: Strength identifies the competencies and the capabilities of ISPs in Manitoba that support the further development and advancement of the waste management programs in the province. There are immense possibilities to improve the system, but the shared-responsibility model is a positive and supportive feature. The strength of ISPs also lie in the mandate for annual

reporting in order to ensure accountability for year-round activities and achievements. It is very evident from the data and findings that the PROs are deeply committed to waste reduction and prevention. The PROs have their own goals, which include increasing waste diversion rates, expanding collection networks and reaching out to a maximum range of the population. A well designed reporting system exists that regulates PROs in tracking their activities and trends every year. A similar framework for reporting is a strong point of the ISPs in Manitoba. The Department of Sustainable Development also assigned a Special Operating Agency (SOA) with responsibility for defining and implementing waste management initiatives in collaboration with PROs in the province. Green Manitoba was made responsible for the execution of the ISPs, which provides a well-knit system for ensuring programs are carried out properly.

Weaknesses: Current ISPs in Manitoba are restricted to maximizing household waste collection, which also has several weaknesses. ISPs in Manitoba could be perceived as business models limited to only commodity-driven products. There are many products that are still not covered under these programs because of lesser profits in collecting and sending them to recycling facilities. To mention a few, these include bike tires and motorcycle batteries. Besides these, people tend to recycle products if they see direct benefits associated with recycling them, for example, as with lead-acid batteries. Another important deficient area is the lack of public awareness. Although PROs have set goals to reach out to the full population, there is still a lack of recycling education. This results in inadequate public participation.

Public participation is also associated with strong collection networks and co-ordination. When citizens do not see enough convenience to get rid of their unwanted stuff, there is the possibility of decreased public participation and increased illegal dumping. Beyond this, good

quality and accurate data are a major concern while preparing any annual report. Lack of government officials and data sampling networks limit the reliability of data.

Opportunities: The Province of Manitoba could act as a role model to start quarterly door-to-door collection of bulky waste. Door-to-door collection would increase the convenience to the public, decrease the chances of illegal disposing and in return increase the recovery rate of household waste. This model could also aid in increasing public awareness, which is a necessary action to improving waste management in Manitoba. Nine out of eleven PRO participants highlighted the importance of public education and awareness to promote recycling in the Province. Another key opportunity is strong policy interventions such as penalizing illegal disposal of household waste and enforcement of weight-based user pay systems in communities.

Threats: Several strengths and opportunities are identified in the above paragraphs, yet certain threats exist in relation to the enforcement of waste management and economic policies. The enforcement of strong policies and economic reformation requires proper implementation. The failure to deliver and implement reforms in an efficient manner may pose certain threats. It is understood that that there is a lack of recycling awareness and education in the Province; hence, enforcement of new reforms without proper information may result in public non-compliance leading to failure of the system. Publicity programs could be launched using various media including free handbooks, leaflets and a CD with a detailed display of the established system; advertisements in the local press, website and on TV; and public consultation meetings.

5.5 Summary

It has been recognized in this research that Manitoba has a very extensive waste management system, which is very important to achieve maximum waste diversion and recycling rates. The

research here describes that the ISPs in Manitoba possess a physical infrastructure that involves co-ordination, a shared-responsibility model to fund the programs and government's intervention via regulations and enforcement. From the data and findings, it can be concluded that there is a great deal of work done to achieve aggressive levels of waste collection as an identified goal. This, however, achieves and fulfills short term goals. Improved effectiveness also requires reporting on the end product of the collected material. Another conclusion drawn from the research is that in order to run these programs effectively, public convenience is fundamental. There is a need for an integrated approach to create a convenient and well developed waste management system. An integrated approach means the interests and roles of all stakeholders (households, municipalities, PROs, recyclers and government) are involved in the waste management system. Households play the important role of separating their waste, with the interest of taking advantage of incentives and generating income by selling/returning their recyclables. Similarly, PROs provide waste collection facilities, and recyclers gain profit from recovered recyclables. Improved effectiveness of the programs also depends upon strong policy interventions, increased public convenience and support from the government for the monitoring and auditing of the waste targets and collection rates.

Chapter 6

Conclusions

6.1 Research summary

The purpose of the research was to evaluate Industry Stewardship Programs in Manitoba through participants' viewpoints in order to understand: the process of target setting, barriers and opportunities for achieving targets, and the effectiveness of the shared-responsibility model. To serve the purpose of the study, the research methods included document review, key-informant interviews and interviews with the other major clients. Document review included evaluation of five years of annual reports of all the 12 PROs, which provided information about the development and implementation of waste management activities in the province. To complete my research, performance indicators were selected that formed the basis for further research and the design of the interview guide for interviewing participants.

6.1.1 Document Review and Development of Evaluation Framework

The literature review provided an understanding of the ISPs and goals and objectives related to solid waste management in Manitoba. Documents, including five years of annual reports from PROs, work plans and stewardship plan review & evaluation templates, were reviewed to identify and select the performance indicators to undertake the evaluation. The performance indicators selected were directly linked to the goals of the ISPs being evaluated. In order to develop them, the programs' goals and objectives were therefore assessed. Document review generated information about program activities over the five year period from 2011 to 2015 in relation to solid waste collection and recovery rates, collection networks, public outreach activities and partnerships with stewards and municipalities. The data provided information about target setting for each PRO. The evaluation framework developed from the document review provided

knowledge and information about programs design and implementation and the outcomes of ISPs, which aided in completing an evaluation from both ends.

6.1.2 Key Informant Responses

The interviews with PRO participants and PRO clients provided detailed knowledge regarding operations and outcomes of ISPs. A total of 15 participants were selected for the interviews. The responses from the interviews helped in understanding the gaps in the delivery of ISPs in the province, especially by reflecting on the barriers and the opportunities to achieving waste related targets. The respondents had different opinions about the waste related targets, and public access and convenience to the existing collection networks, but similar opinions were observed regarding promoting recycling awareness to the public. A select number of participants provided information about their operations in northern communities.

The responses from the PRO participants reflected upon their waste targets and the strategies to achieve them; the amount of waste collected and the annual recovery rate is reported by each PRO. However, the PRO clients had conflicting opinions regarding the annual reporting, with the need to improve the monitoring and transparency of annual reports the expressed concern. The respondents also emphasized the need for more designated government officials to improve the monitoring, auditing and annual reporting of the ISPs.

The responses from PRO participants identified the existence of well-developed and convenient collection networks in the province. Conflicting responses from the PRO clients highlight a strong need for improved convenience for residents to get rid of their used and unwanted products. Another concern raised by PRO clients is the complex waste collection network. They reported that the existing collection system was not sufficient and convenient for the public. They were of the opinion that in order to make the waste management system successful

in the Province, ISPs would be required to develop a collection network that is accessible and simple to understand by citizens of all age groups.

The ISPs are also actively engaged in promoting recycling education and awareness. There was a similarity in the responses from PRO participants and the PRO clients. The respondents from both categories emphasized the need and importance of promoting recycling education to the public. The responses from PRO participants highlighted that although a set of PROs' activities have a focus on public outreach, there are still serious deficiencies in public education about recycling and ISPs. In addition, responses from the PRO clients reflect the importance of collaborative education and public outreach by PROs to promote overall understanding and knowledge about recycling rather than individual public outreach events.

The key informant interviews identified deviations in the implementation of ISPs. For example, the work plans submitted by each PRO every five years include program operations in northern Manitoba, which was not reflected in the responses from a number of PRO participants. Similarly, the stewardship plans identify public consultation processes, which were missing from the participants' responses. Therefore, the responses reflect certain gaps that could be turned into opportunities if addressed by the program operators.

6.2 Final Conclusions

The following conclusions are made from the evaluative study, which answer the objectives and meet the purpose of the study.

1) **Industry Stewardship Programs lack clear goals related to waste collection and infrastructure:**

The research concludes that ISPs' goals are to achieve numerical waste targets as identified in their 5-year program plans. The success of the programs is evaluated based on the waste targets and

recovery rate achieved every year. There has been an increase in the waste collection and recovery rates since 2011 but some PROs still do not meet their self-set targets. Each PRO has its own set performance indicators depending on the waste stream and collection methods adopted. A limitation identified is the absence of clear targets related to waste collection and infrastructure across the province. It is concluded that PROs in Manitoba have certainly provided improvements in terms of collection, recycling and recovery performance for specific waste flows as reported in publically available annual reports, but the reports do not include information about program operations in northern communities in terms of waste collection and collection networks.

2) **The monitoring, auditing and transparency of the programs' yearly activities needs to be improved:**

Annual reports provide data and information on the direct activities, missions, goals and objectives of the PROs in Manitoba. These reports serve as the summary of overall activities for the 5-year study period including targets, recovery rates, pilot projects and collection events. There are many inferences that identify the need to improve the annual reporting. First, to improve harmonization and consistency of the programs, it is important that annual reports are consistent in identifying their reporting indicators. Second, annual reports can describe the methods used for waste auditing. Third, validation of the waste audits can be conducted by an external agency.

3) **The evaluative study depicts a serious deficiency in public awareness and education about waste reduction, prevention and segregation:**

The data from the interviews confirm that ISPs are effective in collecting waste from households in southern Manitoba; however, some gaps exist in the delivery of programs. In general, society is aware about the recycling and PROs advertise their programs, but there is a lack of knowledge about the economic, social and environmental benefits of recycling. Improving the system requires

changing the attitudes of individual consumers, government agencies, and manufacturers of consumer goods. Society must learn to view waste materials as not simply a nuisance to be rid of, but as a resource to be valued and conserved. The study reveals that PROs understand what prevents and what promotes waste diversion and waste minimization behaviors; nonetheless, this will only be employed when society acknowledges the need for new attitudes and practices. In this context, it is possible to state that PRO's and the waste management systems they run are a step forward towards developing a "recycling society" in Manitoba.

Based on responses from participants, support from the government to implement the programs includes licenses and the regulations for PROs and stewards, but government support to change consumers' behavior through regulations and enforcement is rare. The involvement of government agencies in enforcing penalties to consumers for irresponsible disposal of used products is needed.

4) **There is a need for separate evaluative study to determine the citizens' perspective about physical infrastructure:**

The responses from participants demonstrate that ISPs in Manitoba have expanded their collection networks across the Province. The PROs websites, City of Winnipeg website, Waste wise website are all useful tools to locate the nearest collection site to drop off unwanted products. It suggests strong evidence to support the inferences made about the collection network during the research. The findings demonstrate that PROs have focused on developing a sustainable physical infrastructure that is more convenient to citizens, but there is a need to conduct an assessment of citizens' perspective about their access to collection sites. Their perspective is an important factor in determining the amount of household waste diverted from landfills. Knowledge and information on what percentage of citizens actually know about the collection depots and what percentage of

them actually take their unwanted waste products to drop-off at collection sites are required for such a calculation and assessment.

4) **Policy implementation and effectiveness are weak:**

Although the Department of Sustainable Development has enforced regulations to execute and implement ISPs across the Province, there is a need for further support by the government to improve the effectiveness of the programs. There is a lack of policies for checking illegal disposal and free-riders in the system. For example, for packaging and printed paper, when the products are shipped from cross-borders through Canada post, there is no manufacturer or first importer involved to manage these packaging. Because shared-responsibility model is adopted in Manitoba, a government support for appropriate resources and policies could aid in improving effectiveness and control such critical issues.

6.3 Recommendations

The careful understanding of ISPs in Manitoba, and assessment of the weaknesses and strengths in delivering the programs enable me to make certain recommendations for improving the effectiveness of the waste management model. These are as follows:

1) **Clear targets for waste and infrastructure are essential:**

There are no provincial targets for the operations of waste management in the province. Introducing targets related to collection and infrastructure in all municipalities of Manitoba could be an effective measure to meet waste management goals under ISP. The stewardship plan has a mandate for collection in northern and remote communities, and clear targets are essential to meet these goals.

2) **Increase public involvement by using the power of social norms:**

A major challenge involved in improving waste management systems in Manitoba is the effective participation of all the stakeholders involved. In order to be successful, all initiatives should be convenient and easy to understand for the public.

As analyzed in Chapter 4, incentives encourage participants to recycle unwanted products. There should be more incentives for the public to encourage them to recycle more. Introducing direct incentives at the collection point could improve public involvement. Some of the examples of direct incentives include entry for a free draw with prizes such as free movie tickets or free one time entry to parks or zoos. Not only incentives, but measures to reduce litter should also be taken. If penalties for illegal disposal are enforced and a weight-based user pay system is introduced to encourage waste sorting at the source, i.e., households, participation rates would be increased.

3) Sorting of waste must be made simple:

It is important that all households are easily able to sort their waste and have it disposed of properly to prevent recyclable materials going to landfills, especially packaging and printed paper waste. There should be enough information and convenience for households to make sorting a simple process. Although plastics show the recycling symbol, not everyone is aware of the symbol or what it means. If more EPR programs are established as proposed in the Manitoba Climate and Green Plan 2017, providing additional small boxes or bags for sorting hazardous household waste and glass would make it easier for the public to understand what goes where, thereby making the system easier to use.

4) Introducing a quarterly collection day (free-of-cost) for bulky waste:

The Manitoba Climate and Green Plan 2017 proposes the establishment of new EPR programs for appliances with refrigerants (e.g., fridges, air conditioners, water coolers) and small appliances.

Introducing a collection day quarterly (4 times per year) for such materials would provide convenience to the public to get rid of unwanted bulky products, reduce illegal disposing, and also promote recycling awareness. The collection days could be increased or decreased depending upon the needs of the municipality.

6.4 Contribution to Knowledge

The research conducted aids in determining what worked and what needs further improvement to deliver successful ISPs in Manitoba. The study provided an opportunity to evaluate the waste management system in the province from all ends. This study is unique in that it not only provides findings to demonstrate the waste diversion rate in Manitoba, but it also provides details about what other initiatives are being taken by the PROs to deliver their programs effectively and efficiently.

Data were collected from both primary and secondary sources. The secondary data provided the overview of ISPs, and the primary research, which included interviewing PRO participants and a few other clients, provided their perspectives about these programs. The data for the research were thus collected from three different sources. The study reveals the missing links that exist between the public and the PROs. PROs deliver the programs to the public to achieve high recovery rates, but there is an identified lack of recycling education and awareness. The research demonstrates that in order to improve the effectiveness of the programs, there is a need for an integrated approach to improve public involvement.

6.5 Gaps in Research

The research identified the effectiveness of ISP programs in Manitoba in terms of achieving waste recovery rates, public awareness, collection networks, environmental safety, government involvement and the funding mechanisms. One aspect of determining the effectiveness of the programs involves the detailed analysis of the economic aspects, which remained untouched.

There is a need to understand the relationship between the eco-fees charged to the consumers and the funding mechanism. This aspect of the programs' effectiveness remains still unclear.

During the analysis of the data and findings, two other significant evaluation limitations were identified. First, the key-informant interviews with PROs provided limited data to interpret the performance and community benefits of the ISPs. Individuals from community groups and organizations such as Indigenous and Northern Affairs Canada would need to be interviewed in order for their perspectives about waste management services in their region to be known, and thus the results of this study are limited by the fact that participants from such organizations were not included in the research. However, it is worth noting that four participants were selected for interviews in an effort to understand the perspectives of the clients who are directly involved with ISPs. Of these four participants, one was selected from a NGO, one participant was selected from a Manitoba-based steward who shares funding for ISPs in the province, and two other participants were clients of PROs. Interviews with these four participants allowed me to collect necessary information directly from the clients.

A second identified limitation is the lack of a detailed financial analysis of the ISPs in Manitoba. Accurate data on the regulated eco-fees were not available, which prevented an extensive analysis of program efficiency and economy. The PROs report their operational costs, funding, other administrative expenses and regulated eco-fees, but information about how eco-fees are calculated remained missing. Alternative ways of assessing efficiency and economy were undertaken, such as seeing out opportunities to understand the process of eco-fees through key-informant interviews.

6.6 Future Research Questions

The research has served the purpose of evaluating the ISPs in Manitoba and initiatives that are taken in the province to increase waste diversion from landfills. There is a need to determine how many people actually understand the diverse waste management systems in Manitoba. Also, there is a need to study what percentage of people actually know about the collection network, if they consider it convenient and do they take enough advantage of the existing collection network. Future research can be carried out by conducting household surveys in selected municipalities, including remote and northern communities. The input from residents could aid in promoting collection network and public convenience for disposal of household waste products.

Another possible future research question could be to attempt to forecast different dimensions of residential curbside collection. An observational study could be conducted over 4-5 weeks to predict household recycling behavior related to frequency of participation, amount of recyclable materials, and contamination of recyclables by improper materials.

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Attachment 2.A

Manitoba WRAP Act

(Assented to March 15, 1990)

WHEREAS the volume of waste generated in Manitoba is a threat to the environment;

AND WHEREAS action is required to reduce and prevent waste;

AND WHEREAS governments, government agencies and all members of society are responsible for reducing and preventing waste;

AND WHEREAS that responsibility includes contributing toward the cost of waste reduction and prevention;

THEREFORE HER MAJESTY, by and with the advice and consent of the Legislative Assembly of Manitoba, enacts as follows:

Purpose

1(1) The purpose of this Act is to reduce and prevent the production and disposal of waste in the province consistent with the principles of sustainable development and to this end

(a) to encourage consumers, manufacturers, distributors, retailers, governments, government agencies and other persons to develop and adopt practices and programs for the reduction and prevention of waste;

(b) to enhance public awareness of the detrimental effect of waste on the environment and the natural resources of the province; and

(c) to ensure the use of resources and the environment today meet the needs of the present without compromising the ability of future generations to meet their own needs.

Principles of sustainable development

1(2) For the purpose of subsection (1) the principles of sustainable development include the following:

(a) that government, operators of waste disposal grounds, manufacturers, distributors and retailers acknowledge their stewardship for wastes generated;

(b) that sustaining a healthy environment and sound economy requires all Manitobans to acknowledge responsibility for both the environment and the economy, by reducing and preventing the production and disposal of waste;

(c) that waste minimization through reducing and recycling, including reuse and recovery, be encouraged and promoted;

(d) that scientific research and technological innovations respecting waste reduction and prevention be encouraged with a view to preventing and reducing adverse impact on the environment and economy;

(e) that decisions respecting waste management be made with due regard for their impact on the environment, including human health, and that waste management programs and initiatives be instituted with due regard for their economic impact;

(f) that waste management policies, programs and decisions anticipate, prevent or mitigate adverse environmental and economic impacts;

(g) that government, manufacturers, distributors and retailers assist in the maintenance of ecological processes and the biological diversity of the province, ensure that the management of renewable resources is based on a sustained yield and make decisions that reflect wise and efficient use of renewable and non-renewable resources;

(h) that all Manitobans have a role in enhancing the long term productive capability, quality and capacity of our natural ecosystems;

(i) that policies, programs and decisions take into account the need to rehabilitate any part of the environment that is damaged or degraded as a result of waste disposal and management;

(j) that the ecological interdependence of the provinces and territories of Canada and of the nations of the world be recognized.

S.M. 1994, c. 22, s. 2; S.M. 2009, c. 26, s. 90.

Definitions

2 In this Act,

"additional WRAP levy" means an additional levy for waste reduction and prevention as provided in the regulations; (« cotisation RVPD supplémentaire »)

"designated material" means a designated material within the meaning of the regulations; (« matériau désigné »)

"environment officer" means a person appointed as an environment officer under subsection 7(2); (« agent de l'environnement »)

"industry operated WRAP fund" means a waste reduction and prevention fund within the meaning of the regulations; (« fonds RVPD géré par une industrie »)

"minister" means the member of the Executive Council charged by the Lieutenant Governor in Council with the administration of this Act; (« ministre »)

"recycle" means to do anything, including reuse or recover, that results in providing a use for a thing that otherwise would be disposed of or dealt with as waste, including collecting, transporting, handling, storing, sorting, separating, and processing the thing, but does not include the disposal of waste in land, the use of a thermal destruction process or any other activity prescribed by regulation; (« recyclage »)

"retailer" means a retailer within the meaning of the regulations; (« détaillant »)

"waste" means, subject to the regulations, waste within the meaning of *The Environment Act*; (« déchets »)

"waste reduction and prevention" includes recycling; (« réduction du volume et de la production des déchets »)

"WRAP levy" means a levy for waste reduction and prevention as provided in the regulations. (« cotisation RVPD »)

"WRARS levy" means a waste reduction and recycling support levy under section 14.1. (« cotisation ARVRD »)

S.M. 1994, c. 22, s. 3; S.M. 2009, c. 26, s. 91.

Powers of minister

3 To carry out the purpose of this Act, the minister may

(a) consult with manufacturers, distributors, retailers, consumers, governments, government agencies and other persons and make recommendations with respect to improving waste reduction and prevention programs and practices;

(b) encourage manufacturers, distributors, retailers, consumers, governments, government agencies and other persons to implement programs and practices to reduce and prevent waste;

(c) monitor the waste reduction and prevention programs and practices of manufacturers, distributors, retailers, consumers, governments and government agencies;

(d) undertake, or by means of grants or other assistance, support and encourage programs or research in the field of waste reduction and prevention;

(e) cause the preparation and publication of educational materials pertaining to waste reduction and prevention;

(f) enter into any agreements respecting waste reduction and prevention that the minister considers advisable; and

(g) generally, do any acts the minister considers necessary to carry out the purpose of this Act.

S.M. 1994, c. 22, s. 4.

WRAP Strategy Report by minister

4 The minister shall cause to be prepared within six months from the date of the coming into force of this section and annually thereafter, a "Waste Reduction and Prevention Strategy Report" which includes the following information:

(a) a statement of specific goals relating to waste reduction and prevention;

(b) a plan setting out the means of achieving these goals; and

(c) a report on waste reduction and prevention activities in the province.

Tabling of report

5 The minister shall lay the report referred to in section 4 before the Legislative Assembly immediately if the Legislative Assembly is in session, or, if the Legislative Assembly is not in session, the minister shall

(a) without delay, provide a copy of the report to each member of the Legislative Assembly;

(b) make copies of the report available to the public; and

(c) lay the report before the Legislative Assembly within 15 days of the beginning of the next ensuing session.

6 [Repealed]

S.M. 1994, c. 22, s. 5; S.M. 2013, c. 35, s. 2.

Delegation of powers

7(1) The minister may delegate any duty or power imposed on the minister by this Act or the regulations, to a person who is under the responsibility of the minister.

Appointment of environment officers

7(2) The minister may in writing appoint persons to be environment officers for the purpose of this Act and the regulations.

S.M. 1994, c. 22, s. 6.

8 to 11 [Repealed]

S.M. 1994, c. 22, s. 7.

WRAP levies to be collected

12 A person who manufactures or distributes a designated material, and a retailer, shall

(a) collect the WRAP levies and additional WRAP levies prescribed by regulation for the designated material; and

(b) remit them;

in accordance with the regulations.

S.M. 1994, c. 22, s. 8.

WRAP levies to be paid

13 A person who manufactures or distributes a designated material, and a retailer, shall, in accordance with the regulations, pay the WRAP levies and additional WRAP levies prescribed by regulation for the designated material.

S.M. 1994, c. 22, s. 8.

Industry operated WRAP funds

14 When

(a) an industry operated WRAP fund is established under the regulations; and

(b) a management board or other body is established and charged with the administration of the fund under the regulations;

the fund shall be used to provide or pay for the following in accordance with the regulations:

(c) establishing and administering waste reduction and prevention programs;

(d) education programs for the purpose of waste reduction and prevention;

(e) expenditures incurred in the collection, transportation, storage, processing and disposal of the waste for the purposes of waste reduction and prevention programs;

(f) research and development activities related to waste reduction and prevention;

(g) promotion and development of activities and economic instruments to encourage waste reduction and prevention;

(h) promotion and development for marketing of the products resulting from recycling;

(i) the appropriate disposal of designated material;

(j) salaries and other costs of the management board or other body charged with the administration of the fund;

(k) salaries and other costs of the government for the administration and enforcement of this Act and the regulations as they relate to the responsibilities of the management board or other body under this Act and the regulations respecting waste reduction and prevention;

(l) such other activities in relation to waste reduction and prevention as are prescribed by regulation.

S.M. 1994, c. 22, s. 8.

WRARS levy

14.1(1) Subject to subsection (3), the operator of a Class 1, Class 2 or Class 3 waste disposal ground must pay to the Minister of Finance, for each of the following periods each year:

(a) January 1 to June 30;

(b) July 1 to December 31;

a waste reduction and recycling support levy determined in accordance with subsection (2) for that period.

Amount of levy

14.1(2) The amount of the levy for any six-month period is

(a) the amount determined for that period in accordance with the applicable formula or tariff prescribed by regulation; or

(b) if there is no applicable prescribed formula or tariff, an amount equal to $10 times the number of tonnes of waste received — or estimated in accordance with the regulations to have been received — by the waste disposal ground during that period.

Due date

14.1(3) The levy payable under subsection (1) must be paid on or before the last day of the first month after the end of the period for which it is payable.

Commencement dates

14.1(4) The first six-month period for which a levy is payable under subsection (1) is

(a) in the case of a Class 1 waste disposal ground that received more than 30,000 tonnes of waste in 2008, the period from July 1 to December 31, 2009;

(b) in the case of any other Class 1 waste disposal ground, the period from January 1 to June 30, 2010; and

(c) in the case of a Class 2 or Class 3 waste disposal ground, the period from January 1 to June 30, 2011, or any later period prescribed by regulation for that Class.

Class of waste disposal ground

14.1(5) For the purposes of this section and any regulations made for the purposes of this section, a Class 1, Class 2 or Class 3 waste disposal ground is a waste disposal ground of that class as determined by regulation under *The Environment Act*.

S.M. 2009, c. 26, s. 92.

WRARS fund

14.2(1) A fund to be known as the "Waste Reduction and Recycling Support Fund" is hereby established, as a separate fund within the Consolidated Fund, for the following purposes:

(a) providing support or incentives to municipalities and local government districts for recycling;

(b) supporting recycling programs and improvements to waste management, including management of electronic waste and household hazardous waste;

(c) supporting organic waste management programs and initiatives.

Payments to fund

14.2(2) The following amounts are to be paid or credited to the fund:

(a) all amounts paid to the government on account of the WRARS levy;

(b) any amounts authorized by an Act of the Legislature to be so paid and applied;

(c) interest and other income earned on the amounts paid or credited to the fund.

Payments from fund

14.2(3) The minister may requisition payments from the fund

(a) for the purposes of the fund; and

(b) to pay administrative expenses of operating the fund.

The Minister of Finance must make payments from the fund according to those requisitions.

Annual report

14.2(4) For each fiscal year, the annual report of the department over which the minister presides must include a report of the accounts and transactions of the fund.

S.M. 2009, c. 26, s. 92; S.M. 2013, c. 35, s. 3.

15 and 16 [Repealed]

S.M. 1994, c. 22, s. 8.

Powers of environment officers

17 For the purpose of enforcing and administering this Act, an environment officer may at any reasonable time, and where requested upon presentation of an identification card issued by the minister,

(a) without a warrant, enter any building, vehicle or other place and make such inspections as may be reasonably required to determine compliance with this Act or the regulations;

(b) require the production of any record that the environment officer reasonably considers necessary for the purpose of enforcing and administering this Act or the regulations; and

(c) examine and make copies of any record referred to in clause (b).

Entry with order

18(1) Where a justice is satisfied by information under oath that there are reasonable grounds for believing that it is necessary for an environment officer to enter any building, vehicle or other place for the enforcement of this Act or the regulations, and

(a) a reasonable, unsuccessful effort to effect entry without the use of force has been made; or

(b) there are reasonable grounds for believing that entry would be denied without a warrant;

the justice may at any time, and where necessary upon ex parte application, issue an order authorizing an environment officer, and such other persons as may be named therein, with such peace officers as are required to assist, to enter the building, vehicle or other place and to take any action that an environment officer may take under section 17.

Warrant to enter and seize

18(2) A justice who is satisfied by information under oath that there are reasonable and probable grounds for believing that

(a) a violation of this Act or the regulations has occurred or is occurring; and

(b) there is to be found in any building, vehicle or other place in the province a record or other thing that affords evidence of the violation;

may at any time, and where necessary upon ex parte application, issue a warrant authorizing an environment officer, and such other persons as may be named therein, with such peace officers as are required to assist, to enter and search the building, vehicle or other place for the record or thing, and to seize it and bring it before a justice, or report on it to a justice, to be dealt with according to law.

Assistance to environment officers

18.1(1) The person in charge of a building, vehicle or other place referred to in clause 17(a) and any other person found in that place who is under that person's direction shall

(a) give the environment officer all reasonable assistance to enable the environment officer to carry out his or her functions under this Act; and

(b) furnish the environment officer with any information he or she may reasonably require for the enforcement and administration of this Act or the regulations.

Obstruction of environment officers

18.1(2) No person shall hinder, obstruct or interfere with an environment officer in the carrying out of his or her functions under this Act.

S.M. 1994, c. 22, s. 9.

Offences

19 A person who contravenes this Act or the regulations is guilty of an offence.

S.M. 1994, c. 22, s. 10.

Penalties

20(1) Every person who is guilty of an offence under this Act is liable, on summary conviction, to a fine of not more than $50,000 or to imprisonment for a term of not more than one year, or to both and where the person is a corporation, to a fine of not more than $500,000.

Additional penalty

20(2) A judge may, in addition to any penalty imposed under subsection (1), require the convicted person to pay an additional fine that takes into account

(a) any monetary benefit, or estimated monetary benefit, that accrues to the convicted person as a result of the offence; and

(b) any environmental damage that results from the commission of the offence, and the cost or estimated cost of rectifying the environmental damage.

S.M. 2013, c. 35, s. 4.

Offence by director of corporation

21 Any officer, director or agent of a corporation who directs, authorizes, assents to, acquiesces in or participates in the commission of an offence is a party to and guilty of the offence and is liable on conviction to the penalties set out in section 20.

Regulations

22(1) The Lieutenant Governor in Council may make regulations

(a) defining "retailer" for the purposes of this Act or any regulation under this Act including defining it to include any other person who provides a designated material for use in Manitoba;

(b) prescribing activities for the purpose of the definition of "recycle";

(b.1) extending or limiting the meaning of "waste" for one or more purposes of this Act, even if it results in the term having different meanings under different provisions of this Act;

(c) designating designated material for the purpose of this Act and creating different classes of designated material for different purposes;

(d) prohibiting and regulating the manufacture, distribution or sale of specified designated material;

(e) providing for a system of licensing of retailers and persons who manufacture or distribute or wish to manufacture or distribute a designated material in Manitoba and respecting requirements for licensing and all matters related to the system of licensing including the fees for application for a licence and the issue, suspension and cancellation of licences;

(f) respecting the insurance to be carried or the security to be given by a manufacturer or distributor of designated material or by a retailer, including the forfeiture of the security and the disposition of the proceeds of insurance or security;

(g) respecting the development and implementation of a waste reduction and prevention plan for designated material by manufacturers or distributors of the designated material or by any other person;

(h) respecting the establishment and operation of waste reduction and prevention programs;

(i) requiring and respecting the recycling of designated material;

(j) respecting WRAP levies and additional WRAP levies, including regulations

(i) establishing, or providing for the manner of establishing, the classes of designated material for which WRAP levies and additional WRAP levies are payable,

(ii) prescribing the amounts of WRAP levies and additional WRAP levies or the method of determining them and the circumstances in which additional WRAP levies are payable,

(iii) prescribing the amounts of penalties to be paid on WRAP levies and additional WRAP levies that are paid late, or the method of determining their amount, and

(iv) providing for the manner in which and the times at which WRAP levies and additional WRAP levies are to be collected, paid or refunded, and for the remittance of those levies;

(j.1) respecting the WRARS levy, including regulations

(i) exempting waste disposal grounds from the levy,

(ii) for the purpose of clause 14.1(2)(a), prescribing one or more formulas or tariffs for determining the amount of the levy, which may be different for different types of waste or classes of waste disposal grounds,

(iii) for the purpose of clause 14.1(2)(b), prescribing a formula or method for estimating the amount of waste received by a waste disposal ground,

(iv) for the purpose of clause 14.1(4)(c), prescribing

(A) the first period for which the levy applies to a Class 2 waste disposal ground, or

(B) the first period for which the levy applies to a Class 3 waste disposal ground,

(v) respecting the provision of information, reports and returns in respect of waste received by a waste disposal ground;

(k) requiring manufacturers, distributors or retailers of designated material to collect the designated material, and specifying the manner in which the collection is to be carried out;

(l) respecting the manner in which designated material is to be stored, collected, transported and recycled;

(m) respecting a system of deposits and refunds on designated material, including regulations

(i) establishing, or providing for the manner of establishing, the classes of designated material in respect of which deposits and refunds are payable,

(ii) prescribing the amount of the deposits, refunds and handling fees, or the method of determining them,

(iii) respecting the payment of deposits, refunds and handling fees,

(iv) respecting the disposition of unrefunded deposits, and

(v) providing for all matters related to the system of deposits and refunds;

(n) respecting the establishment and operation of depots, including the qualifications of persons who may operate them;

(o) respecting the amount and kind of designated material a retailer is required to accept at the retailer's place of business for recycling;

(p) specifying designated material for which payment must be made by a retailer or depot operator on its return for recycling;

(q) requiring a retailer or depot operator to pay a specified amount for designated material returned for recycling;

(r) requiring manufacturers or distributors to pay depot operators and retailers in respect of the collection of designated material, and prescribing the amount of the payments or the manner in which they are to be calculated;

(s) respecting the keeping, submission and inspection of records;

(t) respecting the provision of information, reports and returns in respect of designated material;

(u) governing the packaging and labelling of designated material;

(v) governing the content of recycled material required in commodities;

(w) respecting the use of packaging materials;

(x) providing for the establishment of a management board or other body, as a corporation or otherwise, for any purpose in connection with a regulation under this subsection and governing its operation and the application of *The Corporations Act* to a management board or other body that is incorporated;

(y) authorizing a management board or other body established under regulations under clause (x) to make by-laws, and respecting the subject-matters on which such by-laws may be made, including

(i) the conduct of its business and affairs, and

(ii) any matter on which a regulation may be made under this subsection;

(z) establishing an industry operated WRAP fund to be administered by a management board or other body established under clause (x) and governing its operation, transfer and winding-up;

(aa) respecting the salaries and costs of government for the purpose of clause 14(k);

(bb) prescribing other activities in relation to waste reduction and prevention for the purpose of clause 14(l);

(cc) defining any word or expression used but not defined in this Act;

(dd) respecting any matter the Lieutenant Governor in Council considers necessary or advisable to carry out the intent and purpose of this Act.

Public consultation in regulation development

22(2) Except in circumstances considered by the minister to be of an emergency nature, in the development of regulations under this Act, the minister, in the case of a regulation proposed to be made by the Lieutenant Governor in Council, and a management board or other body established under clause (1)(x) in the case of a by-law proposed to be made under clause (1)(y), shall provide an opportunity for public consultation and seek advice and recommendations regarding the proposed regulations.

Standards adopted by regulation

22(3) A regulation made under subsection (1) may adopt or incorporate by reference a code, standard or body of rules established by another jurisdiction or recognized organization, and the standard may be adopted or incorporated by reference as amended from time to time.

WRAP levies not public money

22(4) WRAP levies and additional WRAP levies under clause (1)(j) that are paid or remitted to an industry operated WRAP fund are not public moneys within the meaning of *The Financial Administration Act*.

S.M. 1994, c. 22, s. 11; S.M. 2009, c. 26, s. 93.

Regulations applicable to part of province

23 The Lieutenant Governor in Council may make regulations with respect to the whole or any part of the province.

Crown bound

24 The Crown is bound by the provisions of this Act.

Citation

25 This Act may be cited as *The Waste Reduction and Prevention Act* and may be published in The *Continuing Consolidation of the Statutes of Manitoba* under that title and may be referred to as chapter W40 of those Statutes.

Attachment 3.A

Informed Consent Form

UNIVERSITY
OF MANITOBA

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

303-70 Dysart Road
Winnipeg, Manitoba
Canada R3T 2N2
Telephone (204) 474-8373
Fax (204) 261-0038

INFORMED CONSENT

Research Project Title: An Evaluation of Green Manitoba's Industry Stewardship Programs:

Researcher: Sukhmanbir Bajwa

RESEARCHER'S INTRODUCTION

I am a graduate student at the Natural Resource Institute, University of Manitoba, (Canada) and I am conducting a field research for my Master's Thesis. My research focuses on Industry Stewardship Programs in Manitoba delivered by 12 Producer Responsibility Organizations to regulate post-consumer waste. My purpose is to determine the process of setting targets and understand the barriers and opportunities for accomplishment of the identified targets and examine the options for improving program outcomes and effectiveness. The study has already been approved by the Joint-Faculty Research Ethics Board at the University of Manitoba, Canada.

PARTICIPANT'S CONSENT

This consent letter, a copy of which will be given to you for your records and reference, is part of the process of informed consent. It will give you the basic idea of the research and what your participation will involve. If you would like to know more details about my research, or some information not included here, please feel free to ask for clarifications. Please manage time to read it carefully and understand the information presented here.

In the course of research you will be asked a series of questions that will help me understand Industry Stewardship Programs, the work plans and the strategies followed to ensure program effectiveness and how it contributes in accomplishing the target of creating zero waste Manitoba. You will be requested to participate in an interview session that will take no more than 45 minutes. If more time is required, a subsequent meeting can be arranged at your convenience. These interviews can be conducted at your place of work or at another location according to your preference. There will be no compensation for your participation. A recording device will be used for conducting the interview. Participant can ask to have the recording device turned off at any time during the interview. You should be contacted for further clarifications after the interview, if necessary. There are minimal risks, direct or indirect,

involved in this research beyond those associated with normal activities. The research will provide indirect benefits for waste management practices.

PARTICIPANT'S CONFIDENTIALITY

Your contact information will be kept in secure location and will be destroyed upon completion of the study. If you want to get an output of the study, you can indicate your email and will receive an integrated output of the study. Your feedback on integrated output will be highly appreciated and will be taken into account while preparing the final results. The data will be accessed only by me and my advisor Dr. C. Emdad Haque and the probable date for eventual destruction of all data is August, 2021. My research records will be handled in a safe and proper way. The information you provide will be used to complete a progress report, my Master's Thesis and will potentially be published in an academic journal. After my Thesis Defense, you will have an opportunity to get an electronic copy of my thesis if you are interested.

Your participation is voluntary and you can withdraw from the study at any time, and/or choose not to answer any questions you may not be comfortable with. You can withdraw by telling me in person or through email or telephone. The data will be destroyed if you withdraw yourself from the study (any time before my Thesis defense) and it will not be possible for you to withdraw after my thesis defense. Yow will not face any negative consequences if you decline to participate in the study or answer any questions. Please feel free to ask for clarifications or additional information if the study is not explained to you clearly.

If you have any queries about the nature of this research, please feel free to contact me at (bajwas3@myumanitoba.ca) or to my advisor:

Dr. C. Emdad Haque

Phone: +1 204 474 8375

Email: CEmdad.Haque@umanitoba.ca

If you have ethical concerns or complaints, your concern may be directed to:

Human Ethics Coordinator

Crop Technology Centre

208-194 Dafoe Road

Winnipeg, MB R3T 2N2

Ph: (204) 474-7122

Fax: (204) 269-7173

humanethics@umanitoba.ca

Please be advised that the staff of this office speak only English. Do you understand and agree to the terms described here?

Participant's consent (Please check the box)

☐ I am aware of the purpose and objective of this study, scope of this study, nature of the questions to be asked, and the nature and extent of my involvement in the study.

☐ I am aware that I can contact the researcher, Sukhmanbir Bajwa (Email: bajwas3@myumanitoba.ca), regarding any complaints or queries with respect to the research.

☐ My participation is completely voluntary and I can withdraw from the research at any point of time.

☐ I have participated in the study because the researcher has assured me that she will safeguard my identity by keeping my responses confidential and all identifying information will be removed from any data associated with me.

☐I allow researcher to use a recording device for the interview.

☐I would like to receive a copy (electronic) of your thesis.

If yes, e-mail address: _____

By signing below, I am affirming the truth of the above statements and consenting to participate in this study.

Participant's name _____ Date _____

Participant's Signature _____

Researcher's name _____ Date _____

Researcher's Signature _____

Thank you for your time.

Attachment 3.B

Ethics Approval Certificate

UNIVERSITY OF MANITOBA | Research Ethics and Compliance

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

PROTOCOL APPROVAL

TO: **Sukhmanbir Bajwa** **(Advisor: C. Emdad Haque)**
Principal Investigator

FROM: **Kevin Russell, Chair**
Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2016:104 (HS20252)**
"An Evaluation of Green Manitoba's Industry Stewardship Programs"

Effective: December 16, 2016 **Expiry:** December 16, 2017

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

This approval is subject to the following conditions:

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

Funded Protocols:

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

Attachment 3.C

Stewardship Plan Review and Evaluation

PRODUCER RESPONSIBILITY ORGANIZATION (PRO)

STEWARDSHIP PLAN REVIEW & EVALUATION

Producer Responsibility Organization: _____

Applicable Regulation: _____

❑ **New Plan** **Date Submitted:** _____

❑ **Plan Renewal** **Date Submitted:** _____ **Current Plan Expires:** _____

Reviewer: _____

Date Reviewed: _____

A) MANDATORY PROGRAM REQUIREMENTS
The following program requirements must be included:

#	Condition	Meets Reg. requirement	Comments
1	The establishment and administration of a waste reduction and prevention program for designated waste material		
2	The appropriate management of waste material according to this guideline established by the minister		
3	A province-wide, convenient collection system for waste material without user fees at the point of collection		How has the number of depots changed over time?
4	A system for the payment of expenses incurred in the collection, transportation, storage, processing and disposal of waste material in connection with the waste reduction and prevention program		What model is used? Membership based model. How many stewards? How has the membership changed over time?
5	The orderly collection of revenue from program subscribers in balance with expenses for the program		Variation of surplus/loss from year to year – do we have data?
6	The establishment and administration of education activities and public awareness campaigns for the program		What portion of the budget is allocated for education and awareness?
7	The establishment and administration of a point-of-sale information for the program		What type of point-of-sale information is provided to the consumers?
8	The payment of salaries and other costs of Government for the administration and enforcement of the regulation and the Act as it relates to the prescribed waste material		Covered by the cost recovery agreement with GMES
9	Ongoing consultations with people the program may affect, including members of the public, in accordance with any consultation guidelines the Minister may establish		Has there been any specific feedback from any First Nation group/MMF in the past?

The plan may deal with: (Are these components voluntary?)

10	Research and development, training and education activities addressed		
11	Activities related to waste reduction or pollution prevention		

B) PROGRAM PLAN EVALUATION

For the purpose of plan evaluation, proposed plans shall demonstrate how:

#	Condition	Meets Condition	Comments
12	The cost of managing designated waste materials is borne by the stewards and users of the designated material rather than by the taxpayer.		Average cost per container or per weight?
13	The management of these materials is economically and environmentally sustainable.		Is there an cradle-to-grave flow chart showing the full product life cycle?
14	Product stewards determined how these materials are managed and how the affected industry and potential program partners will bear these costs.		
15	Fees, if any, will be set and collected under an approved program plan and integrated into the price of the product communicated to the customer, unless otherwise approved by the Minster;		In the case of CleanFARMS, consumers do not see the cost directly
16	The operator provides a province-wide collection system that provides public access in all regions of Manitoba that is convenient and consistent.		A GIS map would be good in the future...
17	The product stewardship program in Manitoba is harmonized, where practical and feasible, with those of other provinces.		Where else do they operate? Any data to compare performance?
18	Funds raised for the management of a material or product relate to the costs of managing that designated material or product.		
19	The transparency of program operations is provided through the development of industry proposals, program plans, and annual reports, which will be available to all stakeholders.		Do we have clear reporting in the annual reports? What is missing if any?
20	Stakeholder disputes are resolved		Is there a formal dispute resolution mechanism?
21	Plan conforms to regulatory requirements to ensure a level playing field among stewards responsible for a designated waste stream.		

C) PUBLIC CONSULTATION PROCESS

#	Condition	Meets Condition	Comments
22	Consultation occurred with all affected stakeholders including local government, municipalities, community councils, citizen groups, First Nation and Aboriginal		Include checkbox for each group
23	The plan received input from some or all of the following: government, service delivery agencies, relevant external agencies and the public.		????
24	The operator made provisions for consultation that were meaningful to stakeholders		
25	The operator responded to concerns in a timely manner		
26	The program plan proposal identifies: a. who has been consulted with in the process of developing and evaluating the plan and/or proposal options; b. any objections and concerns raised by those who were consulted; and c. endorsement of proposed responsibilities by program partners.		

D) DESIGN OF AN ADEQUATE COLLECTION SYSTEM

#	Condition	Meets Condition	Comments
27	Program plan shall adequately provide for collecting and managing designated waste material.		
28	Where applicable, the plan makes special provisions for ICI and other large volume generators Industrial, Commercial, Institutional		Left over empty pesticide containers – funded by industry? Why not included in the program plan?
29	The plan attempts to partner with existing collection systems wherever possible		
30	The plan shall adequately provide for reasonable and free consumer access to collection facilities and recycling services. Accordingly, consumers are not to be charged a user fee at the point of collection.		

E) PERFORMANCE MEASURES AND TARGETS

#	Condition	Meets Condition	Comments
31	Program performance measures are recommended in the plan submitted for approval		
32	Performance measures or targets specified by the Minister are addressed in the program plan		
33	The products are categorized and prioritized according to their degree of risk		
34	The plan includes some or all of the following metrics: ▪ Sales and recovery data ▪ Municipal waste composition results ▪ Public awareness programs and surveys ▪ Amount of waste collected and processed by service provider ▪ # of collection points ▪ Per capita recycling rates • cost of operating		
35	The plan shows evidence of a commitment to continuous program improvement		

F) DISPUTE RESOLUTION PROCEDURE

#	Condition	Meets Condition	Comments
36	Provides for a dispute resolution process which allows for fair, transparent and unbiased independent processes where all views are known when stakeholder or public interests may be affected.		

G) POLLUTION PREVENTION AND BEST MANAGEMENT PRACTICES

#	Condition	Meets Condition	Comments
37	Plan adheres to guideline provisions for pollution prevention and best management practices		Which particular pollution prevention protocols are relevant and adhered to?
38	The plan promotes local processing, manufacture and use of products from waste material as an alternative to exporting recovered material to another jurisdiction where environmentally and economically sustainable		This would be an interesting criterion for some of the other PROs ... PCA?
39	Plan operates in a manner supportive of national and international agreements.		Which national and international agreements are relevant for this PRO? For others? Are we referring to CCME-led efforts?
40	The plan promotes and supports principles of reduce, reuse, recycling and recover.		May not be always relevant? Should be incorporated in the promotional and educational materials....

41	Environmental approvals issued and all processors meet high environmental standards		Do they need separate environmental approval?

H) REPORTING

#	Condition	Meets Condition	Comments
42	Operators will submit an annual report within 120 days of the end of the Calendar Year summarizing the activities of the program and contain audited financial statements for the Calendar Year reported.		
43	Report will include details on public education and outreach, collection facilities, efforts to reduce environmental impact and adhere to 4R principles, recovery rate information		Should have an agreed upon template
44	This report will be made available to the public (via website, etc)		Done at GMES website

NOTE: Nationally recognized programs that operate without separate fees at the point of sale may propose other reporting standards.

RECOMMENDATON:

Attachment 3.D

Interview Guide

Organization:

Designation of the person:

Questions for Producer Responsibility Organizations (PRO)

1) From your perspective, in what ways has the program been effective or successful? Please share specific examples.

2) How has the organization made progress towards achieving the goals?

3) From your perspective, what challenges have you encountered with this program? Please describe.

4) What plans do you have to enhance the program in the future?

5) **Cost-effectiveness:**

a) How is the environmental handling/membership fee related to the amount of waste collected - Does it increase or decrease with the increase or decrease in recovery rate?

b) Is there any relation between the number of registered stewards with the program and the environmental fee and cost per kg?

c) Could inputs (e.g., public awareness events, collection sites) be reduced and result in the same level of output, or can greater output be obtained with no increase in inputs?

d) What is the method followed for fee setting of different material? Is it calculated based on total expenses including promotion and education or is it based on the availability of suitable market? What other factors are considered?

e) How does the recyclers the organization work with effect cost of operations of the program?

f) What can be done to reduce the cost per unit of collection of designated materials?

6) **Program operations:**

a) What is new in the day-to-day operations of the program? How could day-to-day operations be improved further?

b) What are the challenges in achieving improvements in day-to-day operations?

7) **Targets and recovery rate:**

a) What methods do you use to identify the collection targets for a five year work-plan based cycle?

b) Can you list some barriers and opportunities to accomplishing the targets identified in your next current (new) program plan?

c) Can you comment on the estimated % of free riders in the system? What is the percentage of total obligated material supplied by these free riders for targeted material?

8) How does your operations in other provinces impact the program in Manitoba?

9) Do you have any further comments on EPR in Manitoba, your program or this survey? Would you like to add anything else?