Building community with recycling:

A case study of two small islands in British Columbia, Canada

by

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Abstract

Waste management strategies that focus on reduction, reuse and recycling have an immediate environmental impact through diverting waste from landfills and conserving natural resources. Although recycling is practiced in many cities around the world and especially in developed countries, little attention has been paid to the challenges associated with it in small island communities. Furthermore, research has focused predominantly on waste management practices carried out by local governments and private corporations rather than by non-profit community groups. This thesis examines the assets and barriers of community-based recycling operations on Mayne and Hornby Islands in British Columbia, Canada.

The study develops a methodological framework for assessing community-based recycling and utilizes qualitative research tools to achieve the research objectives. Theoretical pillars of social economy, community-building and environmental education are examined in this case study. The research purports that the community recycling groups are central to building social capital and inculcating environmental awareness on the islands as well as to contributing to the wider social economy network. Co-management partnerships between the community recycling groups and local government allow for increased local engagement and participation in resource recovery.

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1.0 Introduction: towards solutions for waste management

Solid waste is a pervasive and undeniable outcome of human society. Recent increases in the generation and the diversity of waste materials have resulted primarily from rising consumption and the spectrum of consumable products with multifarious chemical compositions. Growth in waste generation is suggested to be positively correlated with growth in household income; therefore, wealthy North American nations, such as Canada, experience excessive rates of waste disposal due to unsustainable resource use (Meyers, McLeod, & Anbarci, 2006). The increasing volume and complexity of waste material compounds problems related to technical, economic, social, environmental and political aspects of management. With population increase and the global trend towards over-consumption, the myriad of problems resulting from waste will continue to rise.

Waste management in North America and Europe has predominantly been driven by financial considerations and executed exclusively by professionals, government agents, and private companies. Despite this, rates of waste generation and associated risks continue to rise (Ahmed & Ali, 2004). Community-based organizations[1] have played an integral role in waste management by providing service where public and private sectors have failed[2] (Luckin & Sharp, 2006). Sustainable options to conventional waste management that effectively reduce the waste of recyclable resources by including the community in resource recovery are urgently needed. This

[1] Community-based organizations are non-profit institutions formed by engaged citizens to provide services to the community (Luckin & Sharp, 2006).

[2] "Market failure is seen as occurring when the market is 'imperfect', for example, when waste producers do not meet the external costs of waste disposal. Government 'failure' occurs when a topic is not considered of sufficient weight to influence the ballot box, and thus a social need has escaped the state's consideration" (Luckin & Sharp, 2006, p. 280).

thesis looks into community-based recycling and the supervised depot model to provide insight into alternative methods of sustainable waste management.

Community-based organizations can contribute to waste management in a variety of manners by: providing a high quality of service; having increased stakeholder control; lower operating costs of waste management; and greater responsiveness to the community's needs (Luckin & Sharp, 2006). In an attempt to determine the role of community-based organizations in sustainable waste management, this thesis examines (a) political and economic partnerships as co-management arrangements (b) citizen engagement and participation in resource recovery (c) environmental benefits and (d) social benefits of community-based resource recovery. The thesis focuses particularly on sustainable management of waste in small island communities and highlights two case studies of established community-based resource recovery operations – Mayne Island Recycling Society and Hornby Island Recycling Depot – in the Gulf Islands, British Columbia, Canada.

This first chapter provides a definition of waste as utilized throughout the thesis, followed by an overview of dominant waste management strategies, and the resultant situation in Canada and particularly in small island communities. Finally, detailed research questions and objectives are provided.

1.1 Defining waste as a resource

The definition of waste remains complex and subjective as there are innumerable types and uses for waste with both positive and negative connotations (Hawkins, 2001). Historically, waste was easily disposed of at the periphery of communities (Seadon, 2006) and perceived by many as a resource: items could be re-

used or re-worked numerous times (Ackerman & Mirza, 2001; Weinberg, Pellow, & Schnaiberg, 2000). However, with increasing population density in large urban centres, people found themselves living amongst increasingly large volumes of waste (Seadon, 2006). In America, middle-class groups in the first half of the 20th century pressured governments to address the problem of waste accumulation by providing disposal services (Pongracz & Phojola, 2004; Weinberg, Pellow, & Schnaiberg, 2000). Now, garbage is typically transported out of residential neighbourhoods to more marginal, rural landscapes (Bradshaw, 2003).

Waste is a subjective notion, but essentially, "waste exists where it is not wanted" (Pongracz & Phojola, 2004, p. 143). Waste can be perceived as an asset or as an assault (Ackerman & Mirza, 2001): it is an asset when it creates formal or informal economic opportunities or when it can be reused or recovered as a resource; it is an assault when it poses environmental and human risks or causes social injustice (Drackner, 2005). Regardless, waste management is an issue of commonality and, as such, can serve to unify people and communities.

The concept of waste as a resource is consistent with an asset-based approach to management (Child & West Lyman, 2005). This approach seeks community benefit through inclusive partnerships in waste management (Phillips, Barnes, Bates, & Coskeran, 2006). Community-based waste management approaches utilize partnership arrangements to adopt creative strategies for waste management particular to each location.

1.2 Waste management strategies

The polluter scenario is a 'tragedy of the commons' where individual positive gain by any one polluter produces a negative impact on the communal area (Drackner, 2005). The issue of responsibility is intrinsically linked to the notion of waste management: individuals, governments, industry, manufacturers, and commercial enterprizes are all stakeholders in the issue. While governments, private waste management companies and, more recently, manufacturing industries have typically been responsible for waste management in the latter twentieth century, this thesis investigates the role of community-based organizations in tackling the issue.

The management of waste is a contested issue and models for best-practice are disputed. In North America, waste is increasingly managed by private corporations contracted through government agencies (Pongracz & Phojola, 2004; Weinberg, Pellow, & Schnaiberg, 2000). Modern, conventional waste management can be defined as the "control of waste-related activities with the aim of protecting the environment and human health, and resources conservation" (Pongracz & Phojola, 2004, p. 151). The waste management hierarchy attempts to order solutions into a preferred scale: reduce, reuse, recycle, then landfill/incineration (Price & Joseph, 2000). However, conventional waste management merely advises the handling of waste and does little to reduce the generation of waste; "Very little consideration or effort has yet gone into true waste minimization or reduction in the demand that leads to waste generation in the first instance" (Price & Joseph, 2000, p. 97). Where waste management focuses primarily on end-of-pipe solutions, Price and Joseph (2000) propose the need for demand management and the development of efficient processes

which reduce energy and raw resource use and have a direct impact on waste generation.

While there is widespread consensus that waste minimization, reuse and recycling are preferable to landfills and incineration, these techniques have not proven practical in many cases - especially in low-income and rural communities where low tax revenues and large distances to the market make waste management more difficult (Barr, 2004; Butler & Hooper, 1999; Government of British Columbia, 2000b; Denison, 1996; Entwistle, 1999; Joos, Carabias, Winistoerfer, & Stuecheli, 1999; Powell, 1996; Powell, Craighill, Parfitt, & Turner, 1996). In British Columbia, large urban centres generate the greatest volume of waste but have the highest rates of resource recovery compared to the province (Government of British Columbia, 2000b). Nationwide, waste minimization efforts have been left to private households and the community sector with little support from governments and industry. Waste minimization is the intended goal of waste management, but conventional systems often do not enforce this so the voluntary nature of the responsibility is shifted to the individual (Entwistle, 1999; Phillips, Barnes, Bates, & Coskeran, 2006).

Recycling retains much of the attention from governments and policy-makers despite its lower position in the waste hierarchy (Price & Joseph, 2000). Indeed, little change in lifestyle is required for recycling whereas adopting waste reduction and reuse behaviour prove more demanding on the individual consumer. Clearly, alternative strategies that promote waste minimization through reduction, reuse and recycling as the optimal goal for waste management must be assessed.

1.2.1 Waste management in Canada

Production of Municipal Solid Waste (MSW) in most developed countries increases at least as rapidly as its gross national product (Cooper, 2001). Canada ranks among the nations with the highest rates of waste generation (Government of Canada, 2003). It is evident that strategies for waste reduction in high-income countries such as Canada must be addressed. Canadian communities are largely dispersed with small populations, making transportation costs a critical challenge for waste recovery. Considering this, methods of source reduction and waste minimization are preferable to end-of-pipe management.

In Canada, the Waste Management Act defines MSW as refuse that originates from residential, commercial, institutional, demolition, land clearing, or construction sources (Government of British Columbia, 2003). In 1989, the government of British Columbia established a goal to reduce the per capita amount of solid waste requiring disposal by 50% by the year 2000, compared to 1990 levels (Government of British Columbia, 2000a). In 2005, the B.C. provincial rate of waste disposal was 0.663 tonnes per capita, representing only a 24.5% reduction in the per capita amount of solid waste requiring disposal since 1990 (Recycling Council of British Columbia, 2005). While municipal governments have attempted to increase waste diversion through recycling, very few have been effective at substantially reducing waste. It is therefore necessary to explore alternative strategies to managing waste disposal by addressing the interrelated political, social, economic and environmental components of waste management.

1.2.2 Waste management in small island communities

Island communities are by no means homogenous in their environmental, social, geographical, economic or political composure; however, it is widely recognized that small islands share similar vulnerabilities that could negatively impact sustainable development (Deschenes & Chertow, 2004; Douglas, 2006; Georges, 2006; Ghina, 2003; Hernandez & Martin-Cejas, 2005; Kerr, 2005; Pantin, 1999; Singh, 1996). Islands have distinct margins and boundaries, and are therefore ecologically sensitive, economically fragile, politically and socially isolated (Douglas, 2006). Problems resulting from waste and pollution are particularly accentuated on small islands and present challenges to sustainable development (Douglas, 2006). While every human population faces challenges in finding solutions to waste management, the problem is more immediate on islands (Deschenes & Chertow, 2004); it is therefore important to continue research into the management of waste and pollution on island environments.

The problems associated with waste disposal are heightened on small islands as the limited land area makes landfills unsustainable in the long term; and other options, such as incineration, have so far proved to be economically unfeasible (Ghina, 2003). A hindrance on many small islands is the lack of financial resources to properly monitor and enforce environmental regulations. Because of waste's low status in the public image, it is increasingly difficult to implement comprehensive solutions (Georges, 2006). It is not possible for islands to manage increased amounts of waste, so the challenge is to create policy frameworks that close ecological cycles so that wastes become resources and responsibility is shifted from individuals to industry and producers (Bass & Dalal-Clayton, 1995).

A valid assessment of progress towards sustainability is missing from many small island communities. As humanity stresses the earth's ability to support material economies and absorb wastes, progress towards sustainability requires reduced reliance on resources, efficient production processes, reduced consumption and recycling. The result would be less production, consumption and waste disposal, less pollution and less threat to environmental integrity. Municipal solid waste is only a portion of the global waste-stream, but it is the dominant waste-stream for many small island communities:

> For island economies, which consume imported materials to produce services, wastes associated with extraction, processing and manufacturing accumulate elsewhere in the global ecosystem. Goods are imported to the island system in finished or semi-finished form. The discards of these consumer items accumulate in the municipal solid waste stream and present the most noticeable evidence of pollution pressure within their insular environments (Georges, 2006, p. 128).

Collection of solid waste on islands continues to be an economic challenge. Many islands have scattered settlement patterns and have challenging topography that make door-to-door waste collection financially prohibitive (Georges, 2006). Many small island communities have also experimented with landfills or incinerating wastes with negative environmental results. How waste associated problems are resolved on small islands "will resonate at a global level because the Earth itself is ultimately an island in space" (Georges, 2006, p. 136).

1.3 Research Objectives

The small island communities of Hornby Island and Mayne Island were selected for this research because of the existence of well-established community-based resource recovery facilities formed by grass-roots initiatives, and the relative geographical isolation from major urban centres. Both communities have practiced resource recovery since the mid-1970s at supervized depots where source-separated recyclable or reusable material is accepted.

Little is known about the role of community-based waste management in resource recovery in North America. This research addresses gaps in literature on how community-based waste management can offer sustainable strategies for waste reduction and diversion. The focus on small island communities is important as geographic isolation magnifies the externalities from waste and, at the same time, the small size can facilitate the diffusion of information and innovation (Wang, 1990).

Hornby Island Waste Management Centre (HIWMC) and free-store holds a local reputation for its character, and was selected for that reason. Mayne Island Recycling Society (MIRS) actively sought participation in this research, and was selected to represent similar resource recovery operations within the Southern Gulf Island Chain. Although Mayne and Hornby have similar attributes, each recycling organization has implemented a different management strategy and presents a different governance structure. By comparing and contrasting two separate communities, the assets and barriers to community-based waste management can be better determined. The theoretical framework outlined in Chapter 3 provides a basis for evaluation from environmental, social and economic perspectives.

The main objective of my research is to assess the assets and barriers to community-based waste management on Mayne Island and Hornby Island by determining how these non-profit organizations function economically, politically, environmentally and socially. My research will contribute to the development of a theory and elaboration of a framework for evaluating community-based resource recovery, which could be applied in other small island or rural communities in Canada and other North American countries.

This research is guided by the following questions:

- What are the assets and barriers to achieving waste reduction at the community-based waste management centres on Hornby Island and Mayne Island?
- How can community-based waste management contribute to waste reduction and more sustainable societies?

This research is guided by the following underlying assumptions and definitions:

- Sustainable waste management is defined by waste reduction, reuse, and recycling;
- Civic engagement in political decision-making is an asset which contributes to building strong communities and healthy environments;
- Sustainable waste management requires high levels of public participation;
- Sustainable societies achieve environmental integrity through minimization of waste and resource degradation while maintaining

social and economic vitality that enhance environmental health[3] and social well-being[4] (Bridger & Luloff, 1999).

1.4 Format of thesis

The format of this thesis will include six chapters. Chapter 2 investigates the literature on sustainable waste management and explores strategies for waste reduction and management. Chapter 3 presents an outline of the theoretical pillars that make up the research framework. Methodologies and methods of data collection are illustrated. Chapter 4 begins the analysis of data related to social economy and social capital. Chapter 5 continues the analysis of the data as it relates to environmental education and resource recovery. Chapter 6 reviews the main findings of the research and recommends future research avenues.

[3] Environmental health is defined as a system's ability to maintain its structure (organization) and function (vigour) over time in the face of external stress (resilience). A healthy ecosystem must also be defined in terms of its larger context and its smaller components (Costanza, 1992).
[4] Social well-being is the appraisal of one's circumstance and functioning in society. Among the potential benefits of public life are social integration and cohesion, a sense of belonging and interdependence, shared consciousness and collective fate (Keyes, 1998). Keyes (1998) purports five characteristics of social well-being including: integration, acceptance, contribution, actualization and coherence.

2.0 Reviewing the literature on waste management

There is a plethora of literature and research about waste from many disciplines and perspectives; however, a large part of the work from developed countries focuses on large-scale private or municipal services and not community-based enterprizes. This chapter will use the lens of political ecology to examine the literature on waste generation, disposal and management, highlight the concept of sustainable waste management and identify gaps in the literature that fail to address how the non-profit community-based waste sector contributes to sustainable solutions to waste reduction in Canada, and specifically for small island communities.

Appropriate solid waste management is a challenge of global proportions. The major problems are: a) the increasing quantity of per capita waste generated resulting from urbanization and changing lifestyles; b) unsustainable disposal methods, such as landfill and incineration, because of consequent environmental problems; and c) the lack of financial resources in rural and poor communities for waste management and service provision. New methods for waste management that address these problems are urgently needed as the proliferation of waste and consequent environmental and social injustices ensue. It is important that approaches are cost effective, minimize externalities, address waste minimization, and that they are inclusive. Recent focus on waste has not successfully proposed solutions that wholly address social, environmental and economic aspects of waste management. It is the aim of this thesis to provide a perspective that integrates these facets and provides tangible recommendations to address the problems resultant of current waste management practices at the local-level.

2.1 Political Ecology

Political ecology aims for theoretical synthesis by integrating the studies of political, economic and social factors that affect environmental issues in an interdisciplinary, non-dualistic manner. As Greenberg and Park (1994, p. 1) state: "political ecology expands ecological concepts to respond to this inclusion of cultural and political activity within an analysis of ecosystems that are significantly but not always entirely socially constructed." In researching community-based models of waste management, I will draw on this integrated approach by investigating people's experiences of the political, economic and social structures that influence environmental outcomes so that strides can be taken to move towards sustainable environmental outcomes such as waste reduction and reuse.

Utilizing the approach of political economy, what Weinberg et al. (2000) refer to as "the treadmill of production," political ecology studies how different polities are part of a global economic structure, influencing environmental policy development and exacerbating environmental degradation. Areas of production and consumption within the dominant economic model shape the social and political contexts for environmental policy. In North America, waste is predominantly treated as a commodity, where economic investment in production and consumption of waste has transformed environments (Njeru, 2006). Alternatively, waste reduction strategies can challenge the dominant paradigm by promoting sustainable changes to the political, social and economic foundations of environmental policy. Although this thesis does not specifically address global production and manufacturing within an economic context, awareness of these dominant forces are critical to any study of

waste management. By revealing the value of waste as a resource and not something generated for economic benefit, conservation and reduction can begin to take place.

The issues of access to and unequal ownership and distribution of resources hold a central place in political ecology literature. The industry of waste management, especially in North America, has increasingly been dominated by corporations such as Waste Management Inc., B.F.I. and Alpine Disposal, rather than the local community. Economic gains from waste generation have strengthened such companies, thereby concentrating wealth in the hands of private multinational corporations. This inequality in ownership and entitlement (Johnson, 2004) to waste resources has raised environmental justice concerns, weakened deliberative democracy (Petts, 2001, 2003, 2005), and stalled progressive environmental policy changes. Community-based models have the potential to provide an example of sustainable waste management policy that challenge dominant political strategies which tend to segregate social, environmental and economic problems.

2.2 Sustainable community development

The concept of sustainable development is rooted in the widespread recognition that human activities have placed a serious strain on the earth's carrying capacity (J. Bridger & Luloff, 2001). Attention to sustainability has increased due to environmental degradation, resource depletion, and declining public influence on economic and political structures. The complex interactions of political, social, economic and environmental factors make sustainable outcomes complicated and contested. The difficulty lies not in the relativity of the concept but in its implementation.

Dimensions of sustainable development theories involve emphasis on economic diversity, self-reliance, reduction in energy use and the generation of waste, environmental diversity, social justice, and civic engagement (J. Bridger & Luloff, 2001); however, building communities where environmental quality, social justice and economic vitality come together in a sustained fashion requires both long-term planning and short-term adaptability (Hempel, 1999). The 'resource maintenance' approach to sustainable development emphasizes the maintenance of future resources by minimizing human impact on the environment without sacrificing material needs (Bridger & Luloff, 1999). Development is seen from an ecological perspective over a solely economic one. This approach challenges current methods of material consumption, standards of living, and relationships to the environment. For the purpose of this research, sustainable development will be defined as the achievement of environmental integrity through minimization of waste and resource degradation while maintaining social and economic vitality that enhance environmental health and social well-being (Bridger & Luloff, 1999).

The context of 'place' must be emphasized when considering the concept of sustainable development. Gibbs (2005, p. 408) suggests that "the nature of place is interrelated with discourses of sustainability and we need to understand these interrelationships to interpret how dominant local versions of sustainability arise and are incorporated into local policies and projects." Attempts at achieving sustainable development at a global scale result in difficulties due to complex political, economic and cultural structures; sustainable development at the community-level, however, does not require as much abstraction for perceiving change and transformations can

be experienced in a more immediate manner (Bridger & Luloff, 1999). While disseminating positive examples can assist in establishing sustainable development, communities must also retain degrees of flexibility and independence as each place has inherent requirements. As Bridger and Luloff (1999, p. 381) suggest, "a community-level approach allows for the design of policies and practices that are sensitive to the opportunities and constraints inherent to particular places." Sustainable community development, therefore, attempts to balance environmental concerns, economic development objectives, political engagement and social relationships between the local and the global scale.

2.3 Strategies for waste reduction

Environmental stresses are escalating due to the consumer culture that relies heavily on resource extraction, production, consumption and disposal (Barr, 2004; Entwistle, 1999; Pongracz & Phojola, 2004). Sources of production are often distant from places of consumption and disposal, making the interconnectedness of resource cycling difficult to ascertain. It must be emphasized how the conditions experienced by one group of people can undermine the existence of another (Hartwick, 2000). To link the spaces of production to the places of consumption and disposal, one must "follow the path of a commodity back from the point of consumption, marketing, distribution, and processing, along the transport network, to the point of production, and beyond" (Hartwick, 2000, p. 1183). It is also important to follow the commodity forward through consumption, second-handedness, deconstruction, transformation, or disposal. Hernandez and Martin-Cejas (2005, p. 14) reinforce that "the integral

management of solid waste requires a global perspective of the flow of materials circulating in the ecosystem."

Taking account of the full environmental, social and economic costs of products and waste management policies is a step towards regarding the future consequences of today's actions (Powell, Craighill, Parfitt, & Turner, 1996). These costs must be considered in a long-term context as sustainable waste management "raises concerns not only about the intra-generational but also the inter-generational implications of cradle-to-grave control where the potential environmental impacts may last hundreds of years" (Petts, 2005, p. 401). Recent investigations into waste management strategies are challenging the idea that production-consumption-disposal follow an inevitable sequence from cradle to grave. Production and consumption processes can be imagined as being part of a cycle, referred to as a 'cradle-to-cradle' model by McDonough and Braungart (2002), where materials are continuously utilized throughout multiple lifecycles, never being downgraded to lesser products. The emphasis is on durable, long-lived products over single-use items, thereby minimizing waste, conserving raw resources, reducing pollution and offering the consumer a sustainable option.

Consumer waste is highly variable, typically unsorted, and contains multiple materials from an array of production sources. The true economic costs of solid waste management are far removed from consumers' decisions thus violating the 'polluter pays' principle (Michaelis, 1995). Waste management on a global scale should enforce the notion that individuals, governments and industry have a role in reducing and reusing materials. Individuals have a responsibility to reduce

environmental impacts from waste through participation in environmentally-conscious consumer practices; governments have a responsibility to monitor and enforce best-practices for waste reduction, including the implementation of policies and incentive programs; and industry has a responsibility for reducing energy and resource consumption by producing packaging that is recyclable or reusable.

2.3.1 Extended producer responsibility

The policy strategy of Extended Producer Responsibility (EPR), also known as product stewardship, is gaining increased attention as a means towards waste minimization. EPR is a policy option requiring producers to be financially or physically responsible for their products after their useful life (Hanisch, 2000; Michaelis, 1995; Sheehan & Spiegelman, 2005), as opposed to the current throw-away systems where industry externalizes the cost of disposal to be borne by governments and tax payers (Dimitrov & Iordanova, 1997). This requires producers to take back or manage spent products through reuse, recycling or remanufacturing, or delegate this responsibility to a paid third party. EPR can be required through policy or made through voluntary agreements. However, as product and packaging waste create huge costs for society, the idea of EPR is to redirect those costs back to the manufacturer. This is commonly achieved through attaching a deposit to consumer items, therefore creating a financial incentive for individuals to return the product for refund. Deposit-refund systems impose a cost to the consumer and to society only when the product is discarded in the waste stream (Kulshreshtha & Sarangi, 2001).

In Canada, EPR regulations are enacted at the provincial level thus creating a Canada-wide patch-work effect where certain products are only regulated in some provinces or regulated differently among provinces (Sheehan & Spiegelman, 2005). In an attempt to achieve 50% waste reduction of 1990 levels by 2000, Canada implemented various EPR schemes (Sheehan & Spiegelman, 2005). Beverage containers are a common product governed by EPR deposit-refund system in Canada, although milk and milk-substitute containers are not regulated, thus contributing to confusion over what products are valuable and recyclable.

Widespread EPR legislation would effectively close the loop in the waste stream by re-directing materials back to manufacturers. Communities' and governments' role in waste management would shift to being facilitators of this re-direction of materials, rather than taking responsibility for their ultimate disposal. Industry would offer financial incentives for waste recovery and the burden to consumers, tax-payers, volunteer associations and governments would be lessened. EPR policies are necessary to move towards the ideal of zero-waste societies where all materials are re-used and recycled in a closed-loop cycle.

2.3.2 User fees and limits

The technique of implementing user fees or bag limits for waste disposal has emerged as a strategy to reduce the volume of waste (Ferrara & Missios, 2005). Applying a flat fee to refuse disposal does not encourage reduction or recycling by linking the amount of waste generated to the price paid for its collection, and can therefore lead users of the service to generate inefficiently high levels of waste. However, applying a fee that varies with the weight or volume of waste generated

could encourage the users to use the service more rationally (Hernandez & Martin-Cejas, 2005; Michaelis, 1995). One negative repercussion of this strategy is the illegal disposal of waste. Ferrara and Missios (2005) also found that, coupled with accessible recycling programs, user fees resulted in significantly increased recycling intensity compared to bag limits, and they confirmed that bag limits actually reduce recycling rates for some materials. McDonald and Oates (2003) also suggest that economic incentives should be offered to stimulate recycling behaviour. One caution, however, is that while this strategy can be effective at targeting non-participants, diversion rates may return to their previous low levels once incentives cease (Ebreo & Vining, 2001; Vining & Ebreo, 1990).

2.3.3 Minimizing waste through reuse

Reuse is a means of preserving raw resources and is thus environmentally beneficial; however, reuse can also be viewed as a particular form of consumption where objects remain constituted in the transition from one episode of use to another, involving a process of dispossession, disposal or storage (Vaughan, Cook, & Trawick, 2007). The main determining factor is how products are designed to facilitate opportunities for reuse (Vaughan, Cook, & Trawick, 2007). A growing segment of society is voluntarily simplifying life through less work and less consumption; these people have been called ‘down shifters’ (Nelson, Rademacher, & Paek, 2007). Nelson et al. (2007) investigate how alternative forms of consumption by ‘down shifters’ correspond to increased levels of civic engagement. Similarly, Belk (2007) explores sharing as a means of saving resources and fostering community, a concept increasingly scarce in a world geared towards privatization.

Reuse receives the least amount of review in the literature compared to recycling, but is ranked with primary importance in the waste hierarchy.

Scavenging reusable materials is a common method of resource recovery. Medina (2001) outlines the history of scavenging among poor and immigrant individuals in America. Scavenging at dumpsites occurred at a large scale in America during the first half of the twentieth century until it was banned in 1950 due to sanitary considerations and potential liability suits (Medina, 2001). In Canada, scavenging bylaws remain in effect, prohibiting anyone from salvaging material from the waste stream. Despite this, the activity is prevalent among poor and socially excluded individuals in both rich and poor countries (Gutberlet, 2007). Even though the activity provides an environmental service and a means to alleviate poverty, it is generally regarded with public contempt.

Reuse is also a home-based activity that is under-studied and less recognized in environmental education programs (Medley, Zhou, & Condon, 2006). Main avenues by which materials re-circulate include economic cycles between homes and second-hand markets and non-economic cycles as gifts and donations to non-profit societies (Medley, Zhou, & Condon, 2006). The non-economic avenue of re-circulating reusable materials is of utmost relevance to the community-based waste operations on Mayne and Hornby Islands.

2.3.4 Door-to-door collection versus supervised depot drop-off

Integrating waste minimization practices into the milieu of cultural and built environments is necessary as the pervasiveness of waste intensifies. Understanding public places of waste is integral to the evolution and design of waste places in

capitalist culture and landscape (Engler, 2004). Bringing waste into our everyday environments, thereby normalizing and decentralizing waste management, can facilitate positive changes to cultural perceptions of waste. Methods of achieving such cultural shifts depend largely on how waste is handled.

Two common methods of waste collection include curb-side pick-up and depot drop-off. Door-to-door pick-up service allows residents to be conveniently alleviated of recyclables on a weekly or bi-weekly basis. While some programs require source-separation at the curb, many do not, leaving material separation to automated machines at centralized facilities. The curb-side pick-up method of waste collection is the most dominant in Canada, especially in urban areas. Curb-side collection can be more costly for rural areas due to the great distances between residential units and greater distances to processing. Alternatively, drop-off depots require individuals to deliver and sort their recyclable material. Depots present a flexible option for communities as residents only use the service when they have sufficient quantities of material to recycle. Davila and Chang (2005) suggest that sustainable development goals can be achieved through the installation of Material Recovery Facilities (depots) as they are a cost-effective alternative when curb-side recycling does not demonstrate long-term success. Of particular interest to this thesis, is the effectiveness of the supervised drop-off depot system for small island communities.

Considerations for planning drop-off depots include locating accessible sites and allocating citizen demand to them; however, externalities of the location must be addressed including environmental, social and economic factors (Flahaut, Laurent, & Thomas, 2002). The location of waste facilities has always been contentious,

however externalities are more extreme when locating landfills compared to smaller-scale drop-off depots (Baxter, Eyles, & Elliott, 1999; Cooper, 2001). The location can be considered a problem because while the facilities should be accessible to ensure efficiency of service, they should also be located outside of residential neighbourhoods (Flahaut, Laurent, & Thomas, 2002). This compromise is a key factor in locating successful recycling depots.

Conventional waste management has not been effective at minimizing waste. In some instances, "decreased waste generation adversely effects system routing and induces larger system costs when it is not configured appropriately" (Davila & Chang, 2005, p. 346). Waste generation is therefore an economic driver for the industry. Strategies for waste minimization, such as Extended Producer Responsibility, user fees and limits, reuse, and collection techniques can offer effective means of diverting materials from the waste stream. In Canada, some steps have been taken towards adopting waste minimization; however, the rate of waste generation continues to grow unsustainably. Therefore, methods of encouraging waste reduction must be reassessed at the individual, governmental, and manufacturing levels.

2.4 Strategies for waste management

Communities are often in the best position to make decisions on matters that concern them most, and the high probability of repeated interaction within a community means that members have a strong incentive to act in socially beneficial ways (Somerville, 2005). It is this perspective which guides the field of community-

based resource management. As waste is a factor in every community and its improper management can result in negative externalities, it is important to explore the role of community-based organizations in offering sustainable strategies for waste management.

Community-based recycling centres are not-for-profit organizations motivated by the principles of ecological sustainability. They have the explicit objective of encouraging the minimization, reuse or recycling of waste. These organizations rely heavily on volunteerism and public participation to invoke social change (Lounsbury, Ventresca, & Hirsch, 2002; Luckin & Sharp, 2005).

2.4.1 Development of the solid waste sector

In the first half of the 20th century, solid waste disposal in Canada was primarily a local affair. The rise of environmentalism and social activism during the 1960s encouraged efforts to reduce waste through changes in consumer habits, production processes, and recycling in high-income countries (Weinberg, Pellow, & Schnaiberg, 2000). A small-scale economy was generated in recyclables and, until the 1980s, "most post-consumer waste recycling took place within these community-based recycling centers" (Weinberg, Pellow, & Schnaiberg, 2000, pp. 12-13).

Community-based recycling centres have largely functioned at the margins of society where environmental activists could prepare agendas for social change. The non-profit recycling movement was informed by a community-building ethic, intended to invigorate communities and challenge capitalist forms of production by raising environmental awareness, promoting self-sufficiency, and connecting local actions to global processes (Lounsbury, Ventresca, & Hirsch, 2002). Recycling was

perceived as a marginal practice mainly due to its association with a social change agenda advocated by activists; and "recycling as a mechanism for the radical restructuring of capitalist forms of production never achieved broad popularity" (Lounsbury, Ventresca, & Hirsch, 2002, p. 15). Rather, recycling was eventually touted by industry as an avenue to divert waste material from landfill without significantly changing consumer behaviour. Minimal responsibility from the individual was expected from this industrial approach to recycling, making the scheme more attractive to middle-class consumer culture.

Deindustrialization in North America in the 1980s saw the dismantling of urban neighbourhoods in favour of suburban sprawl; the culminating effect was environmental pollution and economic pressures threatening the sustainability of cities. At this time, recycling emerged as a way to formally address rising environmental concerns and the financial burden of municipalities who were managing the costs of garbage hauling (Weinberg, Pellow, & Schnaiberg, 2000). This demand for recycling promoted the creation of a competitive market system for recyclables, whereby costs were recovered from materials picked up from municipal curb-side recycling programs and new products were manufactured from recycled materials. As Lounsbury et al. (2002, p. 10) suggest, "the scarcity of data on recycling before the 1990s provides an indicator of the fact that the recognition of recycling as an industry distinct from other solid waste management segments is a very recent development." Initially, the recycling industry seemed to have resolved much of the environmental and economic issues; however, with expanding programs and service, the cost of staffing and service provision threatened the integrity of

recycling to address environmental degradation resulting from consumer society. The attempts at making recycling a for-profit business undermined the efforts of community-based recycling programs that did not have the capacity to expand operations and compete on a market basis. This recent mainstreaming of recycling services may threaten the future of the community waste sector (Luckin & Sharp, 2006).

2.4.2 Community-based waste schemes

It is arguable that non-profit recycling organizations are able to maximize the environmental gains from waste reduction activities through their "flexibility, responsiveness and innovation in collection methods" (Luckin & Sharp, 2005, p. 64) that enable high participation rates in recycling schemes. However, sustainability for non-profit recycling centres is important if they are to deliver a reliable and effective service.

One aspect of sustainability that must be considered is cost recovery and revenue generation, requiring entrepreneurial tactics (Ali, 2003). While large-scale waste enterprizes may be able to reduce costs due to economies of scale, community-based enterprizes have the advantage of technology choice, motivation and supervision, and can therefore be cheaper than large-scale operations even considering economies of scale (Ali, 2003). In a study of the community waste sector in the U.K., Luckin and Sharp (2003) concluded the main sources of revenue for non-profit waste organizations was from the sale of recyclable materials and from other sources, namely Lottery funding; however, that the majority drew on more than three different sources of funding raises some concern. Community-based recycling projects often

enable significant environmental gain with minimum resources, operating without adequate financial resources because of the dedicated participation of volunteers (Luckin & Sharp, 2005). However, in order for community-based organizations to operate over the long term, support from local authorities, in the form of transportation services or funding, is necessary (Ali, 2003).

Community waste organizations in the U.K. have achieved substantial waste reduction compared to conventional waste management strategies. As highlighted by Luckin and Sharp (2003), some schemes have reduced average waste disposal from 800kg to 250 kg per household per year and recycling rates between 47% and 52% have been achieved. Luckin and Sharp (2003) identify 83% of community waste initiatives in the U.K. are involved in educational activities that emphasize widespread awareness of waste reduction. Entwistle (1999) argues that the act of recycling demands a personal commitment that challenges the routines of a throwaway society and the environmental awareness stimulated by recycling is likely to lead to other environmentally beneficial changes in individual behaviour.

Luckin and Sharp (2006) suggest that non-profit community organizations fulfill particular social roles that are often neglected by state and private sectors. Social impacts can include support to low-income families through access to material goods, provision of employment and skills training (Luckin & Sharp, 2003). Another defining feature of community-based recycling organizations is that they operate on the community level and emphasize the involvement of local people in developing the organization (Luckin & Sharp, 2005). This involvement is typically in the form of management committees or board of directors (Luckin & Sharp, 2003). Volunteer

involvement can tap into the citizenship potential of a community and provide opportunities for individuals to gain confidence, experience and skills that could benefit their careers (Luckin & Sharp, 2003). Community waste schemes can also provide opportunities for the development of relationships between those involved in the waste organizations and the larger community, thereby strengthening social capital (Luckin & Sharp, 2004; Luckin & Sharp, 2005).

The sustainability of community-based waste organizations depends on a number of external factors including regular payments, political influence, competition from large-scale private operators, and support from local authorities (Ali, 2003; Luckin & Sharp, 2003). However, the community sector has had a significant impact on the governance of waste and has pioneered source-separated recycling schemes. In the U.K., Luckin and Sharp (2003; Luckin & Sharp, 2004; Luckin & Sharp, 2005, 2006) note that through partnerships, community and government can work together to develop sustainable waste management strategies.

Luckin and Sharp (2006) have found the community waste sector in the U.K. to be diverse, financially sustainable, delivering integrated environmental education and non-waste related services such as advocacy, community expression and innovative functions. However, they often lack the capacity to provide service over a larger area and are subject to market fluctuations and policy changes related to waste handling (Luckin & Sharp, 2006).

Community-based waste services can fill gaps in service provision left by overburdened municipalities and become an integral component of the waste management system (Muller, Iyer, Keita, Sacko, & Traore, 2002). Community-based

recycling facilities therefore embody goals of offering recycling services, environmental education, and providing employment while challenging people to push for social change (Weinberg, Pellow, & Schnaiberg, 2000). The apparent decline in community-based operations suggests a shift in the overarching structure of waste management in North America – dominantly, large-scale private companies are operating waste services compared to small-scale community organizations. This shift represents an increase in the profitability of waste resources and resultant competition for financial gain in this sector, putting the social and environmental intentions of small-scale groups in jeopardy. It is therefore imperative to study the opportunities and challenges faced by community-based waste operations in light of the dominant market forces.

The majority of community waste schemes have resulted from community development initiatives where waste projects are implemented at the community level often by outside organizations (Hernandez, Rawlins, & Schwartz, 1999; Kironde & Yhdego, 1997; Miraftab, 2004; Muller, Iyer, Keita, Sacko, & Traore, 2002; Robbins & Rowe, 2002). Johnson and Wilson (2000) highlight the need to increase the effectiveness of development interventions, defined as interventions or service provisions directed towards some form of social change, specifically for waste management. Some development interventions have been ineffective because institutional sustainability, defined as established norms, values and practices that "enable action and outputs to continue beyond the interventions' formal life", are lacking (Johnson & Wilson, 2000, p. 302). Thus, the notion of sustainability must be concerned with "the social arrangements which enable coordinated and effective

action to bring about change in the longer term" (Johnson & Wilson, 2000, p. 302). Social processes are complex as multiple actors are involved. Johnson and Wilson (2000) suggest that inclusive practices cannot be reliant solely on voluntarism, but require structured representation of different interest groups in a process of negation that enables social learning.

Research on community-based waste schemes in Canada is limited to non-existent. Waste management strategies can be improved by utilizing the resources of existing community-based enterprizes that go above and beyond what overburdened municipal authorities do (Muller, Iyer, Keita, Sacko, & Traore, 2002). This thesis will contribute to a broader understanding of community-based waste management in this country by specifically focusing on how community-based initiatives can become an integral component of the municipal waste system and offer local solutions to the problems of waste management by strengthening relationships between communities, industry and government.

2.4.3 Civic engagement and community-based waste management

A fundamental element of sustainable development is civic engagement in political decision-making. Civic engagement is the active involvement of citizens in general public life (Short, 2001) and the process of people participating in the formulation, passage and implementation of public policies (Stoker, 1997). The range of public involvement can include voting to the involvement of people in member-centred organizations (Short, 2001). As government has become increasingly fragmented and multi-tiered, it is asserted that citizens are losing confidence in formal politics and government institutions (Pearce & Mawson, 2002)

resulting in widespread civic disengagement (Short, 2001). This crisis of representation brings into question the political dimension of citizenship which is concerned with the way people share in collective agency (Carens, 2000).

Concepts in sustainability emphasize the central role of active citizenship in participatory structures of governance (Stratford & Jaskolski, 2004). However, although citizen participation is regarded as a key element in sustainability, few researchers or public authorities have paid much in-depth attention to the barriers to active citizenship and fewer still have addressed the issue in the context of island sustainability (Davidson, 2003).

Deliberative democracy is concerned with the process of decision-making and ensuring all citizens have an equal right to participate and have influence on the process (Southern, 2002). The principles of inclusiveness[5] and deliberation[6] are key elements of good governance (Bloomfield, Collins, Fry, & Munton, 2001; Dahal, 2003; Southern, 2002). Governance is an exercise of authority through formal or informal institutions[7] for the common good of society (Dahal, 2003; Southern, 2002). However, as Zwart (2003) highlights in a case study of waste management deliberations in the U.K., deliberative theory can be problematic when claims are made regarding the legitimacy of outcomes from deliberative models, as impressions of fair processes are subjective and may be shaped by self-interest.

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[5] Inclusion is the act of including others in the *process* of consideration, decision, and implementation by involving a wide range of stakeholders thereby increasing sense of ownership, respect, legitimacy of outcomes and valid knowledge (Bloomfield, Collins, Fry, & Munton, 2001).

[6] Deliberation is defined as careful consideration or discussion of reasons for or against an issue, but is not necessarily inclusive (Bloomfield, Collins, Fry, & Munton, 2001).

[7] Institutions are the rules and enact behavioural norms by which agents interact and implement the rules to achieve desired outcomes (Dahal, 2003).

The process of devolution, whereby responsibility and authority are shifted from central government to non-governmental bodies or less autonomous government authorities, is occurring in all sectors of natural resource management (Dahal, 2003; Wanyande, 2004). Devolution policy is based on the assumption that it will generate public participation in the development process. The idea is to transfer "centrally exercised power, resources and administrative functions to local people so as to strengthen democratic process, accountability, political skills and national integrity" (Dahal, 2003, p. 17).

While devolution can enhance local decision-making power, it can also result in limited financial resources and staffing shortages leading to reduced service provision. In South Africa, for example, political restructuring led to unequal distribution of waste collection services where community-based organizations were responsible for waste collection in informal and marginalized settlements (Miraftab, 2004). Petts (2001; Petts, 2003, 2005) has extensively explored deliberative participation in waste management in the U.K., bringing to light environmental justice issues for disadvantaged populations. As Beall (1997) stresses, decentralization and civic engagement are key concerns in debates on solid waste management as responsibility for environmental protection rests with individual citizens as well as governments.

Luckin and Sharp (2004) assess claims that community involvement in waste service provision can increase participation and engagement. Muller et al. (2002) investigate different meanings of community participation in community waste management by distinguishing between community participation as an instrument to

make waste management more efficient and participation as an objective to achieve social development. Public involvement can generate acceptance of waste policies, can strengthen social networks and provide opportunities for inclusive decision-making and civic engagement (Muller, Iyer, Keita, Sacko, & Traore, 2002). Muller et al. (2002) conclude that all sustainable local waste services require support from authorities, an open communication platform, and capacity amongst residents to organize, supervise, and control.

Participation can be ineffective if the institutional capacity necessary for people to be involved is lacking. Barriers to participation can include: lack of integration across departments, lack of political will, and lack of capacity to engage in profound change to institutional practices (Stratford & Jaskolski, 2004). The challenge of establishing local strategies for sustainable development is as much about institutional change as about new forms of public participation in the planning process (Burgess, Harrison, & Filius, 1998). Personal barriers to participation can include lack of time, skills, knowledge, money, self-interest and political will (Selman, 2001). Participation can be oppositional and reactive to specific issues, rather than strategic and co-operative (Davidson, 2003). Armstrong and Stratford (2004, p. 545) reinforce the "praxis of sustainability requires that individual interests be constantly reconciled with those of the collective."

In regards to waste management, citizens do not widely hold the responsibility for consumption and disposal actions and local authorities tend to bear the burden of service provision. Problems of misinformation coupled with feelings of being unable to influence decision-making may be a main factor in the increasing objections to the

waste disposal industry. It is beginning to be acknowledged that the waste management problem can only be solved in partnership with neighbourhoods and individual households (Robbins & Rowe, 2002). This thesis will further investigate levels of civic engagement in local waste management decision-making and relationships with local government stakeholders with the aim to determine feasible models of co-management arrangements for waste management.

2.4.4 Partnerships and governance arrangements in waste management

The uneven distribution of waste service provision between wealthy and poor, and rural and urban neighbourhoods has been noted in many cases (Johnson & Wilson, 2000; Miraftab, 2004; Morrissey, 1992; Petts, 2005). Currently, most local governments "follow a top-down process of producing compliance with waste management, rather than seeking to identify citizens' needs and concerns" (Johnson & Wilson, 2000, p. 306). Entwistle (1999) argues that the structure of conventional waste management systems is fundamentally unsuited to the definition and delivery of sustainable waste management. This view suggests that solutions are best framed at the local level where governance issues can be addressed. Therefore, the option of forming partnerships between multiple stakeholders to address waste problems is being investigated to find alternatives to conventional waste programs (Beall, 1997; Blake, 1999; Forsyth, 2005; Hernandez & Martin-Cejas, 2005; Kironde & Yhdego, 1997; Massoud & El-Fadel, 2002; Seldon & Wilkinson, 2001).

The concept of partnerships[8] has emerged as a contemporary system of local governance (Southern, 2002). Inherent to partnerships is power dynamics between partners and, although voluntary groups are usually well represented in partnership structures, it has been suggested that they often lack any real power (Southern, 2002).

Conventional waste management arrangements do not consult local actors and provide no provision for participation by the public in deceision-making. Kironde and Yhdego (1997) examine community-based waste management in Tanzania from a governance perspective and emphasize the formation of partnerships between non-profit organizations and local governments to provide effective, integrated waste management solutions, as the services rendered by private companies do not address the sustainable management of waste. By involving citizens in the management of solid waste, employment, social cohesion and civic engagement should result (Kironde & Yhdego, 1997). Their conclusion is based on assessments of participation in decision-making, transparency and accountability, financial efficiency, and sustainability (Kironde & Yhdego, 1997).

Forsyth (2005) explores case studies of waste management that attempt deliberative forms of environmental governance. He highlights how participation and governance are not uniform processes, and political conditions are not always open to partnership possibilities. Robbins and Rowe (2002) also caution that being co-opted into formal partnerships may make activists and leaders less effective. Marginal populations can become subject to political co-option at national and international scales, thus calling into question accountability and legitimacy of collaboration.

[8] Partnerships should include representatives from public and private, voluntary and/or community sectors working together in the furtherance of a common vision that has defined goals and objectives (Southern, 2002).

Miraftab (2004, p. 246) suggests that community partnerships in South Africa also promoted the "casualization of labour and differential levels of service" that re-emphasize social hierarchies.

Governments have often failed to acknowledge the services of informal recycling groups and have declined to provide financial incentives to recycling micro-enterprizes (Hernandez, Rawlins, & Schwartz, 1999). However, in Quito, Ecuador, a pilot recycling program incorporated micro-enterprizes and informal recycling groups to operate municipal recycling services; the revenue was then used towards local development projects (Hernandez, Rawlins, & Schwartz, 1999). Partnerships are an increasingly popular arrangement where new political arenas involving diverse stakeholders are formulated. Environmental and developmental policies can thereby be acknowledged through new deliberative platforms of governance (Forsyth, 2005; Hoque, 2006).

Waste management fundamentally requires partnerships to succeed. Cooperation between industry, consumers, governments and community groups is essential to maintain the movement of commodities through the waste stream. More recently, local stakeholders and individuals have had less of a stake in this process as dominant companies have taken control over the waste management economy. Without local-level involvement, tendencies for disengagement increase resulting in decreased levels of resource recovery and consequent environmental degradation. This thesis investigates how communities and local governments can partner to retain a stake in the waste management process by inculcating local participation in waste recovery and engagement in decision-making. The hypothesis is that increased local

involvement in waste management can benefit communities socially, economically and environmentally, thereby increasing self-sufficiency and control over local resources.

3.0 Methodological approach to community-based research

This research employs a case study approach to determine the assets and barriers to community-based recycling on Mayne and Hornby Islands. In order to understand the contribution these communities make to waste management at the regional and provincial scales, the levels of voluntarism and engagement, degrees of environmental awareness and recycling behaviour are documented and experiences of those involved are recorded. To achieve this, qualitative research methods are used to bridge the gap between my understanding of community-based waste management theory and the experiences of those involved in local resource recovery. In social research, qualitative techniques and humanistic philosophies are frequently used as a means of gaining a thorough understanding of social phenomenon (Crang, 2005).

This chapter outlines the research framework and theoretical pillars of social economy, social capital and environmental education within the context of community-based waste management. This is followed by an outline of the philosophical approaches, research methods and analytical tools used in this research.

3.1 Theoretical framework

The concepts of social economy, social capital, and environmental education serve as the theoretical pillars of my research into community-based waste management. Figure 1: Theoretical Framework is a visual representation of the theoretical framework developed inductively from the data and from the literature. The figure represents the linkages between social, economic and environmental

aspects of waste management in order to investigate sustainable solutions at the community level. A purely economic or scientific analysis of waste management strategies fails to account for the social value generated from local participation and engagement in decision-making. These economic and scientific models also dismiss the value of environmental education gained through active participation in waste management. As this research aims to integrate these aspects into the study of local waste management, it is necessary to not isolate the social, environmental or economic factors influencing the community operations.

Figure 1: Theoretical Framework

3.1.1 Community-based Management

Community-based management (CBM) is guided by a participatory approach and what Berkes (2003, p. 4) refers to as the "subsidiarity principle: as much local management as possible, and only so much government management as necessary."

Government institutions, economic forces, and societal norms act as external influences on local management efforts so that CBM models cannot be considered independently of the political context (Virtanen, 2005). While some cases reflect outright community control over resources, the majority in Canada are better labeled as co-management arrangements, given the retention of certain authority by governments (Berkes, George, & Preston, 1991; Bradshaw, 2003). Co-management is defined by partnerships that connect stakeholders from community and government for mutual benefit and efficiency in resource management (Pomeroy & Berkes, 1997).

Much of the literature on CBM has focused on issues of local organization, management processes and development in the context of resource management; however, the role and activities of government within these has not been as widely addressed (Pomeroy & Berkes, 1997). Effective institutional integration in co-management requires some degree of decentralization (the transfer of power and responsibility from the centre to the lower levels of governance) and deliberation (debate and discussion aimed at producing well-informed opinion, increasing diversity of public values and appropriate institutions) (Parkins & Mitchell, 2005; Wanyande, 2004). CBM is inevitably embedded in governmental systems and involves the recognition and legitimization of formal and informal local-level institutions.

The regime of top-down management has affirmed that the ability of states to coerce citizens into conservation of resources is limited (Agrawal & Gibson, 1999; Kuper, 1997; Ostrom, Burger, Field, Norgaard, & Policansky, 1999). Traditional

methods of public consultation, such as public hearings and comment periods, have been criticized as being unrepresentative and unsatisfying to participants (Halvorsen, 2001). Concern over the injustice and inefficiency of state-imposed resource management has prompted a return to localized management options (Cheong, 2005; Fellizar, 1994). CBM is a response to the limitations of a resource management paradigm that has emphasized technical expertise, Western science, and bureaucratic centralization (Armitage, 2005). CBM strives for flexible and integrated approaches that seek to reflect the complexity of human and environmental systems, strengthen civil society and deepen the process of democratization while retaining economic benefits of resource use (Bellamy, McDonald, Syme, & Butterworth, 1999; Virtanen, 2005).

The assumption that local resource management is preferable to state control is based on the view that local communities have more vested interest in the long-term condition of local resources, more intimate knowledge of local environments, and can more effectively manage resources through local institutions and ethics (Armitage, 2005; Carr & Halvorsen, 2001; Cheong, 2005). Communities of people can, but do not necessarily, hold an attachment to place and have superior local knowledge and a vested interest in ensuring the survival of that place (Bradshaw, 2003). A community can be defined as a small spatial, homogenous group of people with shared norms and values; however, critical notions are increasing (Agrawal & Gibson, 1999; Armitage, 2005; Cleaver, 1999): communities can be complex, dynamic and stratified (Wismer & Mitchell, 2005) with administrative boundaries seldom reflecting social arrangements and resource use (Cleaver, 1999).

Localized approaches to development may neglect broader social and environmental processes such as the embedded institutional structures in national and global hierarchies and external influences of economic markets and environmental changes (Cheong, 2005; Wismer & Mitchell, 2005). It is therefore important to consider localized notions of community within a broader perspective. For the purpose of this research, the communities of focus will refer to geographic associations of people on Mayne and Hornby Islands and those who share some social, political, historical, and economic interests in waste management on the islands (Hempel, 1999).

The local community is the primary setting for social interaction and contact between society and the individual. The community setting is where people develop definitions of society and begin to construct meaning and values (Bridger & Luloff, 1999). The community field does not completely harmonize diverse perspectives; however, it provides linkages that may lead to inclusive decision-making processes (Bridger & Luloff, 1999). Identifying interests that dissect various fields is important in reinforcing commonality amongst social groups. Strong social interaction amongst diverse groups enhances the likelihood of finding common ground and therefore creating strong and diverse communities (Bridger & Luloff, 1999). Ideally, CBM aims to reduce conflict among stakeholders by building effective governance institutions and decision-making platforms, building social cohesion through cooperation and reciprocity, and addressing interconnected issues of social, economic and environmental nature (Conley & Moote, 2003).

With escalating environmental degradation, conflict over resource use, and economic vulnerability, local solutions to sustainable resource management are increasingly being sought by communities. It has been noted that "the capacity of individuals to extricate themselves from various types of dilemma situations varies from situation to situation" (Ostrom, 1990, p. 14). It is therefore important to identify key variables that can enhance or detract from the capacity of individuals and groups to solve problems at the local level. In order to determine why some community-based systems perform better than others, factors influencing community capacity for management must be identified.

This research employs the theoretical perspectives of social economy, social capital and environmental education to investigate the co-management arrangements at two community-based recycling depots. The supporting literatures offer an explanatory framework within which to situate the research. The research draws upon similar experiences found in the literature to formulate suppositions.

3.1.2 Social Economy

The concept of social economy arose as a response to job scarcity and poverty by providing access to services and fostering more inclusive citizenship (Shragge, Graefe, & Fontan, 2001). While social economy originated in Europe, by the twentieth century it emerged in Canada and Quebec in particular (Laville, Levesque, & Mendell, 2006). Due to the multiplicity of contexts in which the social economy concept has developed, a multitude of definitions have emerged to explain the concept. However, the social economy has been defined as being

> centred around the provision of social and welfare services by the not-for-profit sector…. Social economy organizations are understood to represent a break from the 'binary choices' of conventional socioeconomic strategies that present market and state as mutually exclusive spheres of economic growth and social regeneration (Amin, Cameron, & Hudson, 1999, p. 2033).

Non-profit groups are situated to respond to the needs of local communities by linking service provision and economic activity. Charitable organizations have been associated with the debate about citizenship as they are rooted in the social principle of charity (Laville, Levesque, & Mendell, 2006). Shragge et al. (2001) suggest that community organizations have taken on greater responsibilities as providers of social services in reaction to state decentralization. They also suggest that the social economy is similar to the third sector as it embodies the idea of breaking with the binary choices of market and state. Many authors treat the terms third sector, voluntary and community sector, and social economy as fairly close in meaning to one another (Vaillancourt, Aubry, Tremblay, & Kearney, 2003).

Social economy seeks to enhance the social, economic and environmental conditions of communities. It is the grass-roots, entrepreneurial, and non-profit sector that differs from the traditional economic sector as profit-making is typically not the exclusive or primary purpose of social economy. Financial return may be seen as strictly necessary for achieving other community purposes but a lower rate of return may be accepted in exchange for the achievement of other community goals (Peredo & Chrisman, 2006). The social economy strives to find new ways to create and sustain participatory democracy, inclusiveness, reciprocity, civic engagement, social equality, and environmental stewardship (Peredo & McLean, 2006).

The governance structure under social economy is designed to be participatory and inclusive (Peredo & Chrisman, 2006; Shragge, Graefe, & Fontan, 2001). Often, the social economy sector will arise from the desire of communities to gain control over their own local development (Peredo & Chrisman, 2006). As Moulaert and Nussbaumer (2005) suggest, innovation in institutions can encourage communication, reveal decision-making mechanisms and power dynamics, which are all necessary elements in social economy. Without institutional innovation, new social economy initiatives cannot be grounded in community dynamics and will be alienated from community needs.

Where the traditional utilitarian economic view sees individuals as substitutable, the social economy interprets individuals as autonomous persons with social responsibilities (Ballet & Bazin, 2004). There is increasing attention in the literature focusing on the role of social capital in facilitating networks to build collective processes of innovation (Peredo & Chrisman, 2006). As Evans and Syrett (2007, p. 55) suggest, "there appears to be a close relationship between promoting and strengthening social capital and the development of a dynamic social economy." The fusion of local economic development and social capital is particularly pertinent when considering the social economy because "the social objectives of the sector appear well suited to the development of the norms and networks which facilitate collective action and provide a basis for effective local development" (Evans & Syrett, 2007, p. 60).

The 'gift' economy, understood as transfers of goods or services from one member of a community to another without explicit remuneration, is an example of

exchange that fosters social capital (Peredo & Chrisman, 2006). Strong relationships built on cooperation and collective action can develop within such exchanges. Although cooperation can be forced through power exertion, it is more genuinely based on free choice and reciprocity in human interaction (Moulaert & Nussbaumer, 2005). Voluntarism can also foster a high degree of reciprocity in a community network where short-term sacrifices are made with the understanding that communal gains will be made as a result (Peredo & Chrisman, 2006).

Large communities typically have complex and fragmented social networks. Therefore, reciprocal non-market exchanges are suited to smaller communities due to the likelihood of frequent contact and ability to achieve solidarity (Peredo & Chrisman, 2006). Achievement of self-reliance, income opportunities, access to services, and support for cultural activities create value in community as the need for out-migration is reduced, thus revitalizing remote communities (Peredo & Chrisman, 2006). There is growing consensus "that a locally based 'social economy'… could and should play a central role in future regeneration and social cohesion strategies" (Amin, Cameron, & Hudson, 1999, p. 2033).

This research highlights how community-based waste management organizations on Hornby Island and Mayne Island are representative of social economy and how these non-profit organizations differ from public or private waste management organizations. That the community waste operations are representative of social economy groups suggests they serve a role of responding to the needs of the citizenship by providing social and welfare services where governments and the traditional economy has failed. That these operations can survive in a traditional

market system while at the same time enhance local self-reliance, facilitate cooperation and foster inclusive citizenship suggests the resilience of these organizations to retain local control in the face of globalization.

3.1.3 Community-Building

The concept of community-building is derived from an asset-based approach to development where social relations are valued as components of vibrant communities (Arefi, 2004). Social assets include interconnections of people where cooperation, cohesion, reciprocity, trust, empowerment, and civic engagement are cultivated. Successful cooperation for long-term benefit to communities depends on the fostering of social capital (Bridger & Luloff, 2001; Pretty & Ward, 2001; Uphoff & Wijayaratna, 2000). Social capital is a set of relationships or "features of social organization such as networks and norms which facilitate mutually beneficial coordinated action" (Evans & Syrett, 2007, p. 55).

Some are critical of this definition of social capital where only the positive aspects for promoting democracy and sustaining economic development are in focus (Beall, 1997; DeFilippis, 2001; Evans & Syrett, 2007). Social capital is essentially about power: "one's social, economic and political positions within society influence the kind and extent of one's social relations and networks" (Miraftab, 2004, p. 241). Assuming social capital is a single entity owned by community strips the concept of its ability to speak of power relations within the community (Beall, 1997; DeFilippis, 2001).

Social capital is situated within vertical power relations in a governance context as well as within horizontal relations in the local community context. Evans' and

Syrett's (2007, p. 57) "*structural* version of the concept… emphasizes networks, organizations and linkages through which information and norms are conveyed," involving extra-community ties and degrees of autonomy; also termed *bridging* capital, it is "the extent to which community members have social relations with non-community members" (Evans & Syrett, 2007, p. 58). The 'scaling-up' of locally based networks of social capital to create organizations that are linked into wider power relations is important (Somerville, 2005). One example is the horizontal linking of groups in confederation or social movement organizations that exist on local and national scales (Somerville, 2005). The structural definition is complemented by the *cognitive* version of social capital that investigates shared norms, trust, attitudes and beliefs. The cognitive aspect of social capital explores embedded social capital, or the intra-community ties that are consistent with the concept of *bonding* social capital (Rydin & Holman, 2004). Cooperation, reciprocity and civic engagement are considered qualitative indicators of intra-community ties: failure to cooperate can result in 'tragedy of the commons' scenarios where individual actions can degrade communal experiences. The non-compliance of individuals in waste minimization behaviour can result in negative impacts to communal property and the community experience. Social cohesion is evident when common objectives among actors culminate in widespread participation in an activity, such as resource recovery (Arefi, 2004). Cohesion can be determined by shared norms and values that put the interest of the group above individual concerns (Pretty & Ward, 2001). However, too much emphasis on bonding capital can lead to negative capital that hinders the achievement of policy goals by coalescing opponents into an effective

coalition (Rydin & Holman, 2004). An intensely insular focus on community-building can limit opportunities to establish partnerships with outside groups, thus limiting the potential to effectively share experiences and exchange information.

Of particular importance to my research is the role of voluntary organizations in fostering social capital. Variations in voluntarism can depend on multiple factors including the role of the local government in mediating policies, level of public awareness about an issue, and personal time availability. The responsibility for service provision can often result in voluntary, non-profit organizations playing an increasing role either independently or in collaboration with governments; however, cutbacks and lack of funding can also limit community support and result in a shortage of volunteers (Fyfe & Milligan, 2003). Whether non-profit groups excel can likely be related to the availability of support from government and the degree of volunteer involvement (Pretty & Ward, 2001).

Voluntarism has a role in fostering civic responsibility and enhancing social capital by providing a setting of relative equality within which people engage in interaction, thereby generating the capacity for reciprocity and collective action (Fyfe & Milligan, 2003). An important task for communities is to build self-reliance and empowerment in order to increase subsistence, self-sufficiency and co-operation (Jeffrey Bridger & Luloff, 1999; Lyons, Smuts, & Stephens, 2001). The elements of social capital enable the achievement of the mutual commitment necessary to address complex, collective problems (Davidson, 2003).

This research will investigate the role of social capital within the community-based waste operations and how civic engagement becomes evident in the local

politics. Vertical and horizontal relations, levels of voluntarism, civic engagement and participation in resource recovery and decision-making within the community-based waste operations on Hornby and Mayne Islands will be explored to determine how social relationships unite the participants and whether those relationships enhance the setting for resource recovery, environmental awareness and cooperation. The outcome will be important when considering waste collection strategies, co-management structures and environmental education campaigns.

3.1.4 Environmental Education

Western society's endorsement of expanding the global trade of resources to drive the capitalist system has separated humans from their natural environments. This industrial drive to increase economic output, wealth and standard of living has disastrous effects on the global environment. Public awareness about the environment is imperative for a society to be adequately prepared to make informed decisions about ecosystems (Snively & Sheppy, 1991). Environmental education is a tool to provide people the knowledge and experience of reconnecting with their natural environment and becoming active citizens.

Advances in Western modern scientific thought have exhorted science and technology as the highest expression of human accomplishment, resulting in human separation from nature and a loss of spiritual understanding of the natural world (Bowers, 1995). Technological advancements have created new products, such as plastics, that have extremely slow rates of decomposition (Hart, Jickling, & Kool, 1999). As Orr (1994) suggests, it is important to recognize these changes as interconnected, not random and independent. Despite increasing awareness of

widespread ecological deterioration, there seems to be a general lack of responsibility and leadership by governments to teach communities about the environment.

The goal of environmental education is to form environmentally literate citizens who are actively engaged in solving environmental problems (Hungerford & Peyton, 1976; Roth, 1992). Environmental literacy refers to an individual's knowledge and attitudes about the environment and environmental issues, skills and motivation to resolve environmental problems, and working toward the maintenance of dynamic equilibrium between quality of life and quality of environment (Hsu, 2004).

Research into environmental behaviour has explored the value-action gap[9] and effective means to translate environmental concern into pro-environmental behaviour (Barr, Gilg, & Ford, 2001; Blake, 1999; Steel, 1996; Tonglet, 2004). This exhorts that although individuals may hold environmental concerns, few take environmental actions which involve changes to their lifestyles. Thus, "the environmental actions that people take are tokenistic and may be unrelated to the particular concerns that they express about the environment" (Blake, 1999, p. 263).

Many municipal programs have focused on recycling rather than on waste minimization and environmental education (Blaine, Lichtkoppler, Jones, & Zondag, 2005; Thomas, 2001; Watts & Probert, 1999). Barr et al. (2001) suggest that waste minimization behaviour is fundamentally different from recycling behaviour. Recycling behaviour is likely influenced by convenience, knowledge and access, whereas waste minimization behaviour is likely to be driven by a concern for environmental issues and community with more of a focus on changing consumptive

[9] The value-action gap signifies the differences between individuals' environmental attitudes and their actions. Blake (1999) suggests that there is a disconnect between environmental concern and environmental behaviour.

behaviours (Barr, Gilg, & Ford, 2001; Tonglet, 2004). Barr (2004) suggests three sets of factors influence waste reduction behaviour: environmental values (orientations towards the environment and society), situational factors (service provision, demographics and knowledge), and psychological variables (intrinsic motivation, perceived environmental threat and social norms). Whereas recycling behaviour is often encouraged by financial incentives such as deposit-refunds, the role of external incentives "are less important in maintaining behaviours in the long run or in situations where the incentives cannot be continually delivered" (Ebreo & Vining, 2001, p. 426).

Hartwick (2000, p. 1180) highlights the debate around consumers as active agents "shaping the consumption landscape" and suggests tools, such as global commodity chain analysis[10], are useful to reveal linkages between consumption and production and promote waste reduction. Similar strategies to combat consumerism and promote waste minimization behaviour can include consumer boycotts, corporate campaigns, independent monitoring, and labelling campaigns. Other strategies for waste minimization include reusing products or product packaging, composting, donating and purchasing reusable materials. Intrinsic motives, such as conservation ethics, community involvement, and sensitivity to social norms are factors that contribute to greater long-term participation in waste minimization.

Lack of information is an important factor influencing waste minimization behaviour (Ebreo & Vining, 2001). Reasons for not reducing waste can also include apathy, lack of effort, storage space, lack of time available, recurrence of old habits,

[10] Global commodity chain analysis addresses the issue of who controls global trade and industry. The focus on commodity chains as units of analysis reflects the emergence of manufacturing systems which are dispersed and integrated on a world-wide basis (Gibbon, 2001).

perceived effectiveness of action and information deficiency (Watts & Probert, 1999). Kraft (2001) suggests that inherent scientific uncertainty surrounding environmental problems is also a predictable barrier to action. However, information alone is not sufficient in inculcating pro-environmental behaviour (Blake, 1999).

The analysis of community-based recycling organizations on Hornby Island and Mayne Island draws on these elements of environmental education and waste minimization when determining the rates of resource recovery on the islands. I hypothesize that active participation in resource recovery, reuse, voluntarism, decision-making and management at the depots increases waste minimization behaviour resulting in increased levels of waste reduction, reuse and recycling. I also explore the concessions each group makes to promote environmental education and how social norms encourage participation in resource recovery at the depots. It is valuable to determine how environmental education should be directed to the populous and whether experiential forms of education, such as direct engagement in resource recovery, can contribute more to environmental awareness than purely informational campaigns. The results will have implications for how waste management could be most effectively delivered to communities.

3.2 Philosophical approach

I chose to use phenomenology as my overarching methodology for the case study context, while adopting a grounded theory approach for the analysis and interpretation. An ethnographic research methodology was also used in the sense that multiple methods of gathering data were employed, particularly participant observation and interviews.

3.2.1 Phenomenology

Phenomenology aims to describe and interpret lived, or existential, meanings that occur in the immediacy of everyday life. Moustakas (1994, p. 13) states a central theme to this research approach:

> to determine what an experience means for the persons who have had the experience and are able to provide a comprehensive description of it. From the individual descriptions, general or universal meanings are derived, in other words, the essences of structures of the experience.

A phenomenological study describes the meaning of the lived experiences about a concept from the perspective of several individuals (Creswell, 1998). The central tenet is to derive general meaning from individual descriptions of experiences by bracketing preconceptions the researcher may have (Creswell, 1998). Phenomenology does not offer the possibility of effective theory development, but offers plausible insights about the world (van Manen, 1997).

A phenomenological approach was used to capture the diverse experiences of those engaged in community-based resource recovery in the island communities, as well as those involved in waste management at the political level. By collecting information on the individual experiences of participation in waste management on the islands, I developed the ability to detect varying perspectives, similarities and differences in opinion, and identify sources of conflict or convergence. From these individual excerpts, broad themes and insights were derived.

3.2.2 Ethnography

I adopted aspects of ethnography in my research methodology to describe and interpret a social group or system primarily through extended participant observation and immersion in the field (Creswell, 1998). Insight was derived through contact with key informants who provided information and contacts; extensive field notes were also recorded during times of observation. Although ethnographic studies often involve long term field experiences, aspects of this methodology were useful, especially since I conducted multiple visits to Hornby and Mayne Islands. Some ethnographies describe, analyze and interpret meaning from the interactions witnessed. Creswell (1998, p. 58) offers a description that reflects the context of this methodology as applied in this study:

> As a process, ethnography involves prolonged observation of the group, typically through participant observation in which the researcher is immersed in the day-to-day lives of the people or through one-on-one interviews with members of the group. The researcher studies the meanings of behaviour, language, and interactions of the culture-sharing group.

Ethnography encompasses multiple methods of data collection; this approach allowed me to gain information from a focus group, interviews, questionnaires, observation as well as secondary data sources. In the context of this research, ethnographic approaches aided in providing a comprehensive description of those involved in community-based resource recovery and their interactions.

3.2.3 Grounded Theory

Complementing the phenomenological and ethnographic approaches to this case study, I employed grounded theory methods to analyze data and interpret the experiences of participants involved with community-based resource recovery on Hornby and Mayne Islands in light of the three theoretical pillars as outlined above. As Charmaz (2006, p. 10) explains, "grounded theory serves as a way to learn about the worlds we study and a method for developing theories to understand them." Thus, the objective of grounded theory is to generate a theory inductively from the research that relates to the particular phenomenon being studied (Creswell, 1998). Incorporating grounded theory practices with ethnography helped establish "priority to the studied phenomenon or process - rather than to a description of a setting" (Charmaz, 2006, p. 22).

Grounded theory methodology was adopted to address the research questions, which ask what are the assets and barriers to achieving waste reduction on Mayne and Hornby and how can community-based waste management contribute to waste reduction and sustainability? This methodology was valuable when interpreting a diverse range of experiences collected from a multiple methods approach. Analysis of the research data followed a format of open coding, where initial categories of information were established and themes generated. The themes were weighed against the theoretical pillars of social economy, social capital and environmental education in order to cross-reference the data with other research findings. Within each category, several subcategories were developed to show the continuum of the group. Triangulation of the data between methods, participants and the literature served to achieve confirmation and completeness of the interpreted experiences.

Axial coding served to interconnect categories and a logic diagram or framework was developed to visually assemble the data.

3.2.4 Case Study Approach

Case study research investigates phenomena in a particular context that can also be found in other places, thereby making the case unique but not singular (Castree, 2005). In Development Geography, case study research highlights the world as being persistently diverse, yet this diversity rises out of multi-scaled relationships that do not emerge independently (Castree, 2005).

Some argue that local case studies make it difficult to ascertain the significance of such studies to broader development concerns (Walker, 2006). For example, Walker (2006, p. 387) argues that efforts to "theorize-up" or to synthesize case studies into a broader, regional or global analysis are generally weak. It is for this reason that case studies receive criticism for being merely anecdotal. However, studies at a local scale can be of significant value to the communities in question, to the regional context, and to aid in understanding global processes. Also, islands are systems that are essentially closed and bounded (Deschenes & Chertow, 2004; Kerr, 2005) and present a manageable unit to study environmental, societal, economic and political interactions, thereby offering a simplification for research compared to complex continental areas (Georges, 2006).

In the spirit of community-based participatory research, the case study approach will be research "*with* communities and *for* them" (Delemos, 2006, p. 330), by involving community members throughout the research process. Initially, communication with key members from Mayne and Hornby Island depots was

established to discuss how research could be conducted in a beneficial and respectful manner. Members from Mayne Island were especially interested in working collaboratively to showcase their operation as an example typical of waste management in the Gulf Islands and to link their strategies with progressive community-based initiatives globally, and specifically in Brazil (Gutberlet, 2007). Members from the Mayne Island Recycling Society posed questions that were adopted into the survey. Therefore, the research intention is mutually beneficial for the community and the researcher and ensures the use of appropriate methods by honouring local knowledge and cooperating with community objectives.

3.3 Methods

This research entails extensive data collection involving multiple sources of information from surveys, key informant interviews, informal interviews, a focus group, participant observation, and secondary sources. Recruitment of stakeholders relied on snowballing and contact information published in official documents. Recruitment was continuous throughout the study; however, key contacts were made during the summer 2006. Due to the nature of the research, the methods and participant recruitment remained flexible and responsive to change depending on the circumstances at each site. Ethics approval for this research was granted by the University of Victoria (Protocol No. 05-379, Approved February 2, 2006). Table 1 summarizes the data collected from the various methods.

Table 1: Data Collection Summary

Method	Hornby Island	Mayne Island	Other
Questionnaires	51	40	-
Key Informant Interviews			
• Managers/Staff	4	2	5
• Politicians	-	1	-
• Volunteers	3	1	-
• Provincial NGO	-	-	1
Focus Group Participants	-	8	-

3.3.1 Primary data

3.3.1.1 Questionnaires

Twenty survey questions were developed to acquire information about community participation in waste reduction activities. Members of Mayne Island Recycling Society assisted in generating the survey questions. The questionnaires were one page, two-sided, and took up to fifteen minutes to complete (Appendix A). One hundred questionnaires were distributed at the two depot sites to target users of the recycling facilities. I spent three days at each site during July and August, 2006 handing out the surveys. The remaining surveys were left with depot staff to be distributed and a drop-box made available to collect the returned surveys. Posters explaining my research and encouraging participation were erected on public notice boards in each community.

Fifty-one surveys were completed on Hornby Island and forty surveys were completed on Mayne (Table 1). Despite high volumes of visitors to both depots during summer months, several factors contributed to the low survey response rates including limited space to display the surveys, lack of staff and volunteer time to

encourage survey participation, and high congestion at the depots. Non-users of the recycling depots were not targeted in this study as they are beyond the scope of this research and difficult to isolate.

A demographic profile of survey respondents is provided in Figure 2. Frequency and distance traveled to depot by survey respondents is detailed in Figure 3. Seventy seven point five percent (31/40) of Mayne Island survey respondents were full time residents of the island. 3/40 (7.5%) were part time residents of the island, 3/40 (7.5%) were non-residents and one response did not indicate resident status. 53% (27/51) of Hornby Island survey respondents were full-time residents, 19.5% (10/51) were part-time residents, 25.5% (13/51) were non-residents, and one response did not indicate resident status. Data pertaining to survey respondents are elaborated in chapters 4.0 and 5.0.

Figure 2: Age and gender of survey respondents

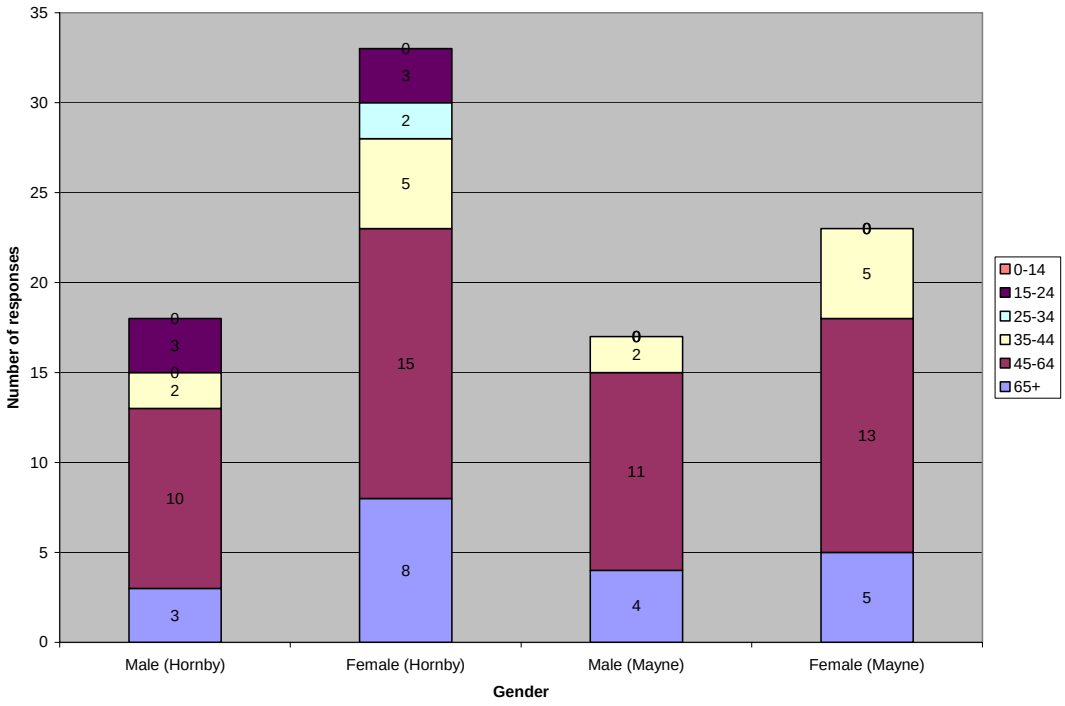
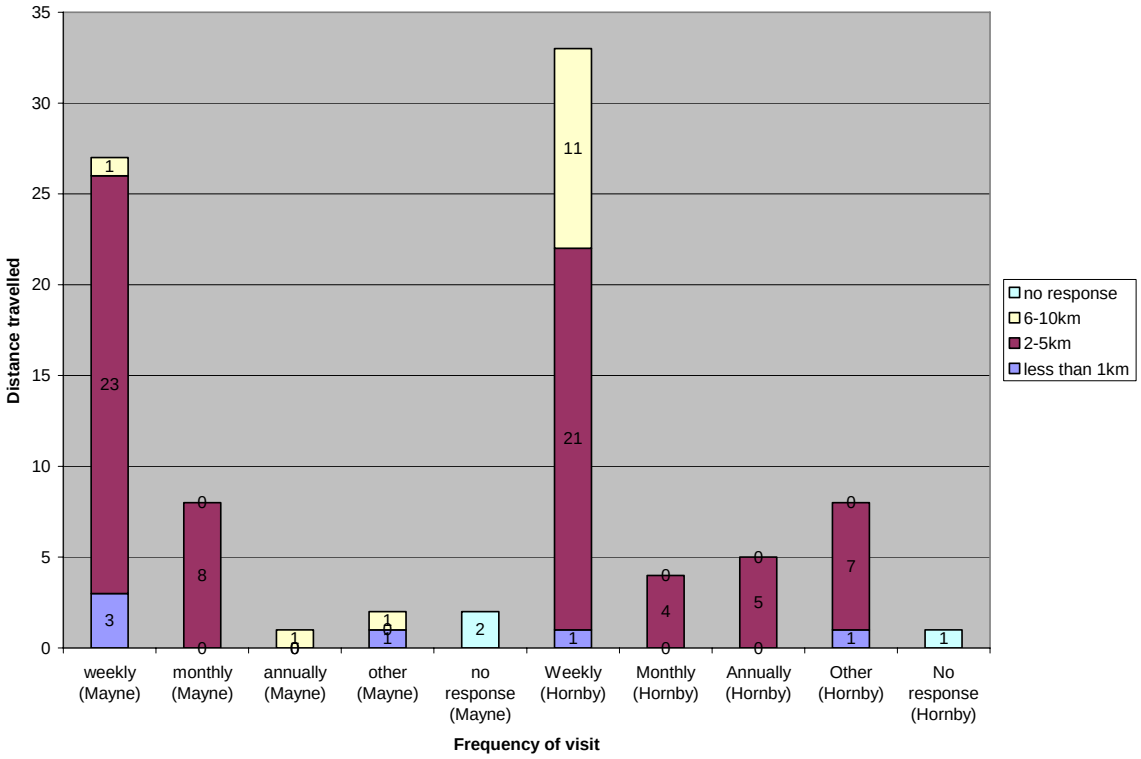


Figure 3: Frequency and distance traveled to depot by survey respondents



3.3.1.2 Key informant interviews

Key informant interviews were pursued with depot managers, staff, volunteers, politicians, and provincial level NGOs (Table 1). Guiding interview questions are presented in Appendix B. Interviews were conducted with depot managers, staff and volunteers on Hornby and Mayne, with members of the Southern Gulf Island Recycling Coalition (SGIRC) and one member of the Product Policy Institute (PPI). An interview was requested with the elected Regional Director on Hornby Island but was denied. Key informant interviews from both the Capital Regional District (CRD) and Comox-Strathcona Regional District (RDCS) waste management department were requested; however, only the Capital Regional District was responsive and granted an interview.

An interview with a CRD waste management staff was granted to obtain information regarding the historical relationship between the regional district and the community-based recycling groups, to obtain information related to waste policies and markets, and to obtain knowledge of funding to the community-based depots. A follow-up interview was also conducted. My requests for an interview with various members of RDCS waste management staff were rejected. Reasons for this remain uncertain; however, lack of adequate staffing was cited as one reason for rejecting an interview.

Interviewees agreed that their identities remain anonymous, despite the possibility of their identity being discerned due to the small sample size. A pseudonym has been assigned to each interviewee to protect his/her identity. Table 2 outlines the pseudonym given to interviewees and their associated affiliation. Interviews were audio-taped and transcribed into a password-secured computer document. A copy of the transcriptions was presented to the interviewee and permission to use quotes in context was requested. Due to time constraints, consecutive interviews with stakeholders did not occur except to verify information. Documents and recordings will be destroyed upon completion of the research.

Table 2: Interviewee affiliation

Pseudonym	Affiliation
June	Mayne Island Recycling Society – board member
Jeff	Mayne Island Recycling Society – manager
Lisa	Mayne Island Recycling Society - volunteer
Jason	Southern Gulf Island Recycling Coalition – president
Alan	Southern Gulf Island Recycling Coalition – member
Scott	Capital Regional District – Solid waste management department
Paul*	Southern Gulf Island Recycling Coalition – member
Nadine*	Southern Gulf Island Recycling Coalition – member
Sue	Hornby Island Residents and Ratepayers Association – administrator; Hornby Island Waste Management Centre – past manager
Mike	Hornby Island Waste Management Centre – staff
Vera	Hornby Island Waste Management Centre – volunteer
John	Hornby Island Waste Management Centre – management
Jessica	Hornby Island Waste Management Centre – management
Sarah*	Hornby Island Waste Management Centre – volunteer
Danielle*	Hornby Island Waste Management Centre – volunteer
Patricia	Product Policy Institute – president
Mark**	Mayne Island Glass Foundry – owner and operator

**denotes interviewees who are not referenced in this thesis but who provided valuable information about recycling operations.*
***no pseudonym assigned to this participant.*

3.3.1.3 Informal interviews

During my visits to each depot, I was able to conduct several informal conversations with staff, volunteers, and visitors about the community-based style of management, about motivations to participate in recycling or volunteering, and about depot operations in general. Conversations were either audio-recorded or excerpts were written in my journal. Some survey respondents requested informal interviews in order to elaborate their views. All participants remain anonymous, but their role as staff, volunteer or visitor will be noted where appropriate. Informal conversations were also carried out with members of the Southern Gulf Island Recycling Coalition.

3.3.1.4 Focus group

A two hour focus group was carried out with eight participants from the Mayne Island Recycling Society (MIRS) (Table 3). Three volunteers, one society member,

two executive and one staff member from MIRS were present as well as one local elected member of the Islands Trust. Recruitment for the focus group was conducted by MIRS. Four men and four women attended, all above 50 years in age and long-term residents of the island with multiple years experience participating with MIRS' recycling activities. The focus group discussion was intended to gather insight from the participants regarding strengths and weaknesses of the community-based depot system. Topics of discussion included practical issues such as site location and equipment, recruitment of volunteers, participation rates at the depot, community cohesion, governance structure and relations with government, and economic issues such as funding and marketing resources (Appendix C). The focus group was video-recorded and then transcribed. I had intended for the participants to partake in mapping and diagramming activities, such as sketching a diagram to highlight stakeholder interactions and mapping places of significance in terms of waste generation and disposal. The participants preferred to discuss these issues and have me interpret the information on the map and in a drawing. A transcription of the focus group was provided to the participants for verification.

I intended to conduct a focus group with staff, volunteers, board members and community members at Hornby Island as well, however due to a shortage in staffing, high visitor volumes, and lack of recruitment and organization, a focus group with members of Hornby depot was not feasible.

Table 3: Focus group participants

Pseudonym	Affiliation
June	Mayne Island Recycling Society – board member
Jeff	Mayne Island Recycling Society – manager
Barbara	Mayne Island Recycling Society – member; Islands Trust – Trustee
Peter	Mayne Island Recycling Society – volunteer
Catherine	Mayne Island Recycling Society – volunteer
David	Mayne Island Recycling Society – volunteer
Dana	Mayne Island Recycling Society – president
Bill*	Mayne Island Recycling Society – member

** denotes interviewees who are not referenced in this thesis but who provided valuable information about recycling operations.*

3.3.1.5 Participant observation

Participant observation was utilized as a tool to record personal experiences with stakeholders during the research process and to record strengths and weaknesses of data collection methods. Correspondence with stakeholders was recorded to document contact information and responses to my requests for information. Regular entries in a journal were made to record personal observations during site visits of stakeholder interactions, depot activities, and places of significance in each community. This diary was a tool employed to enrich qualitative data from other methods and to provide a reflexive outlet as a researcher. These observations have provided me with further insight into my research methods, my approach of recruiting participants, and the need to remain flexible when acquiring qualitative data.

3.3.2 Secondary data

Information from secondary data sources was used to determine waste generation and disposal trends, product stewardship and waste disposal policies, and demographic information. Secondary sources included the Recycling Council of British Columbia, as well as Regional Districts and British Columbia Census data.

Representatives from Recycling Council of British Columbia (RCBC), Comox-Strathcona Regional District and Ministry of Environment (MoE) were contacted by email or phone to request information.

3.3.3 Qualitative analysis

Data collected for this thesis was weighed according to method, with in-depth interviews and the focus group taking precedence. Key stakeholders were targeted with these in-depth methods; therefore, more detail and understanding was achieved compared to other methods. The questionnaires also took high priority as the information provided a broad spectrum analysis of depot users of all ages and genders. The open-ended survey responses allowed for more detailed input from these individuals regarding depot operations. Participant observation and informal interviews provided supplementary information to enrich the survey data, contributing to an understanding of community relations, levels of resource recovery, voluntarism and environmental education.

Interview, focus group and open-ended survey responses were open-coded to identify theme categories and subsequently organized according to themes relating to the theoretical framework (Figure 1). Categories and themes as they relate to the theoretical framework are outlined in Table 4.

Table 4: Data analysis categories

Theoretical Pillar	Theme category	Subcategories
Environmental Education	Education	Awareness, knowledge, training, signage, ignorance
	Access	Accessibility, location, organization, storage, convenience, hours of operation
	Environmental impact	Ecological sensitivity, waste disposal and recycling
	Policy	Waste policies (incentives/ legislation), enforcement
Community-building	Community participation	Voluntarism, engagement, decision-making, involvement, participation, donations, apathy
	Social services	Employment, skills development, personal development
	Social capital	Horizontal/bonding relationships, pride, community spirit, communal benefit
Social Economy	Political structure	Management, leadership, vertical/bridging relationships, partnerships
	Economic structure	Funding, profit, entrepreneurial innovations, industry, economies of scale

3.3.4 Description of study areas

Mayne Island and Hornby Island are located in the Straight of Georgia on British Columbia's west coast, between the mainland and Vancouver Island (Figure 4). The landmass of Hornby Island is 30km^2 and approximately 22% larger than Mayne Island; yet the population of Hornby is 1074, only 3.5% greater than Mayne. Both islands are serviced year-round by a vehicle and passenger ferry.

Mayne Island is geographically located in the Southern Gulf Island chain and is governed by the Capital Regional District (CRD). A Regional Director is elected for the Southern Gulf Island area of the CRD. Hornby Island is located within the Regional District of Comox-Strathcona (RDCS) in the Northern Gulf Island chain. One area director is elected for Hornby Island and neighbouring Denman Island as a representative for the RDCS. Both Mayne and Hornby Islands have a rural community character which is sustained through membership in the Islands Trust, a

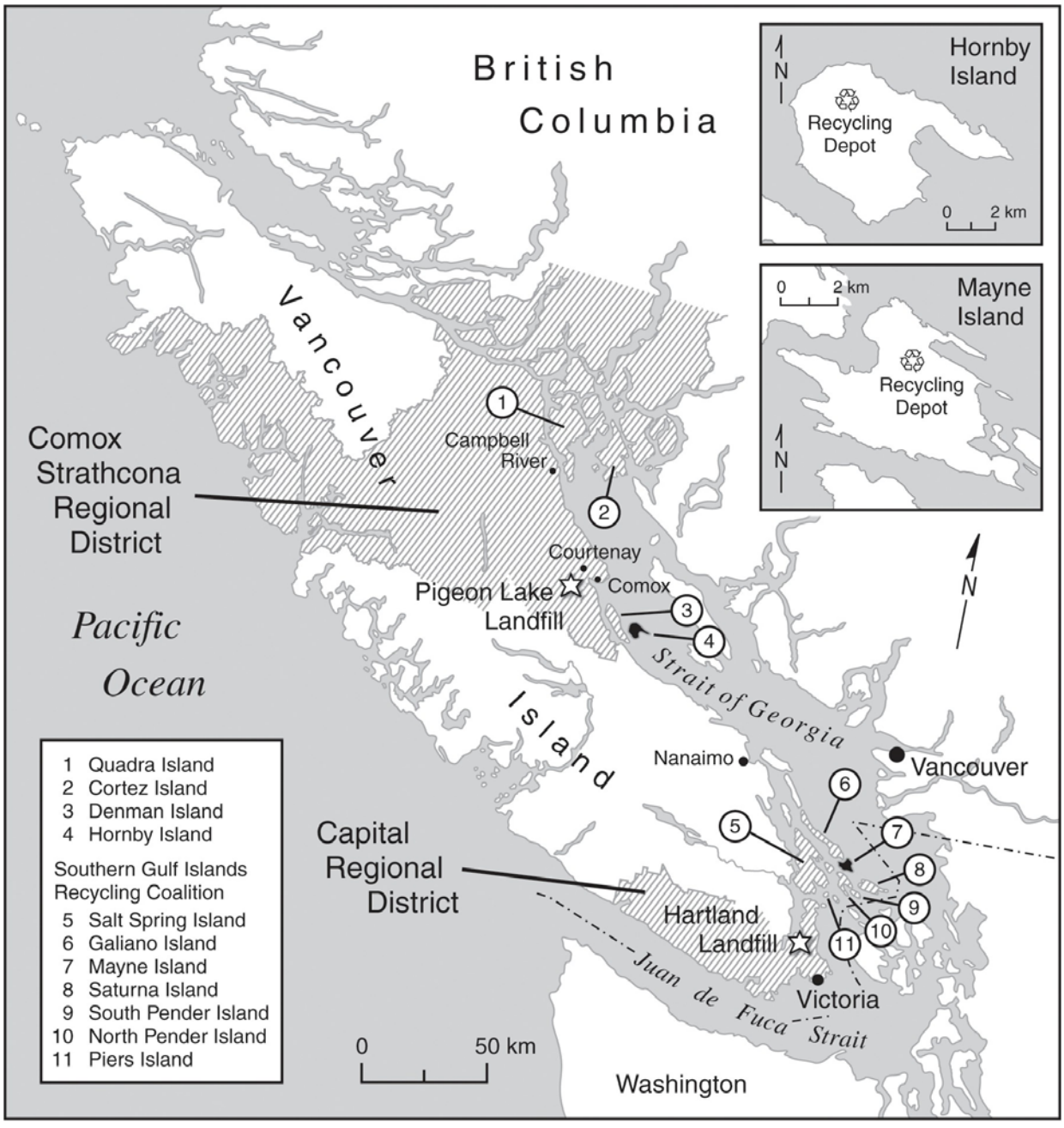
local governance mechanism that serves to conserve the environmental integrity of small islands in the Straight. Islands Trust is a federation of local governments which plan land use and development in the Trust area. Two people are elected from each island to sit on the Local Trust Committee and are responsible for land use planning.

The population of Mayne in 2006 was 1112 – an increase of 26.4% since 2001; however, only 53.2% of the properties are occupied by full-time Mayne Island residents. The economy of Mayne Island depends largely on small-scale eco-tourism, especially during the summer months. BC Ferries provides ferry service to Mayne Island from Swartz Bay, Vancouver Island and from Tsawwassen on the BC mainland coast. It is difficult to determine how many tourists visit Mayne Island on average, particularly during summer months; however, the percentage of visitors and people on vacation traveling to Mayne Island via BC Ferries during peak summer months is between 73% (from Vancouver Island) and 86% (from Vancouver). The rural character and temperate climate of Mayne Island make it appealing to visitors; however, the high cost of land and lack of employment opportunities contribute to the low permanent population.

Hornby retains a rural character typical of the Gulf Islands with a vibrant arts community, abundant co-operative ventures, and rich ecosystems that attract tourists during summer months. In 2005, the population of Hornby Island was 1074 – an 11.2% increase since 2001. Similar to the situation on Mayne Island, full-time Hornby residents own only 56.5% of the properties on the island. BC Ferries provides ferry service to Hornby Island from Buckley Bay, Vancouver Island via Denman Island. The percentage of visitors and people on vacation traveling to

Hornby Island via BC Ferries during July and August is 61%. It has been estimated that over 50,000 tourists visit Hornby Island each year (Giele & Vaugeois, 2006).

Figure 4: Location of Hornby and Mayne Islands



3.3.5 Limitations of study

A limitation to this research has been the difficulty to accurately determine the appropriate stakeholders in regional and local government, and in community-based recycling organizations. Since I did not have pre-established relationships with the communities I had to rely on snowballing and the information published in documents to establish contacts with members of the recycling depots and with key stakeholders in local government. Due to shortages of staff and high turnover of employees in government, establishing contacts with some individuals was onerous and time-consuming. Most of the data was collected during the summer months when many people were busy or on holidays. Because the recycling depots were very busy, the availability of staff and volunteers to devote time to my research was limited. However, by establishing relations with key informants prior to summer 2006, my presence was expected and accommodated. I remained flexible when arranging meeting times and places and was persistent when requesting information.

The implications of the above research limitations were such that the use of similar methods was not possible in both locations. As a focus group was not feasible on Hornby Island, I had to compensate for the lack of richness of data that would have been generated in a focus group discussion by conducting more informal interviews and spending a longer duration observing activities at the depot. The challenges faced establishing contact with government officials in the Comox-Strathcona Regional District also posed a gap in my research as detailed waste generation statistics and management insights could not be obtained. In light of these local-level challenges, contacts were pursued from provincial and regional levels of

government, industry and third sector which provided valuable secondary data on waste generation and management.

4.0 Building communities through recycling

The first section of this chapter outlines the organizational structure of both Mayne Island Recycling Society and Hornby Island Waste Management Centre and highlights the atmosphere of civic engagement within each community. The latter portion of the chapter discusses how social economy and social capital are revealed in the relationships between organizations and within the community-based operations themselves. I was intrigued by the following questions:

- *How does civic engagement become evident in the local politics of the community-based recycling depots on Mayne and Hornby Islands?*
- *How do the Mayne Island Recycling Society and Hornby Island Waste Management Centre contribute to the local social economy?*
- *How do the Mayne Island Recycling Society and Hornby Island Waste Management Centre support social capital?*

4.1 Mayne Island Recycling Society

The capacity of Mayne Island to manage waste at the community level has evolved through the strengthening of vertical relationships between government, industry, and inter-island networks, as well as through embedded relationships at the community level, expressed as commitment by volunteers and engagement by locals in resource recovery. Improved local representation in waste management decision-making has allowed for flexibility in management and governance; while increased autonomy in waste management at the community level has served to decentralize decision-making and diversify the distribution of resources necessary for waste management service provision in the small communities of the Southern Gulf Islands.

4.1.1 Overview of operations

The non-profit Mayne Island Recycling Society (MIRS) manages resource recovery for the small island community at a supervised drop-off depot located on 1.5 acres of leased property on Campbell Bay Road in the centre of the island. In 2007, MIRS had an executive board of eleven directors, a membership of approximately 200, approximately 30 volunteers, and up to three paid staff to run the recycling depot. Depot users are directed to place their material in the appropriate bins by informative signage, helpful staff and volunteers (Image 1). Modest shelves, filled with reusable products, are located outside the depot building and are free for taking. Inside the covered building, there are bailer machines for each type of material accepted and storage in the rafters for bulky beverage containers. A covered outdoor area allows material to be stored until ready for transport (Image 2). MIRS has acquired a forklift for ease of handling materials and a flatbed truck for shipping materials. As one resident emphasized, "it may be small but it's in a really good location. It's a very convenient place" (Barbara, focus group, 2006).

Image 1: Mayne Island Recycling Depot Separation

Image 2: Mayne Island Recycling Depot Storage

In the late 1980s, MIRS operated a curbside refuse collection service and sold 'blue-boxes' to encourage source separation of recyclable materials. Mayne Island was the only rural community in British Columbia offering free curbside pickup of recyclables at the time. The Society received funding to purchase start-up equipment: "before the CRD got in there, there was start-up money federally and provincially and so that was a huge help along with just vast amounts of volunteer labour" (June, focus group, 2006). However, the society had to terminate curbside collection due to high transportation costs of taking the materials to Hartland Landfill on Vancouver Island. Curbside collection of recyclable material was in place long enough to instill an ethic of resource recovery in the population, therefore making the transition to the supervised depot collection system easier, as a long-time member explains: "we gave up the garbage service because we were losing thousands of dollars a year on it….

By that time people were used to putting their stuff out in their blue box" (June, focus group, 2006). A privately contracted, user-pay service now provides residents with curbside refuse collection at the cost of $7.00 per bag. Refuse is transported to the Hartland Landfill located on Southern Vancouver Island within the Capital Regional District by the private contractor (Figure 4). MIRS is responsible for transporting recyclables to Hartland Landfill and receives financial support from local government for this service. Waste diversion will be discussed in chapter 5.0.

4.1.2 Governance of waste management

In 1990, the British Columbia Provincial government devolved authority for waste management to Regional Districts. It was at this time that the Capital Regional District began informal agreements with the Mayne Island Recycling Society. In the initial years, the Regional District assisted with transportation of waste at irregular intervals upon request; but the partnership has since evolved into formalized contracts and involves several other island communities in the area, as one member recollects: "we were up and running so it wasn't as if [the CRD] had to create us, we were there and just demanding our fair share" (June, focus group, 2006). As one resident notes: "we're fortunate because the CRD in general has been much more proactive about recycling and about dealing with garbage going back 25 years" (Barbara, focus group, 2006). Essentially, the Regional District contracts out waste management service provision to MIRS and offers financial support for the work.

Resource recovery has also been an integral part of the communities on the neighbouring Gulf Islands. The Southern Gulf Island Recycling Coalition (SGIRC) was formed in 1990 as an advocacy group for responsible recycling practices on the

Southern Gulf Islands. The Coalition establishes a network of peers who operate non-profit recycling depots on small islands within the Capital Regional District and the Coalition provides a venue for the small operations to practice reciprocity by sharing knowledge and resources and to strengthen capacity by collectively representing their needs to government. SGIRC membership includes: Galiano Island Resource Recovery, Mayne Island Recycling Society, Pender Island Recycling Society, Saltspring Island Recycling Depot, Saturna Island Recycling and Piers Island (Figure 4). Several of the small islands had landfills that were forced to close in the late 1980s,

> so that's when the big impetus was, when they started closing landfills. People started realizing how much it was going to cost getting everything off this island and then we though we'd better do something about it; so we got formal and formed the society (Jason, interview, 2006).

The SGIRC meets quarterly to share ideas and information and to negotiate collectively for CRD contracts. The CRD Environmental Services Waste Management Division oversees the contracts and operations on each island. As one member states, "the coalition is vital to our tiny island, as the well meaning in government would step on us in their eagerness to help" (Alan, focus group, 2006). As one representative suggests: "we have an extremely good working relationship with the CRD" (Jason, interview, 2006).

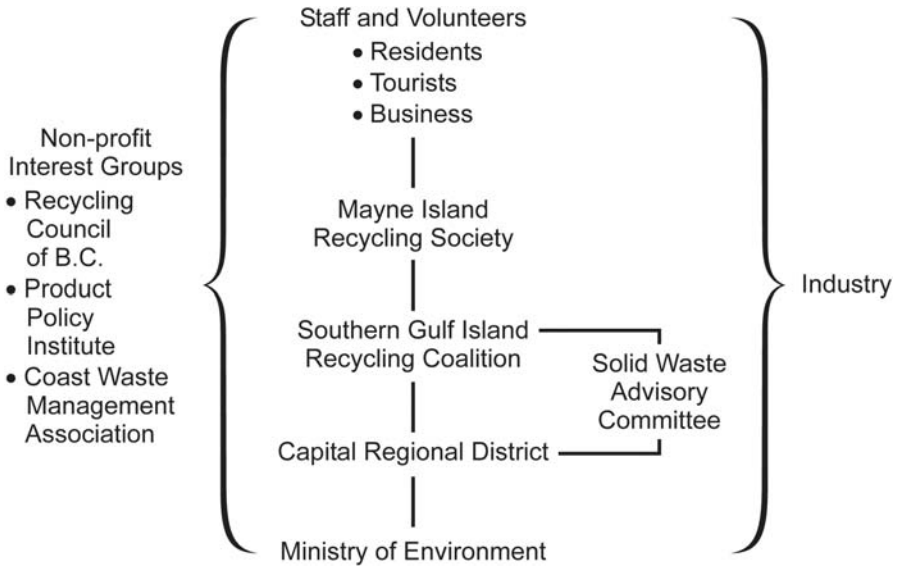
The Solid Waste Advisory Committee (SWAC) is a network established by the CRD with representatives from industry, government and service providers. The Southern Gulf Island Recycling Coalition has one representative on this Committee. SWAC is a forum for industry and service providers to engage with local government

in respect to waste management policies and planning. The forum provides an outlet for deliberation and collective decision-making on a diversity of issues affecting local waste management.

Mayne Island Recycling Society also holds membership in the Recycling Council of BC, Coast Waste Management Association and BC Environmental Network. These organizations lobby provincial government bodies to expand EPR and zero-waste policies, ensure adequate documentation of provincial waste generation and disposal information, and provide environmental education services. MIRS is continuously active lobbying government for expanded extended producer responsibility legislation and zero waste targets. The commitment from MIRS to waste reduction policy-making is evident in their attendance at government meetings, letter writing campaigns, and networking with other waste reduction groups.

Figure 5 outlines the organizational structure of MIRS. Non-profit organizations including Recycling Council of BC, Coast Waste Management Association and Product Policy Institute, along with the waste disposal industry, work to influence provincial policy decisions on waste management, but do not play an active role in waste management in the Regional District or on the island. Provincial policies are adopted and enforced by local governments such as the CRD. The CRD contracts waste management service provision to members of SGIRC, of which MIRS is a member. Although Mayne Island Recycling Society functions under this formal organization, the input from its membership, volunteers and staff contribute to the impressive functionality of the operation. Participation from residents, visitors and commercial businesses is essential to MIRS.

Figure 5: Organizational Structure of Mayne Island Recycling Society



4.1.2.1 Funding structure

Members of the Southern Gulf Island Recycling Coalition have effectively negotiated and convinced government to provide secure financial support to their resource recovery operations. Although financial support is now consistent, "[MIRS has] negotiated for it and it hasn't been served on a platter" (June, focus group, 2006). As one member explains:

> You can look at other regions and say 'ok those guys are getting paid at this rate and you're providing that service'; we're not asking for any more than that, but we want to be funded the same. And [the regional district has] always been good that way; they've always said 'ok that's no problem. Let's figure out how we can do that.' And that's where we sometimes bump heads trying to figure out how to make that work. So you come out with a formula and it works for awhile then something changes in the equation and it doesn't work anymore and then you have to change the formula again. We may be at that point right now, again (Jeff, focus group, 2006).

Between 1990 and 1995, the CRD funded SGIRC members through a monthly diversion credit (funding based on the amount of recyclable material diverted from landfill). In 1995, members signed the first five year contract with the CRD to cover costs of operating the recycling depot: "they ostensibly pay us only for what goes into the blue box in Victoria, or what they call the core communities, but we're not limited to those things. As long as we can finance taking the other things, then there's nothing to stop us" (June, focus group, 2006). The revenue for waste management in the District is generated from the sale of recyclable material and tipping fees at the Hartland Landfill. This system is unique to the CRD as most areas fund waste management from tax revenue. Knowing where the financial resources come from is a step towards greater awareness of waste management issues, as one volunteer suggests:

> You get some comments from a lot of people, as our garbage has just gone up to 7$ a bag and they'll say 'oh, it's free at home.' And I'm looking at them saying 'hello! You pay taxes! If you look at that tax bill, you'll find out what you're paying for your free garbage.' But they don't see it that way (Peter, focus group, 2006).

The high cost per bag for disposing of garbage is a large incentive for islanders to divert waste through reduction, reuse, recycling, and composting.

In 2005, the Southern Gulf Island Recycling Coalition signed a new contract with the CRD, the third since 1995. This is a seven year contract, reviewable after three and five years. SGIRC members no longer receive a diversion credit for the actual tonnage of recyclables shipped off island; rather, a household rate is allocated based on the number of residences on each island. The change in the formula from diversion credit to a variable unit rate per household, although administratively

beneficial, does not provide incentive to increase recycling rates. As the overall tonnage of recyclables diverted has increased each year, the loss of the diversion credit system is of concern to some members of SGIRC as shipping costs are high: "we're almost going to get forced to look for alternatives with the cost of fuel rising and ferry fares rising" (Peter, focus group, 2006). As another member reinforces:

> We're always trying to figure out more efficient ways to deal with more material and so we just recently bought a trailer to pull behind the truck so we can take more material into town and cut down on the number of trips and shipping costs, so anything you can do to create efficiency and make it less stressful at the depot (Jeff, focus group, 2006).

It is premature to comment on the new funding structure.

Income for depot operations is received from CRD operating payment (based on diversion pre-2005 and based on residences post-2005). The CRD also provides a capital expenditures grant – money towards upgrading equipment and structures. MIRS receives funds from donations and annual membership dues ($5.00 per person). As the depot accepts material at no cost, on occasion donations are made to the depot to offset their expenses:

> you get other outfits like the Hardware that generate a huge amount of corrugated cardboard in particular and, unless the price of corrugated cardboard is really high, it's more of a service on our part…, we do encourage those groups to make donations and sometimes they do and sometimes they don't (June, focus group, 2006).

MIRS' revenue from beverage container deposit refunds alone totaled approximately 25% of total revenue in 2006. Although deposit refunds could be collected by individuals at Encorp Pacific designated depots, MIRS receives these funds as revenue: "[The public] could be taking [beverage containers] back to the Trading Post and get their deposits back, but they bring them to us and we get their deposits. And

so that's a community tradeoff" (June, focus group, 2006). Deposits are a common source of revenue for community-based recycling depots in the Southern Gulf Islands: "the operating grant we get from the CRD would not be enough to make us operate. We need support from people to make it happen. [The CRD] understands that we're also making money from these re-fundables" (Jason, interview, 2006). Revenue from the sale of other recyclable products fluctuates with market value. In 2006, the most lucrative products were scrap metals and paper (Mayne Island Recycling Society, 2007).

4.1.2.2 Voluntarism and community-building

The Mayne Island depot relies largely on volunteers to run the Society, assist in operations, and make management decisions: "our Recycle works because of the huge amount of volunteers" (Barbara, focus group, 2006). Approximately 200 volunteers dedicate time to depot operations. Figure 6 shows the range of participation in local resource recovery on Mayne Island. The majority of respondents only practice resource recovery (39% or 16/40), but a large portion also volunteer (23% or 9/40). 15% (6/40) of survey respondents not only practice waste diversion and volunteer, but also contribute by way of community leadership or decision-making. One (3% or 1/40) respondent claimed to not participate, yet they visited the depot and completed the survey.

Figure 6: Degree of participation in Mayne Island waste management

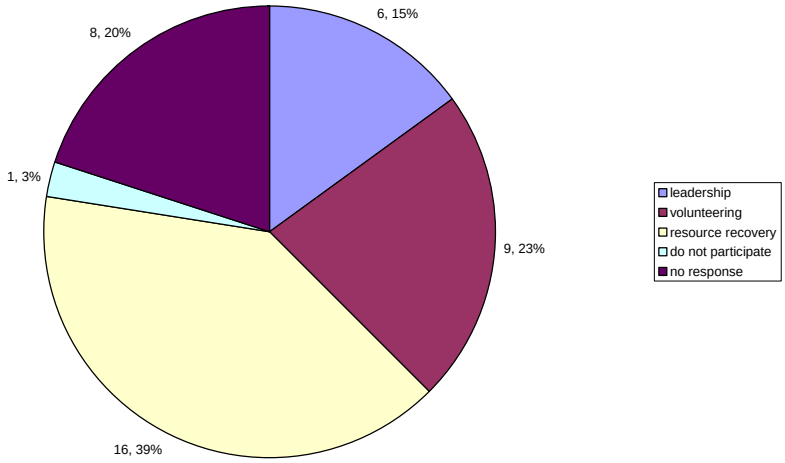
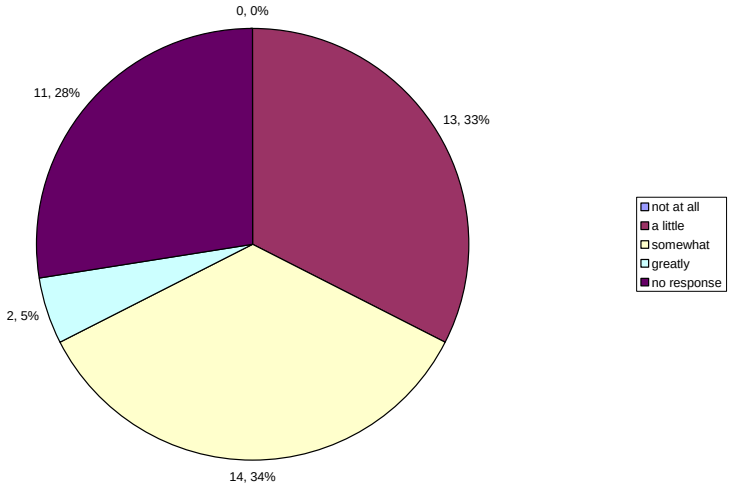


Figure 7 shows respondents' perceived effectiveness of participation, whether it be recycling, volunteering or leadership. The majority perceive their participation as somewhat effective. Only 5% (2/40) of all respondents feel their participation is greatly effective but 34% (14/40) felt it was somewhat effective at influencing waste management decision-making.

Figure 7: Perceived effectiveness of participation in MIRS



When asked what the assets of the depot are, the majority of open-ended survey responses (49% or 26/53) suggested community dynamics (Figure 8). The responses frequently highlighted the "wonderful staff and volunteers" and the levels of "community pride and involvement" at the depot. The depot environment is characterized as "a place that draws people together all for the same reason" and as a "meeting place for members of the community." A long time volunteer explains how important volunteers are to the success of the operation: "it wouldn't be what it is, just in terms of how efficiently and how well run and how much fun it is to be down there" (David, focus group, 2006).

Volunteers at the depot come from "every facet of the community" (Barbara, focus group, 2006) and "it's really refreshing when young people decide they want to come and volunteer" (Jeff, focus group, 2006). Reasons for volunteering are diverse:

> One of the reasons that I do recycling is that partly it's a very light kind of exercise. It's just a little lifting and that kind of thing. I don't do any of the pushing bails onto the forklift or anything like that. So that's a plus, and also I think just saying hello to people and, even just the moronic thing that it is, it's really pleasant just throwing cans into this bag or that bag…. There's something that is very kind of calming and quiet and delightful about it for me (Catherine, focus group, 2006).

One volunteer states: "an hour or two out of your week is not a big deal, you kind of look forward to it" (Peter, focus group, 2006). Volunteering can also provide opportunity for skill development and capacity-building, as one board member describes:

> I think another benefit to volunteers is… the consciousness rises in the community, the social interaction around it. It's one small way that people can do something and feel they're making a difference.

> And sometimes that makes a person feel that they can go on and make a difference in other areas too. It keeps the community connected on a positive level (Dana, focus group, 2006).

Contributing to the well-being of the community was motivation for another volunteer: "I think we should give back to the community" (Lisa, interview, 2006).

While some days at the depot can be hectic, it is important that volunteers and staff maintain an element of fun in their work:

> If people are running around like chickens with their heads cut off then the end result is a frustration level amongst the volunteers, and if it stops being fun then people are going to start ducking out… so you have to make it so that there is still a social component to it (Jeff, interview, 2006).

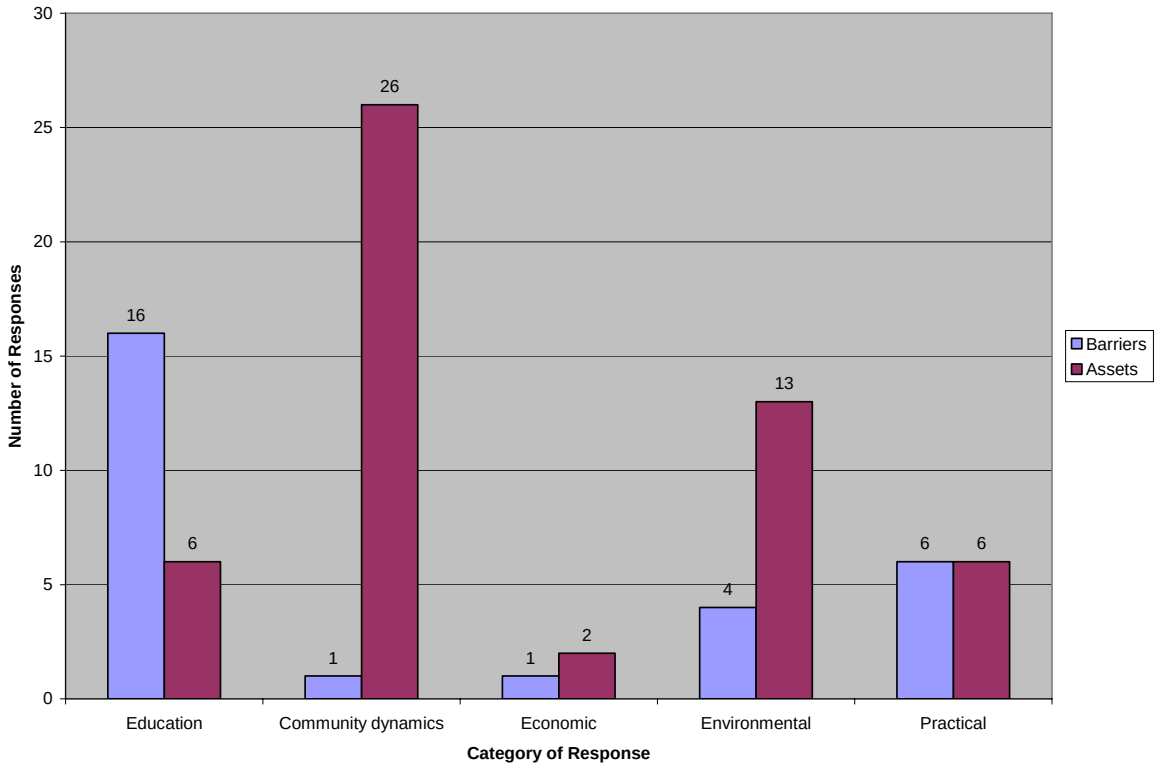
MIRS hosts an annual celebratory dinner in appreciation of the volunteer efforts: "we don't take the volunteers for granted. They are an indispensable part of the operation and we make sure they know we realize that" (June, interview, 2006). Recruiting volunteers is an ongoing effort to ensure success: "you have to make it so attractive to the community that somebody or some group are going to put in that much effort to make it happen" (David, focus group, 2006).

When asked what the barriers to successful community-based waste management are, only one of twenty-eight (3.6%) open-ended survey responses suggested community dynamics (Figure 8). The response indicated a "transient summer population" and "wealth" as impeding a successful operation. The demographic trend is towards more casual or seasonal residences; one staff member elaborates:

> I think what's happening is we're getting a changing demographic coming to the island in terms of economics… what that means is a lot of times they're people that don't necessarily live here… so, those people don't generally volunteer for things (Jeff, focus group, 2006).

Dependence on volunteers was revealed as another barrier to successful community-based management: “when you have one person who is too involved in the structure and the organization is too dependent on them, then that creates a weakness” (Jeff, focus group, 2006). There are a few long-time dedicated volunteers who have seen the operation from inception. The problem being: “you make yourself irreplaceable, then you pay the price for it” (June, focus group, 2006). These dedicated volunteers fear they cannot step down from their duties for fear nobody else will continue the vision.

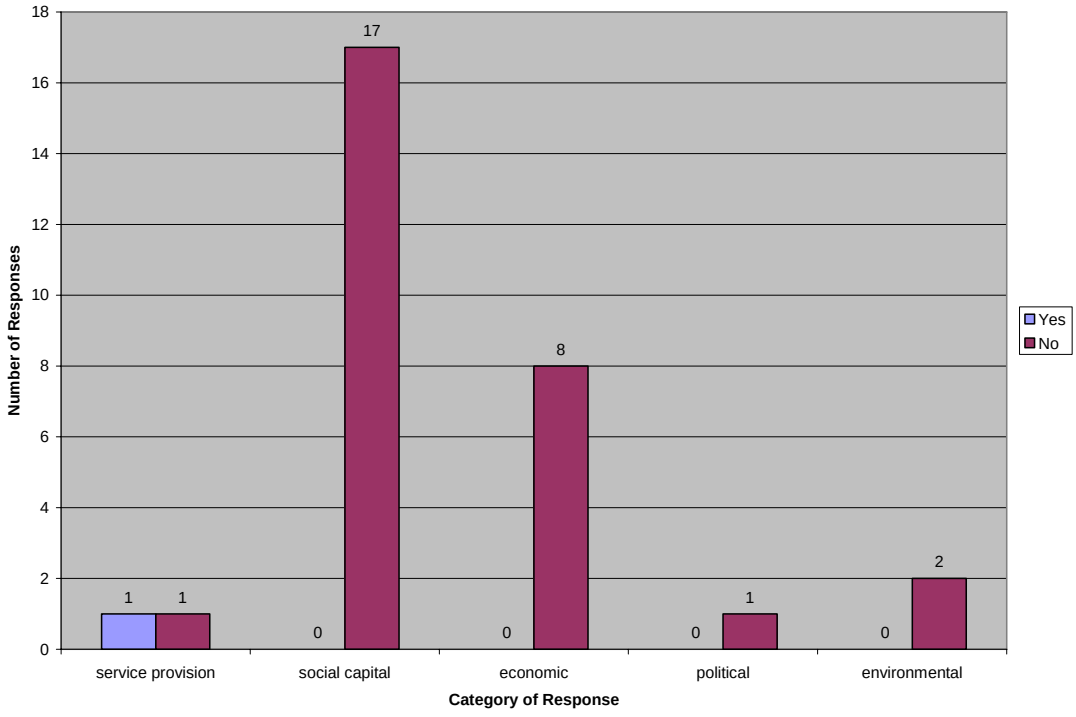
Figure 8: Perceived Assets and Barriers of community recycling on Mayne Island



4.1.2.3 Collective ownership

The Mayne Island depot is owned and operated by the community for the community. When asked if a private recycling business would have the same effectiveness as this community initiative, survey respondents overwhelmingly replied negatively (Figure 9). One out of thirty (3.3%) open-ended responses suggested a private firm would be more effective, but only "if service level maintained." Eight (8/30 or 26.7%) felt that the drive for profit would reduce the effectiveness of the operation. To maintain service levels without volunteers may require implementing fees: "if all those volunteers got paid it would cost a fortune to run." A fear amongst these respondents was that if fees were charged for recycling services, "some wouldn't participate": there is a possibility that "cash-strapped people might burn, bury, ditch their trash."

Figure 9: Would a private recycling business have the same effectiveness as this Mayne Island community initiative?



That "it is fairly common to see private businesses lean more towards profit than community support" suggests the value of the depot to the community. The majority of survey responses (17/30 or 57%) felt community ownership of the depot was preferable to a private company. Five of these seventeen (5/17 or 29%) respondents felt that community participation would be reduced without volunteers running the depot. That "residents have a personal stake in our depot" resonates that the operation holds value beyond simply providing a recycling service. As one respondent states: "the depot binds the community and energizes it." The depot serves as a community meeting place for many of the island's residents, as expressed here:

> Part of going to recycling is there's a whole social thing that happens and it is a kind of part of being a Mayne Islander is having this community experience, going down to the depot and finding out what people are doing… so I think that that's one of the real advantages of it being a community-based instead of a commercial setup (Catherine, focus group, 2006).

Collective ownership of the depot provides a sense of pride and independence in the community, as is evident in this quote: "it's our place" (June, interview, 2006). The Society is largely autonomous, not to discount the support from local government, but the support it receives from the community is the main driving force behind the operation. One volunteer describes the value of having a self-directed Society: "it makes sense, and if we don't do something then some other solution will be imposed on the community that we don't necessarily support, so putting out a few hours of our time every so often is a lot better than the alternative" (David, focus group, 2006).

4.2 Hornby Island Waste Management Centre

Hornby Island has experienced drastic changes in its approach to waste management since the decommissioning of the island's landfill. This transition required behavioural changes by residents and political changes in management with the creation of the recycling depot and free store. The Hornby Island Residents and Ratepayers Association (HIRRA) has established authority over the recycling facility and works with the local government to ensure operations and upkeep continue.

4.2.1 Overview of operations

Hornby Island Waste Management Centre (HIWMC) is located on a parcel of leased crown land on Central Road. There is a gated driveway that leads through forest to the depot and parking area. Depot visitors are guided by colorful signs, helpful staff and volunteers. The centre consists of a free-store, supervised recycling depot, user-pay garbage drop-off, composting facility, composting toilet, drought tolerant gardens and an extensive parking area (Images 3, 4 & 5). The Centre has a backhoe machine for moving material on-site and off-site transport is accomplished with staff members' personal vehicles and by the Regional District of Comox-Strathcona (RDCS). Fees are charged for the disposal of certain items.

Image 3: Hornby Island Waste Management Centre

Image 4: Hornby Island Waste Management Centre Compost

Image 5: Hornby Island Waste Management Centre Free Store

4.2.2 Governance of waste management

The Hornby Island recycling program was initiated in 1978 when the Ministry of Environment's Pollution Control Branch encouraged the community to clean up the island's landfill. Previously, garbage had been dumped and burned without proper monitoring and enforcement. At this time, the Hornby Island Residents and Ratepayers Association (HIRRA), a local governance group, helped launch a recycling program and established a free-store to re-circulate reusable items in the community. Waste management on Hornby Island evolved through various methods with limited dumping and incineration until 1992, at which time all refuse began being transported to Pigeon Lake Landfill on Vancouver Island, managed by the Regional District of Comox-Strathcona (RDCS) (Figure 4). Although some residents feel they "do not like that our garbage goes to somebody else's backyard" (Devost,

1996), Pigeon Lake Landfill currently has the capacity to accept refuse from surrounding communities until 2019, with plans to expand capacity beyond this date. The Hornby Island Waste Management Centre is located at the site of the old landfill, occupying an area approximately 10,000 square metres. This site is on crown land, leased by HIRRA through the Regional District; therefore, any improvements made to the site are owned by RDCS.

The Hornby Island Residents and Ratepayers Association holds a 5 year contract with the Comox-Strathcona Regional District (RDCS) for managing the island's waste. HIRRA is a non-profit society established in 1973 with a membership and an elected executive board. The organization's principle functions are guided by their vision statement, constitution, policies and bylaws and by management contracts with the RDCS (Hornby Island Residents and Ratepayers Association, 2007). Through management contracts with local government, HIRRA administers several tax-funded local services, including the fire department, recycling program and rural garbage transfer station: "A unique aspect of governance on Hornby is the fact that several important services that are the responsibility of the Regional District have been subcontracted back to community organizations" (Hornby Island Residents and Ratepayers Association, 2006a, p. 2). Six HIRRA members sit on the Recycling Committee to oversee management of the waste management contract. Two management staff and up to five part-time staff are hired by HIRRA to work at the waste management centre. Volunteers donate their time at the depot to assist with organization of free store items, signage, and promotion.

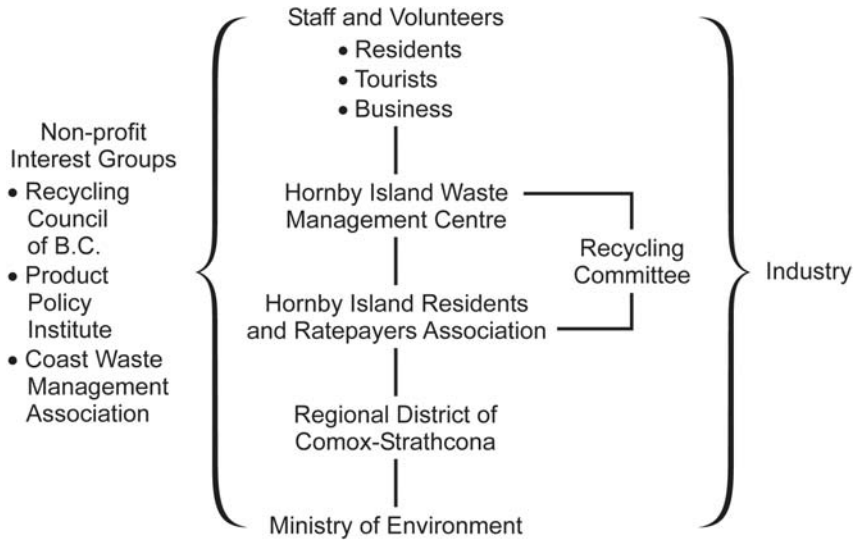
Hornby Islanders take pride in their local governance and intimate connection with government representatives, as is expressed in their vision statement:

> As a grassroots form of governance, [HIRRA] comes as close as one can hope to direct democracy through 'town hall' meeting, in which all community members have the opportunity to voice their concerns and make decisions affecting the common good (Hornby Island Residents and Ratepayers Association, 2006a, p. 3).

Intrinsic to small island life is the situation of mutual dependence and "a dimension of relative autonomy, whereby the community as a whole, as well as individuals, enjoy freedom of self-determination more than dependence on outside authority" (Hornby Island Residents and Ratepayers Association, 2006a, p. 5).

Figure 10 shows the organizational structure of waste management on Hornby Island. Similar to Mayne Island, contracts are granted by the Regional District to Hornby Island Residents and Ratepayers Association thereby concentrating decision-making control in the island community: "the regional district was certainly involved in that but they let the local control be local…. The Regional District lets us do what we do because we mostly do it best" (Sue, interview, 2006). A localized Recycling Committee, HIRRA members, and depot staff and volunteers give direct input into management decisions concerning the depot. Industry and other interest groups lobby government, but no regional Committee has been established to facilitate discussions on local waste management issues.

Figure 10: Hornby Island Waste Management Centre Organizational Structure



Although the local recycling committee makes many decisions about the depot operations, the RDCS ultimately exerts authority over the place. The relations between HIWMC and the Regional District were not observed to be cooperative as communication was not transparent, power was exerted by the Regional District over local decisions, and contact between the two seemed strained. That representatives from local government were not available to comment reinforced this observation. The turn over of staff at the District level was observed as a barrier to effective communication and management.

The RDCS conducts annual site visits to the depot to assess maintenance improvements and equipment upgrades. Staff perceived the actions of the local government representatives with skepticism, as exemplified in this quote:

> [RDCS] came by and they're saying like 'bring the place up to code,'… they think it's too funky. Most of the place is pretty solid. [Management] is kind of worried about what they're up to, actually. You know, they're offering all this stuff right. It's either they have extra money to get rid of or there's an election or they've realized that Hornby is not the same as any

> other depot. It's not just a drop off and a dump (Mike, interview, 2006).

Relations with the regional district in relation to liability were expressed by another member:

> Each year the contracts get more… technical and they get more concerned with liability issues, so when you ask me how sustainable our system is at the depot, the one thing that could interfere with its sustainability is – you see how carefree it is up there? You can go walking around the metal pile – well, the big guys, when they come out from the city to look at that, they might have a problem. We've just had a review and … I'm sort of expecting something out of that that's not going to be to our liking but its going to be some big world rules imposed on us about liability issues…. The liability issue and the litigious nature of society is what is going to hurt us. That is the single most biggest threat to our sustainability is the public liability and nobody wanting to let people walk around a scrap yard and actually salvage stuff and do some good that way (Sue, interview, 2006).

Lack of cooperation and communication about depot operations has resulted in uncoordinated efforts between management and government supervisors, making long-term planning and community ownership challenging. Possible reasons for this strained communication could result from the lack of a Coalition of island operations that works together to negotiate contracts, as is in place on the Southern Gulf Islands. Other possibilities include recent turnover of management at the Hornby depot and staff shortages at the Regional District.

4.2.2.1 Funding structure

HIRRA proposes budgets for the recycling depot and garbage transfer station to the Regional District each year. Although the RDCS has the authority to make the

final decisions, Hornby Islanders have opportunity to comment and engage in the process. A staff member explains:

> Every November… we are proposing budgets and they are there for everyone to see and [assess] the numbers… then that is approved by the island and voted on yes, and then that goes to the regional district and they have to approve it also. They can say no. You know, normally it's a kind of a – 'you guys on Hornby do your local thing, you know, follow these parameters that we set for you.' Its not like we have this wide range to do whatever we want and we kind of follow their lead but they let us do the politics here. And then we approve something and they give us a rubber stamp. They give us, for instance, OUR budget – the depot budget (John, interview, 2006).

Funding for the depot is derived from local taxes, from tipping fees for garbage drop off ($2.50 per bag for residents), and from beverage container deposit refunds. 2006 expenditures largely include payment to staff and transportation of garbage and recyclable materials to Pigeon Lake Landfill and other markets on Vancouver Island. Other expenses include tipping fees at Pigeon Lake Landfill, office expenses, equipment and site maintenance. Finally, a small amount of the annual budget is allocated to education and promotion. This is not a budget item considered by the CRD for members of Southern Gulf Island Recycling Coalition.

An exceptional expense incurred in 2006 was for the construction of a composting toilet, locally referred to as the "Spiffy Biffy" (Image 6). Through the employment of local skills, the environmentally designed project was implemented and completed in 2006. Initially, the Residents and Ratepayers Association anticipated that the Regional District would allocate funds to this site improvement project. However, due to a miscommunication between HIRRA and the Regional District, funds towards

the project were not forthcoming, as expressed in the meeting minutes on January 11, 2006:

> the innovative, unique construction and design, using recycled materials have resulted in a higher than estimated cost. The details of the expenditures, totaling $29,722.59 were read. The regional district has indicated that capital funds, which the committee and staff had thought were available to fund this project, are not forthcoming. The recycling committee met with the executive to discuss this dilemma, and now asks for the support of the members in requesting that the regional district give this reconsideration (Hornby Island Residents and Ratepayers Association, 2006b).

It has been decided that money towards the project will be fundraised as the project is a valuable asset to promoting waste reduction and environmental stewardship: "the educational potential is viewed by the committee to be an ongoing benefit to the island and visitors" (Hornby Island Residents and Ratepayers Association, 2006b). The issue of the composting toilet project exemplifies the community's resilience to overcome political and economic hurdles and achieve goals in an independent fashion. As one member summarizes:

> it was a bit painful but we're over it, the composting toilet is surviving; I mean, it is doing what we thought it would do. It is making people think before they crap which is a really good thing, philosophically and actually…. If we learn some lessons as a result of the sort of errors that were made at our end, we're doing a review of all our policies and tightening thing up a little, but at the same time we don't want to be a little mini bureaucracy (Sue, interview, 2006).

Image 6: "Spiffy Biffy" Composting Toilet

4.2.2.2 Voluntarism and community-building

Figure 11 highlights the range of participation in local waste management on Hornby Island. All survey respondents claim to participate in resource recovery in some aspect except one (1/51 or 2%). 18% (9/51) of Hornby Island survey respondents volunteer and 12% (6/51) have a role in community leadership beyond their participation in resource recovery. Figure 12 shows the majority of respondents perceive their participation as somewhat or greatly effective at influencing waste management on Hornby Island. 20% (10/51) of all respondents feel their participation is greatly effective; however, 12% (6/51) feel their participation is not at all effective.

Figure 11: Degree of participation in Hornby Island waste management

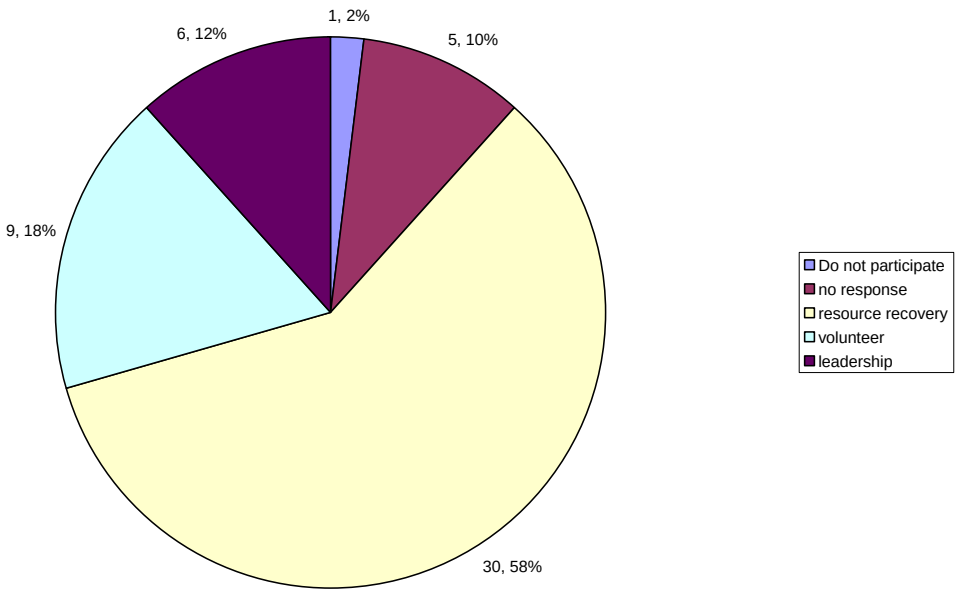
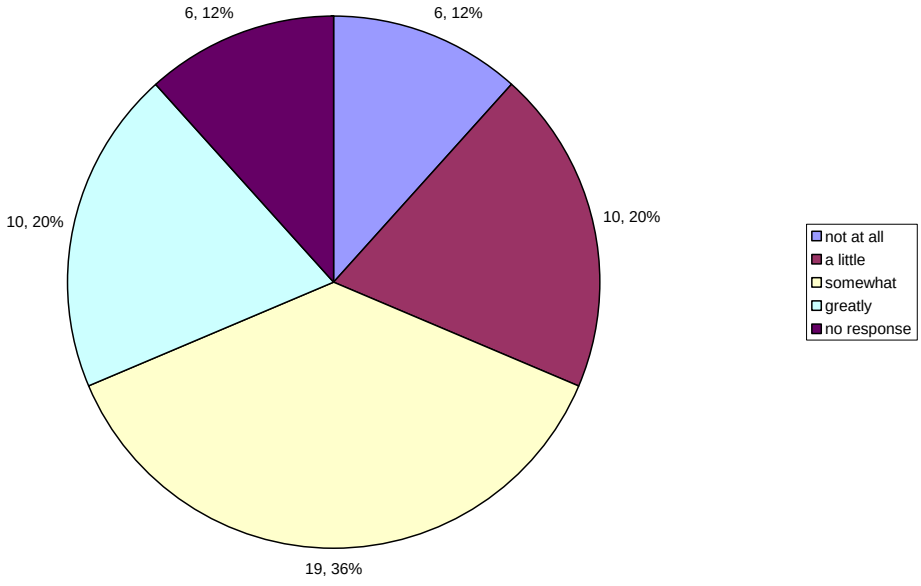
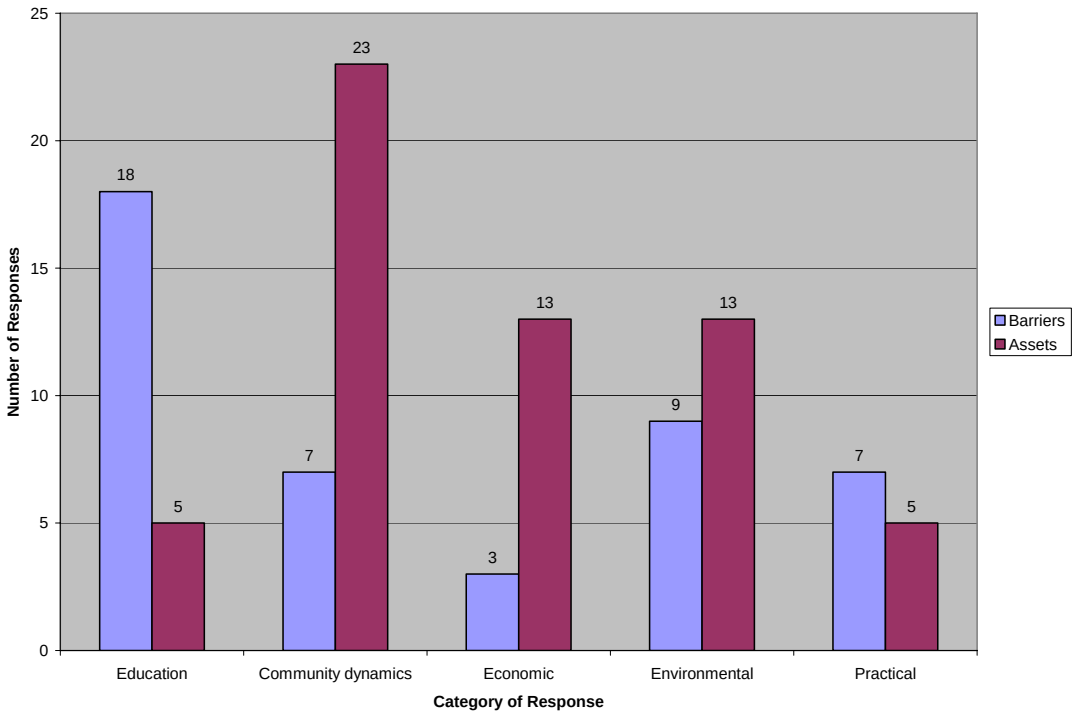


Figure 12: Perceived effectiveness of participation on Hornby Island



Great dedication is shown by the volunteers at the depot. One volunteer commented: "I enjoy what we do and I thoroughly believe in what we do" (Vera, interview, 2006). 23 out of 59 (39%) open-ended responses suggested that community dynamics was the greatest asset to the depot; however, only 2 out of the 23 (9%) responses mentioned volunteers as an asset (Figure 13). Despite the large number of people who do volunteer, "we don't have the manpower to go through every bag when it comes in" (Vera, interview, 2006).

Figure 13: Perceived assets and barriers to community recycling on Hornby Island



The valued community assets include the "sense of community – people working together for the same goal," "people socializing in a positive way," the depot providing "a secure feeling of active participation," and that the "depot feeds community activism, provides venue for volunteers, inspires more complete resource recovery in other communities." As one member suggested: "people can come and

maybe do some of their self-actualizing here" (Sue, interview, 2006). The depot as a node for socialization is highlighted by this employee:

> People come, they hang out, they don't just drop their stuff off and leave. It's quite a meeting place; you have your regulars that come in here all the time. For me, I really like it because in the winter time I get to see people who I would never see [because] almost everybody comes to this depot (Mike, interview, 2006).

Participation not only in resource recovery, but in community-building is seen as the major asset driving the success of the depot.

Seven of forty four (16%) open-ended responses suggested community dynamics were a barrier to the success of the recycling depot (Figure 13). These responses indicate "a dysfunctional community or lack of one" would be a barrier; "transient people or tourists who are uninformed" were also listed as possible barriers. This point was emphasized by a staff member: "some people might think they're a higher echelon so they can't be bothered to sort their garbage" (Mike, interview, 2006).

4.2.2.3 Ownership

When asked if a private recycling company would have the same effectiveness as the community-based initiative, the majority of respondents (38/41 or 93%) thought not (Figure 14). Thirty nine percent (16/41) felt that the community-building aspects of the depot would be lost if a private company took over recycling. Responses indicated that "community involvement and control makes a big difference" and leads to "more commitment to the process." With a private company, "there would be no sense of it belonging to us. Apathy would grow" and "people would not have shared responsibility," leading to reduced participation. The majority "prefer to see it remain a public process because it engages people in building community." Fifty one percent

(21/41) felt that economic factors would be negatively affected if the recycling operation was privatized, as articulated by this survey response:

> the primary purpose of private enterprise is the accumulation of capital. It is this philosophy which creates a lot of the mess. While at first glance it may seem more efficient to run things privately, the sense of social responsibility necessary to make recycling effective is unlikely to be found at the private level.

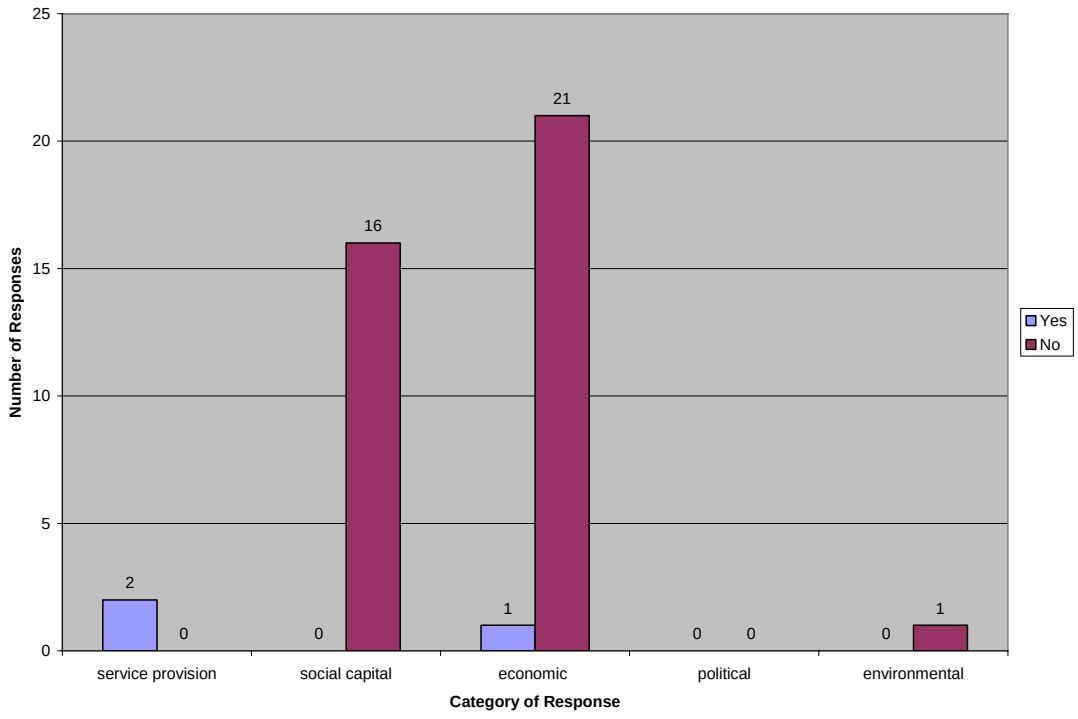
Other responses similarly express the negative aspects associated with for-profit business: "private organizations are bottom line, no patience for social aspect." Another indication of how the residents of Hornby value non-profit ventures is the number of cooperative ventures on the island: "there are more cooperative endeavors per capita on this island than anywhere in the world" (Sue, interview, 2006); and while this may be an exaggeration, this resident compared Hornby to Mondragon, Spain[11]. "We just have a lot of cooperation and the cooperation isn't always good, like there are some dysfunctional coops here, just like there are dysfunctional families, but they're trying. That's the whole thing, they're trying" (Sue, interview, 2006). One response indicated that a private recycling company would negatively influence the environmental effectiveness of recycling: "the recycling process would be changed, altering the way people recycle."

Of the three (3/41 or 7%) responses that indicated a private company might improve recycling on the island, two (2/3 or 67%) responses felt that increased effectiveness and organization would result: "a private recycling business would have

[11] Mondragon Corporacion Cooperativa, Spain has "grown to 160 employee-owned cooperatives, involving 23,000 member owners, with sales grossing $3 billion dollars US in 1991. Statistics show the Mondragon cooperatives to be twice as profitable as the average corporation in Spain with employee productivity surpassing any other Spanish organization. It has its own bank, a research institute, an entrepreneurial division, insurance and social security institutions, schools, a college, a health maintenance system and a health insurance cooperative. It is focused on relational cooperatives dedicated to the common good" (Ginto, 2007).

a bit more organization, cleanliness, for there would be more money put into it." One (1/3 or 33%) response suggested that a private firm would be beneficial as there would be less reliance on volunteers and more employment opportunities (Figure 14).

Figure 14: Would a private recycling business have the same effectiveness as this Hornby Island community recycling operation?



4.3 Discussion

The community-based, non-profit recycling sector on Hornby and Mayne Islands has a history of local control and partnership arrangements with local governments. The characteristics and objectives of both community waste organizations synchronize with the mission of social economy organizations, as outlined by Vaillancourt et al. (2003, p. 2):

> The mission is services to members and community and not profit oriented;

> Management is independent of government;
>
> Democratic decision making by workers and/or users;
>
> People have priority over capital;
>
> Participation, empowerment, individual and collective responsibility.

Smith (2005, p. 277) emphasizes that the most significant comparison can be made with for-profit firms: "within the social economy the primary objective… is not capital accumulation and the primary beneficiary group is not investors." Community-based waste schemes can also be categorized as civil society[12] organizations as they represent non-profit organizations concerned with the minimization, reuse, and recycling of waste operating in the sphere between government, business and family (Davies, 2007). They can also be considered "third sector" organizations as they are not state or privately driven, but controlled by a voluntary association of people (Laville, Levesque, & Mendell, 2006).

Three motives have been identified as the foundation for establishing community-based recycling organizations: environmental protection, social development and economic vitality (Davies, 2007), thus making them unique compared to private and public sector operations and placing them in the realm of social economy organizations. Environmentally, community-based waste organizations can contribute to reducing volumes of waste sent to landfill by providing services that private and public sectors may not supply, as well as providing environmental education about the benefits of resource recovery (environmental education will be explored in chapter 5). Social benefits can include capacity-building through opportunities to volunteer, through provision of free material for people in need, and

[12] "Civil Society is defined as a set of institutions, organization, and behaviour situated between the state, the business world, and the family" (Davies, 2007, p. 53).

through fostering social capital. Economic contributions can include employment and skills acquisition especially for vulnerable populations, and organizations typically operate at a relatively small scale when compared to private sector waste companies (Davies, 2007). I will now discuss the contributions made by the recycling depots to the local social economies on Mayne and Hornby Islands and will highlight how the organizations support the fostering of social capital.

4.3.1 Social innovations

Gerometta et al. (2005) and Moulaert and Nussbaumer (2005) use the term "social innovation" to describe processes aimed at satisfying various needs in local communities by countering social exclusion[13] that results from the "increasing individualization of social and economic life" (Gerometta, Haussermann, & Longo, 2005, p. 2007). Individualism can result from work responsibility, financial independence and increased economic competition in the global economy (Gerometta, Haussermann, & Longo, 2005). Gerometta et al. (2005, p. 2008) explain further that "individualisation fosters social fragmentation, emphasizes the fault lines between different social groups and thus limits possibilities for integration." Peredo and Chirsman (2006, p. 311) argue "that the values of the Western world… which emphasize individualism, continue to dominate the conventional view of what entrepreneurship is all about." The following discussion investigates the Hornby and

[13] Social exclusion can be defined as non-integration into interdependent social and labour relations, and the absence of participation in various dimensions of social life. Social exclusion therefore focuses primarily on relational issues such as inadequate social participation, limited social integration and lack of power. Whereas the notion of poverty focuses narrowly on distributional issues and lack of resources, social exclusion is a broader and more dynamic concept (Gerometta, Haussermann, & Longo, 2005, p. 2010).

Mayne Island recycling depots as places that promote social innovations to cultivate the local social economy and foster social capital.

4.3.1.1 Opportunities for employment and capacity-building

On Mayne and Hornby Islands there are limited secure employment opportunities and, as a result, residents must be creative to find a niche in the local economy. The main occupations here include construction trades, art and culture, and retail services (Horne, 2006). Throughout North America, economic transformations are evident in the declining importance of manufacturing and the increasing significance of service provision (Gerometta, Haussermann, & Longo, 2005). The trend in service industry jobs requires increased flexibility of employees with regards to places of work, schedules and living arrangements, leading to "new divisions in the labour market and the risk of social exclusion for those who cannot adapt to the new demands" (Gerometta, Haussermann, & Longo, 2005, p. 2011). The seasonal flux of tourism on the islands results in variable employment options and therefore demands flexibility and innovation.

While the explicit purpose of the community recycling organizations is not to provide employment, the depots do provide steady managerial positions and seasonal employment. On Hornby, "the depot is a guardian of island diversity by the very fact that it employs at least three people with livable wages. They're not glorious wages, but they're livable" (Sue, interview, 2006). As one Mayne Island resident states: "There are jobs in the summer for some of the younger students" (Barbara, focus group, 2006). Jobs provide value to the communities in terms of building skills capacity and retaining local wealth (Brennan & Ackers, 2007). Luckin and Sharp

(2003) and others (Brennan & Ackers, 2007) found that community-based recycling operations in the United Kingdom had significant social impacts due to their role providing employment and skills training.

Generating employment on the islands is challenging due to the seasonal nature of the service industry, increasing cost of living, and limited skill sets. However, social innovation and commitment to the general welfare of the community is expressed by a past Hornby employee:

> if [the government] says to us, for instance, that we can't have the metal yard the way it is, ok. So what I would do if I have a say in it, and I will because I'm a resident of Hornby… I will definitely go into fixing everything and I'll hire people. I'll hire kids up there… We'll fix stuff and resell it. We're not going to abandon that whole thing, there's no way. We'll just formalize it and make another job (Sue, interview, 2006).

Staff are employed to facilitate depot operations and their time is limited to maintenance of the operation. Expanding operations or initiating new projects is therefore restricted, as one MIRS board member explains:

> we depend so heavily on [staff] that unless there is somebody who has enough initiative and enough time and interest and expertise at whatever level it takes to get [an initiative] off the ground, there isn't really enough energy left over down there for these new initiatives (June, focus group, 2006).

Grants and funding can be leveraged to initiate new projects, however, "going after funding is something that takes a fair amount of doing" (June, focus group, 2006). Volunteers do a large part in keeping the depots functioning; but, "At the end of the day we also can't continue to expect volunteers to do everything… you have to offer some employment, which Recycle does…because the people that are there can only handle so much work" (Barbara, focus group, 2006). The challenge, as highlighted

by Davies (2007, p. 59) is "how organizations, already working at capacity to simply sustain their activities, might allocate precious time and resources to creating a groundswell of support for greater recognition, or to search for alternative funds."

The very nature of non-profit or voluntary organizations allows for an environment where "unemployed can engage, receive recognition and material recompense and thus, integration" (Gerometta, Haussermann, & Longo, 2005, p. 2015). The community-based recycling organizations offer a venue for volunteers to integrate with the community and develop individual skills. Even those who visit the depots and do not volunteer still have opportunity to gain knowledge through participation. As Saegert (2006, p. 282) emphasizes, "leadership development most explicitly supports the acquisition of skills and knowledge by community residents. But even less active participants gain skills in group processes, knowledge of community resources, and competence in specific tasks."

4.3.1.2 Community partnerships

The retention and re-circulating of money in the local economy is important for small island sustainability and this can be achieved through forming partnerships. Partnerships are evident in the economic exchange of both Mayne Island and Hornby Island recycling depots, providing opportunity for reduced expenditures and social gains.

Transportation is a large cost for the island recycling operations. As a member of Galiano Resource Recovery states: "one of our biggest costs is getting everything off this island and over to Victoria" (Jason, interview, 2006). To overcome the burden of transportation from Hornby, the depot is "going to get on this program where we start

meeting [a trucker] in Buckley Bay because he's going up and down the island in a big truck, so [the depot] will bring over all the balasts and paints" to be shipped to market (Mike, interview, 2006). When the recycling materials are shipped on the ferry from Hornby, to save the truck coming back to the island empty, arrangements are made to bring back materials needed by others in the community. On Mayne Island, much revenue is made from deposit-refund beverage containers that are collected by the Saturna Island Encorp Pacific Depot en route to Victoria:

> Saturna has to stop off on Mayne before it can go to town; he stops off here and takes all our stuff too. Because he's an official depot operator, he gets the handling fee, which is probably worth as much or more than the deposit which makes his profit, but he brings us back the deposits…. It's an inter-island operation with a commercial operator and it works out marvelously for everybody concerned" (June, focus group, 2006).

This partnership arrangement saves MIRS a weekly ferry trip to Victoria each week at a return cost of approximately $200. Sharing of transportation can become complicated in the island context due to ferry scheduling and movement of bulky materials. This was noted as a factor limiting further partnership opportunities between island recycling operations.

Both operations on Hornby and Mayne have attempted to coordinate regular shipments of material with neighbouring islands, but at a detriment to operating efficiency. Instead, other innovations are developed, as a Mayne Island employee explains:

> We're always trying to figure out more efficient ways to deal with more material and so we just recently bought a trailer to pull behind a truck so we can take more material into town and cut down the number of

> trips to town and shipping costs and so anything that you can do to create efficiency makes it less stressful at the depot (Jeff, interview, 2006).

Sharing equipment was also attempted between member islands of the Southern Gulf Island Recycling Coalition, but was deemed too complicated due to ferry costs and scheduling. However, Galiano Recycling Resource transferred their remaining annual Capital Expenditures Grant to Mayne Island in 2005 towards purchasing needed equipment. Another initiative to minimize costs of shipping is local reuse. "Some of the crushed glass goes into foundations and drainage fields – that's a perfect application" (David, focus group, 2006).

The reduction of transaction costs is an important economic characteristic of networks for the generation of social capital. As Evans and Syrett (2007, p. 59) explain: "When network exchanges take place between individuals and organizations in circumstances characterized by trust and reciprocity, such exchanges are completed at less cost to the parties involved in terms of both ensuring maximum benefit and in the reduced time taken to conclude the transaction." Pretty and Ward (2001) also suggest that reciprocity and the development of obligations between people can be an important part of achieving positive environmental outcomes. As summarized by a Mayne Island resident: "If you can have those kinds of relationships then certainly it is beneficial to everyone" (Barbara, focus group, 2006).

4.3.1.3 Entrepreneurial opportunities

The nexus of the local recycling industries is at the depots; however the potential for spin-off ventures is high. MIRS is involved in selling 100% recycled stationary, although they are "subsidizing it slightly" (June, interview, 2006). MIRS also sells

cloth shopping bags to encourage consumers to avoid plastic bags. On Hornby Island, composting, art shows, and educational installations such as the "Spiffy Biffy" (Image 6) have been stimulated from the recycling initiatives. However, many of these creative ventures initiated by the depots are limited by funding and volunteer efforts.

A highly successful commercial venture on Mayne is the Mayne Island Glass Foundry. The operation has experimented with using locally recycled glass to re-create artful objects for the tourist market. However, the chemical complexity of recycled glass doesn't allow the Foundry to use unsorted crushed glass from the depots, so outsourcing for a higher grade of window glass from Seattle is necessary (Mark, interview, 2006). The Foundry has engineered highly efficient glass blowing furnaces and instructional modules that are sold globally in hopes to provide entrepreneurial opportunities for communities.

Other recycling opportunities abound for the small island communities of Mayne and Hornby, as one volunteer expresses:

> As petroleum products get more expensive, maybe we could expand into recycling cooking oils and …process it and burn our own bio-diesel as an example. There's a product called paper-crete where you churn up paper of whatever description, you mix in a little cement and sand and you can form kind of adobe blocks with it…. Once you're in the business of recycling source diversion and recycling there's lots of things you can do (David, focus group, 2006).

The problem with expanding the market for recyclable goods is that the materials are still very

> people-intensive, energy-intensive and very expensive, for instance plastic wood…. The cost to buy those things is quite a bit more and the person running the

> plant is running it on very low wages because there's not profit in it, so we still need those subsidies to get the government to buy in or the public… like organic foods, people have to be willing to pay a little bit more (Barbara, focus group, 2006).

Due to the general high cost and low demand for products with recycled components, many businesses do not distribute recycled products. Ideas for creating new recycled goods are stimulated by the activities at the depots, yet again, these opportunities are often limited by funds and volunteer time.

The ingenuity of locals to create new entrepreneurial opportunities from recycled materials became evident in the wider recycling community in and around Vancouver Island. New markets are needed to process more diversity of recyclable materials, such as Styrofoam. The Coast Waste Management Association was established in part to meet this growing need to process materials from the growing local recycling industry. Many small-scale local markets have been established to meet the growing need to process recyclable materials. However,

> what happens is when municipalities get serious about recycling they create or make big markets. And those markets make it so everybody gets to feed material into them. It's good to support those little guys because those little guys are the guys that get the ball rolling. Unfortunately, it's hard for them to survive once the business takes off because then the big companies jump in and start buying all the material they can get their hands on. And sometimes they can't compete price-wise – they can't pay the big bucks because they don't have the capacity to deal with large volumes; so, when things go municipal sometimes it's too big for them. They're set up to operate small and they can't adjust when the markets change (Jeff, focus group, 2006).

How a company decides the level and type of processing often depends on financial considerations. For example, processing new items such as Styrofoam or milk cartons could add expenses that companies determine insignificant and therefore

decide not to process the items. This is a major difference from social economy ventures that do not make decisions strictly on profitability, but on the social and environmental implications of the decision. Predominantly market-oriented social economy organizations and enterprizes, such as recycling enterprizes, must factor in market forces to be viable, but the presence of market activities alone does not mean that profit-making has become an objective (Laville, Levesque, & Mendell, 2006). Civil society organizations "have been found to have potential for innovation towards needs-satisfaction, with institutional change allowing more effective action and the development of other socially innovative processes" (Gerometta, Haussermann, & Longo, 2005, p. 2008).

4.3.1.4 Access to material goods

Shragge et al. (2001, p. 1) suggest that social economy organizations

> are seen as ideally located to respond to the needs of their local communities, particularly by linking social provision and economic activity. The intent is to mobilize community resources to create jobs and social services that the market will not and the state is unwilling to provide.

Social services are especially limited in small island communities due to low population bases, minimal representation in local governments, and isolation. The recycling depots on Mayne and especially on Hornby fill a niche by providing residents with access to free re-useable items. For example, "There are poor people here who wouldn't survive here without it. If you had a baby then you could get baby clothes, then you could give them to somebody else" (Jessica, interview, 2006). As another user noted, "one man's garbage is another's treasure. Poor people here can use the stuff at no cost." The idea that "people get to have something new without

actually going to the store and buying it" (Barbara, focus group, 2006) allows barriers between social classes to erode. About the freestore:

> I always thought that if somebody who was very wealthy was in there and they were standing beside or having anything to do with somebody who wasn't very wealthy and maybe they start talking to each other, then maybe some gaps will be bridged and some assumptions will be overruled by realities because people will actually rub shoulders together. Now that sounds pretty idealistic but it's true. That's exactly what happens at the freestore. And people give and people take and the givers become the takers and the takers become the givers and it's perfect. There should be a freestore everywhere (Sue, interview, 2006).

The freestore has been called the "best shopping mall around here", an "awesome resource", and one that "has improved our quality of life and reduced our dependence on retailers." Housing reusable materials in a central place converts unusable things into available resources:

> people have got to love it because it's a resource. Whereas really, when you put your things by the side of the road, it's not a resource for anyone else. Even though people do go and sift through other people's roadside garbage, but really there's no system there… here it's a central spot for that and I think that's one of the things a lot of people miss when they just look at the depot through the statistics (John, interview, 2006).

In their study of community-based waste organizations in the United Kingdom, Luckin and Sharp (2003) revealed the importance of these operations in providing support to low-income families through provision of materials.

An alternative perspective is offered by a member of the Product Policy Institute, who suggests

> the beneficiaries of this charitable activity are the producers of the products that are collected. End-of-pipe recycling provided without support from producers is a form of 'welfare for waste'. By picking up after the

> producers of throwaway products, well-intentioned community groups are actually letting the producers off the hook (Patricia, interview, 2006).

While extended producer responsibility is an effective strategy for waste reduction, it has not been widely implemented and waste is still being produced. Community-based organizations can therefore provide charitable services by making reusable products available to those in need. The member from PPI concludes: "non-profit product exchanges which keep products in use in the community and delay their entry into the 'waste management' system will always be a way of extending the service life of products and building community relationships" (Patricia, interview, 2006).

4.3.1.5 Community-building opportunities

Gerometta et al. (2005) suggest that a crucial condition for overcoming social and economic exclusion is creating a public sphere where socially innovative experiences can develop. Civil society organizations can function to "create a community-oriented place of intermediation between state, market and citizens tending towards the general welfare of the place" (Gerometta, Haussermann, & Longo, 2005, p. 2010). Horizontal relations comprise bonding capital and include intra-community ties (Rydin & Holman, 2004)

The depot environments on Hornby and Mayne provide an atmosphere for community capacity building[14] which emphasizes development of relationships and the use of community assets to solve common problems (Saegert, 2006). The emphasis on cooperation and the mobilization of resources to achieve collective goals

[14] Capacity building is building relationships, leadership development, increasing relational and organizational skills, sustaining stakeholder engagement, having a sense of common purpose and action agenda, and increasing local institutional capacity (Saegert, 2006).

is evident at both locations. The bonding social capital within community affairs may facilitate the development of a common agenda and increase commitment of members to pursuing that agenda (Saegert, 2006).

Sense of community can be measured by documenting residents' behaviours that are observable, such as expressions of pride, orderly and clean streets, positive activity, social glue, and visible leadership progress (Meyer, Hyde, & Jenkins, 2005). Considering these indicators, Mayne and Hornby arguably demonstrate strong sense of community. Overwhelmingly, survey responses indicated the importance of the depots to community dynamics by offering a social gathering place. Respondents also stressed pride in community ownership of the organization. Largely, the island communities are void of unsightly litter, are alive with community events and activities, and there is a considerable amount of public involvement. A long time resident of Hornby explains that the sense of community fostered by recycling has had a slow evolution since the closure of the island's landfill: "people did it kicking and screaming. They didn't do it happily… people just [dumped] whatever, but gradually the community created standards and the people were forced through peer review, through censorship, to comply" (Sue, interview, 2006). Pretty and Ward (2001) describe the informal rules or norms that place group interests above those of individuals as an element of social capital necessary for environmental education. An official with the CRD commented on the social benefits of the Mayne Island recycling operation: "it is something that cannot be measured; it is one of those intangibles… the fact that they have paying members… they have appreciation days and you read the local papers about these social functions, and so that is the evidence

that it does provide a social environment" (Scott, interview, 2006). Without the depots as 'places', the sense of communal purpose fostered amongst residents arguably would not be as intense, as an employee at HIWMC articulates: "if we didn't have the necessity of people coming up here, I don't think we'd have half the whole recycling thing, half the fun of going to the free store, and half the fun of people scoring things" (John, interview, 2006).

Mayne and Hornby recycling depots have nurtured relationships within the communities for the common good. It has been suggested that:

> the more 'community oriented' a society is, the more its members will experience their membership as resembling the life of parts of an organism…. As community orientation grows, so does the sense that the community itself has needs… and meeting these needs may take precedence over the unregulated freedom of individual choice (Peredo & Chrisman, 2006, p. 313).

Embedded social capital has been cultivated through the activity of recycling; this activity has evolved from that of individual choice to communal necessity.

4.3.2 Institutional innovations

The institutional structure of the community-based recycling organizations on Mayne and Hornby is shaped by vertical relations. Vertical networks link the organizations to local government and external agencies within the broader waste management spectrum; extra-community linkages are an important component of bridging social capital. Moulaert and Nussbaumer (2005, p. 2083) suggest

> there is substantial evidence to show that the local community plays an important role in the production of social cohesion, not only at the most local level, but also 'higher up'. The neighbourhood then becomes more than a place of routine activities… but also an arena where humans can express themselves, converse

> or rediscover their identity, their spirit of solidarity, and work on their connectedness with other networks.

Institutional innovation in facing collective demands is an important factor in determining the success of community-based organizations, allowing for progressive partnerships to be formed and environmental policies to be legislated.

4.3.2.1 Institutional partnerships

The recycling organizations on Mayne and Hornby each have partnership arrangements with local government and, while the structure of these contracts provides fair opportunity for all parties involved, it is the communicative aspect of these partnerships that differs. A Hornby resident states that "the Regional District lets us do what we do because we mostly do it best" (Sue, interview, 2006). The continued contractual agreements between local government and the communities is testament to that statement. However, MIRS is positioned in a more cushioned arrangement within the Southern Gulf Island Recycling Coalition compared to Hornby. SGIRC acts as a network of peers from neighbouring small islands who act in unison when bargaining with government. Hornby is situated in the Northern Gulf Island chain and is not isolated in a geographical sense; neighbouring Denman, Quadra and Cortez Islands also operate community-based recycling depots within the RDCS, yet there is no structured network of peers. A degree of openness, trust and transparency exists between the SGIRC and the CRD that is not evident in the relations between Hornby and the RDCS. Members from the Hornby depot expressed skepticism and distrust towards members of the local government, suspecting motivations by government to exert control over local management decisions and eliminate the creative and carefree attitude typical of the depot

atmosphere. The denial of dialogue between the Waste Management department and myself, the researcher, reinforced the communication barriers experienced between Hornby and local government. Brennan and Ackers (2007) have similarly documented the benefits to community-based waste organizations of establishing wider networks of peers. They suggest that such networks and relationships aid the organizations in influencing the development of waste policies (Brennan & Ackers, 2007).

Massoud and El-Fadel (2002) and others (Davoudi, 2000; Schnaiberg, Weinberg, & Pellow, 1997) highlight the typical case where municipalities are wasteful in their use of capital and labour which leads to inefficient performance causing a drain on public budgets. This is reinforced by a Mayne Island depot staff: "The big companies view the municipality as sort of cash cows. They're getting paid with taxpayer's dollars and they figure that those guys aren't quite as tight with their money as private companies would be. And it's not always true, but that's the perception so they try to get what they can out of it" (Jeff, interview, 2006). Partnerships between local government and the small island communities of Mayne and Hornby have been mutually beneficial: providing flexibility and a degree of autonomy to local communities; and guaranteeing cost-effective service provision that otherwise would be a financial burden to government. Similar arrangements have been observed in the community-based waste sector in the U.K. (Luckin & Sharp, 2003).

4.3.2.2 Civic engagement

Civic capacity exists when a community can influence important decisions made by external public and private sector actors, when the community can access

economic and social resources to achieve its own agenda, and when it can also influence the content of the larger social agenda (Saegert, 2006, p. 282). Considering these criteria, the communities of Mayne and Hornby have achieved civic capacity through vertical engagement. However, I will argue that Mayne Island has been more successful in bridging sustained relations with government, industry and other actors in waste management compared to Hornby as relations are less strained between the community waste operation and various levels of government and industry. Hornby seeks greater autonomy and an insular island attitude compared to Mayne's acceptance of a regional network requiring cooperation.

Although members of Hornby Island depot play a key role in depot operations and were integral to the formation of the Coast Waste Management Association, management has shifted and has been less involved in regional issues compared to previous staff. According to one member's perspective, the new management hasn't "stepped out into the big world that much yet" (Sue, interview, 2006). Establishing links with regional industries, organizations and levels of government can offer beneficial returns to the depots by selling materials to niche markets, learning strategies for waste management from other groups, and lobbying for increased measures regulating waste. Members of Mayne Island have been active lobbying government, active in the Solid Waste Advisory Committee, active in organizations such as Recycling Council of BC and Zero Waste Canada. As Short (2001, p. 276) enforces:

> there is also an important role for civic organization to adopt a more metropolitan-wide vision and thus promote a more vertical form of engagement. To extend our sense of community from the local

> municipality to the metropolitan area will allow a wider range of issues to be explored and greater diversity to be encountered. It takes civic engagement away from the local and parochial before it reaches the more distant national citizenship.

Community-level participation is valuable to the functioning of local depots, establishing regional networks for marketing products, sharing resources and information, is essential for the ultimate success of an operation.

4.4 Summary

The research findings suggest operational structures at Mayne and Hornby Island recycling depots result in similar benefits and challenges. The co-management arrangements serve to devolve decision-making and management to the community level while Regional Districts retain responsibility for operational functions. Hornby Island Residents and Ratepayers Association communicates directly with local government to negotiate the contract whereas Mayne Island partners with the Southern Gulf Island Recycling Coalition to negotiate collectively. This latter arrangement adds transparency to the communication resulting in mutual understanding and benefit. While the organizations are considered to be community-based, direct partnerships with local government are an intrinsic aspect of the management structures. In sync with the mandate of community-based management, the organizations retain flexible, integrated approaches by maintaining decentralized governance structures in order to combat local waste management challenges.

Funding for both operations is allocated by local governments, but the funds for Mayne Island are generated through waste management revenue whereas funds for Hornby Island are generated from local taxes. Despite this allotted income, both

operations rely heavily on donations of beverage container bottle deposits and volunteer labour. Voluntarism is evident in both locations which contributes to the feeling of collective ownership, community pride, and social integration. The greatest perceived asset at the depots is the community dynamics fostered there. However, potential challenges to long-term successes include volunteer burn-out and disengagement. A positive ambiance needs to be maintained in order to retain buy-in from volunteers and participants.

The community recycling depots on Mayne and Hornby contribute to the local social economies by providing employment and skills, a venue for positive community engagement, promoting sharing and access to material goods, and stimulating other entrepreneurial opportunities. Part of the ability of the organizations to promote pro-environmental behaviour relies on the social culture cultivated at the depots.

5.0 Resource Recovery and Environmental Education

This chapter highlights the recycling industry in BC, waste generation and disposal trends and waste-related policies on Mayne and Hornby Islands based on empirical data collected in 2006. I was interested in the following question:

- *How is waste reduction achieved at the community-based recycling depots on Mayne and Hornby Islands?*

5.1 Recycling in British Columbia

Collection of recyclable material is only one aspect of a successful resource recovery program. Processing and end markets must exist for materials that are collected. As Guagnano (2001, p. 428) emphasizes, without stable end markets, effective resource recovery cannot take place:

> the supply of recyclables has increased more quickly than the demand for recycled products. The result is a 'glut' of recycled materials which acts to lower the overall price paid for those materials. This makes it increasingly difficult for community based recycling programs to cover the cost of operation even though most members of the community donate recyclable materials with no direct monetary benefit at the household level…. Simply increasing the rate of recycling participation without a corresponding demand for the products made from the recycled material dooms recycling programs to failure.

In Canada, markets for recyclable products have expanded considerably due to demand; however, there is not sufficient demand for certain materials, causing instability in the market which ultimately affects the ability to successfully recover resources at the community level. For example, future stagnation in the newsprint market is anticipated whereas cardboard has experienced the greatest annual growth

in the North American paper recycling industry due to strong Asian interest in North American cardboard (Comox-Strathcona Regional District, 2003, pp. 6-4). This has resulted from a limited European supply. Also, there is an imbalance between processing capacity and end market demand for many recycled plastic resins: PET, much of which is collected through the beverage container deposit refund system, can only be reincorporated into new food and beverage packaging, whereas other recovered plastic products, such as plastic lumber, have not yet found a strong end market in Canada (Comox-Strathcona Regional District, 2003, p. 6).

Several non-profit networks have been established in response to the growing need to link recycling activities from source to end markets. In BC, three organizations have been particularly active in waste management policy development, market establishment, and education: the Coast Waste Management Association, Recycling Council of British Columbia, and the Product Policy Institute.

The Coast Waste Management Association (CWMA) was initiated to address the lack of markets for recyclable materials on Vancouver Island. CWMA consists of approximately 80 members from the private sector, local and regional governments, and non-profit organizations on Vancouver Island, the Gulf Islands, and the Sunshine Coast, BC (Coast Waste Management Association, 2007). Members are involved in diverse activities relating to waste reduction and recycling, extended producer responsibility, waste disposal, environmental education and consulting, deconstruction, and managing solid waste facilities. CWMA offers a forum for the membership to address challenges and opportunities of waste management in the region by facilitating communication, networking, and educational opportunities.

CWMA also supports its members regarding important issues facing the industry by acting as a local industry liaison, lobby group, and by raising public awareness about waste-related issues.

The Recycling Council of British Columbia (RCBC) was founded in 1974 as a non-profit umbrella organization for the numerous community-based recycling operations that had emerged in the province at that time (Recycling Council of British Columbia, 2006). RCBC has since expanded its membership to include recycling industry representatives such as processors, end-users, equipment suppliers and others involved in recycling. RCBC advocates for waste reduction, coordinates market development for recyclable materials, acts as a professional marketing agent for its members, and has established the BC Materials Exchange service. Under contract to the provincial government, RCBC operates a Recycling Hotline to provide accurate information on pollution prevention and waste reduction. RCBC is actively involved in product stewardship and zero waste policy development, developing markets for electronic waste and deconstruction material recovery, and promoting awareness of solid waste avoidance and sustainable approaches to environmental protection.

The Product Policy Institute (PPI) is another non-profit organization developed in 2003 to communicate a framework for product-focused environmental policies that advance sustainable production and consumption and good governance in North America (Product Policy Institute, 2007). The organization's focus on product-policies is to promote the incorporation of environmental and social costs into the price of products.

5.1.1 Waste generation and recycling trends

Detailed information and data on municipal solid waste generation and disposal from communities in BC is largely incomplete. However, the Recycling Council of BC in partnership with the Ministry of Environment compiles available information from Regional Districts in the province in their Municipal Solid Waste Tracking Reports, published semi-annually. It is important to have detailed information on waste generation and disposal to be able to compare community strategies for reducing waste and to evaluate trends over time. Trends in waste reduction vary widely around the province of BC. This variation can be attributed to different waste reduction initiatives, access to markets, resources available, the ability of each District to track disposal, and the tracking methodology used. The trends in BC are evaluated against 1990 rates of generation and disposal.

In 1990, average disposal rates in BC were calculated at 0.879 tonnes per capita. The lowest provincial disposal rate was reached in 1998 at 0.606 tonnes per capita; however, in 2005 the rate has risen to 0.663 (Recycling Council of British Columbia, 2005). Figure 15 outlines provincial waste disposal trends from 1990 to 2005 compared to trends from the Capital and Comox-Strathcona Regional Districts.

RCBC ranks each Regional District according to their disposal rate. The Regional Districts of Powell River, Central Kootany, Central Coast, and Cowichan Valley have consistently had the lowest disposal rates per capita, Powell River reaching as low as 0.225 tonnes per capita in 2005 (Recycling Council of British Columbia, 2005). Regional Districts with consistently high disposal rates include Northern Rockies, Skeena-Queen Charlottes, and Okanagan-Similkameen with rates as high as 1.842 tonnes per capita in 2004 (Recycling Council of British Columbia,

2005). Possible reasons for these provincial trends could be the existence and enforcement of progressive waste management policies, capacity of the communities to provide waste services, environmental awareness of the population, seasonal fluctuations in the population, available processors and markets for recyclable material, financial resources, and political will.

The Capital Regional District ranked 5th out of 27 Districts in the province in 2005 with a disposal rate of 0.452 tonnes per capita (Recycling Council of British Columbia, 2005). Figure 16 outlines the change in per capita disposal rates in the CRD from 1990 to 2005. Waste generation in the CRD has increased from 196,763 tonnes in 1989 to 237,673 tonnes in 2005. The percent diversion of 42% was reached in 1998; however, the value has decreased to 33% in 2005. Based on the 2005 CRD waste composition study at Hartland Landfill (Capital Regional District, 2005), food waste comprises 23% of the waste stream, which is the largest category of disposed refuse; paper comprises 16% of the waste stream, although it is banned from landfill; and plastics comprise 14%, despite most plastics being accepted in curbside recycling pickup. These statistics provide an important baseline against which to compare data from Mayne Island.

Figure 15: British Columbia Per Capita Waste Disposal

(Recycling Council of British Columbia, 2005)

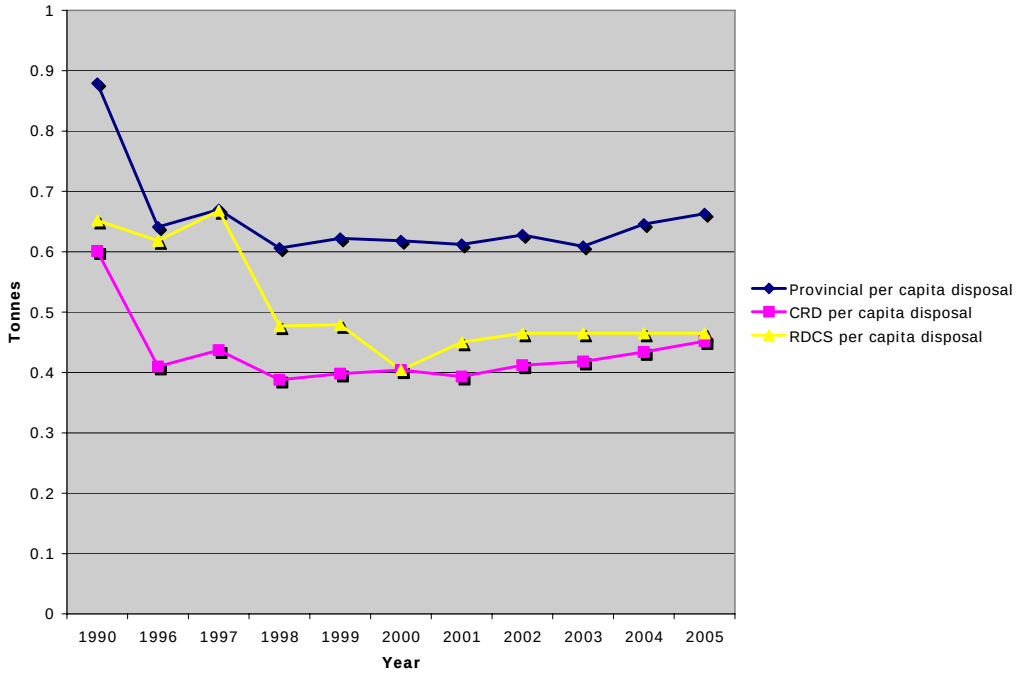
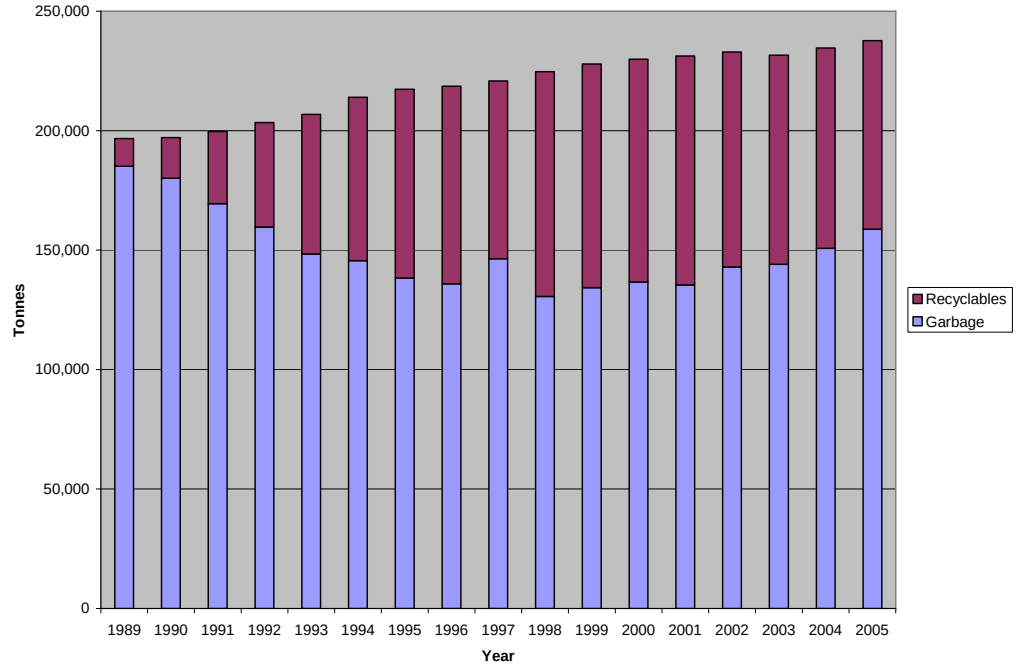


Figure 16: Capital Regional District Refuse Weights 1989-2005

(Capital Regional District, 2005)



Comox-Strathcona ranked 6th out of 27 Regional Districts in the province in 2005 with a disposal rate of 0.465 tonnes per capita (Recycling Council of British Columbia, 2005). However, RDCS did not provide detailed data to the RCBC report; therefore, the rates were estimated by RCBC using a standard calculation outlined in their BC Municipal Solid Waste Tracking Report (2005). The lack of detailed data collection in RDCS is assumed to be due to a lack of resources, either monetary or otherwise (Recycling Council of British Columbia, 2005). Per capita recycling within the RDCS was 0.07 tonnes in 1990 compared to 0.23 tonnes in 2000 (Comox Valley Social Planning Society, 2004). Waste composition in Comox-Strathcona largely consists of organic waste (38%); paper waste (32%) and plastics (13%) (Comox Valley Social Planning Society, 2004).

New approaches to encouraging participation in waste management in the Regional Districts are necessary to increase the amount of waste diverted from landfill: "Although there are a number of recycling options for citizens… many do not use these options, and many are unaware of their options" (Comox Valley Social Planning Society, 2004, p. 72).

5.1.1.1 Waste generation and recycling trends on Mayne Island

Total waste generation (garbage and recyclables) on Mayne Island has increased from 133 tonnes in 1989 to 379 tonnes in 2005. Diversion of recyclables on Mayne Island has increased from 19.5% in 1989 to 42.5% in 2005 (Figure 17). Although the quantity of material recycled has increased, overall refuse has also increased (from 107 tonnes to 218 tonnes). In 2001, Mayne Island had a disposal rate of 0.169 tonnes per capita. Population data was not available for other years so a per capita disposal

trend on Mayne Island cannot be determined. Per capita disposal rates also do not consider the amount of refuse disposed by tourists or short-term visitors.

Figure 17: Mayne Island Refuse Weights 1989-2005

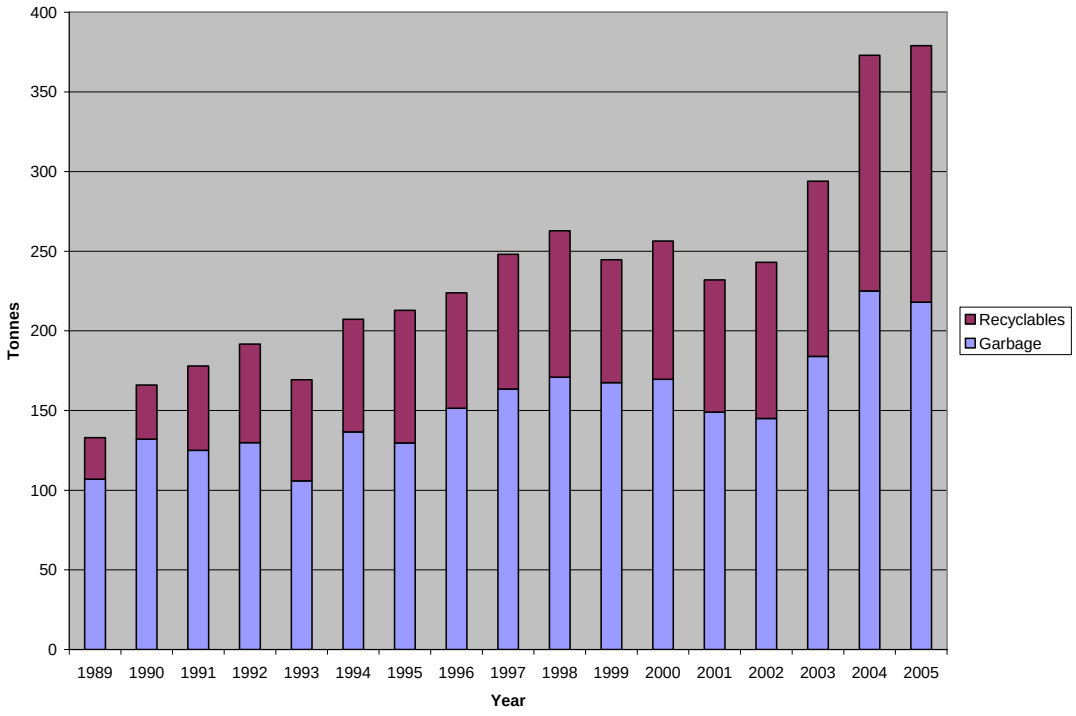
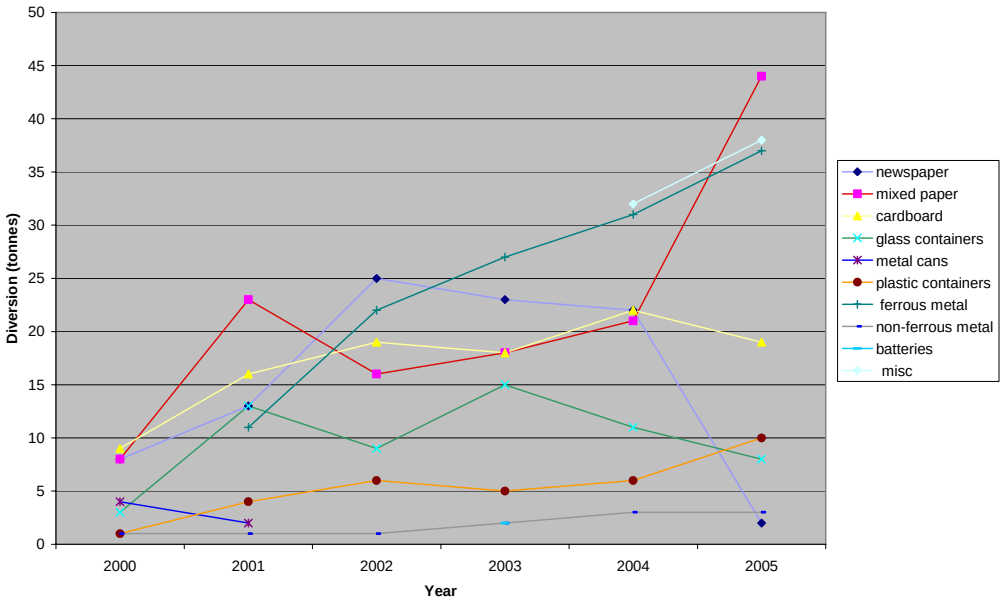


Figure 18 shows Mayne Island diversion by material category for 2000-2005. Quantities of mixed paper products, cardboard, plastic containers, ferrous and non-ferrous metals have increased while quantities of glass have drastically decreased. Newspapers were combined with mixed paper in 2004 due to its decreased value. Participants at the island recycling depots have learned to recognize their duties in relation to the environment by separating their recyclables, as a Mayne Island resident explains: "The fact that we do produce source-separated, either at home hopefully or else at the depot through volunteers sorting the materials, it means we have a very high quality of material that [staff] takes in. And this is appreciated by the processors" (June, focus group, 2006).

Figure 18: Mayne Island Diversion by Material 2000-2005



Despite rates of waste generation increasing on Mayne Island, residents have accomplished recycling levels higher than all Regional Districts in the province. Between 2000 and 2005, diversion of all materials has continued to increase. While these figures do not suggest any significant trends in waste diversion, it aids in understanding the quantity of material handled by staff and volunteers at the depot on an annual basis. These figures do not account for materials reused, re-directed, or material deposited in landfill. However, that rates of resource recovery increase over time and are exceptionally higher than regional or provincial levels suggests that waste management on Mayne Island is effective at encouraging participation in recovery and some level of environmental awareness about the benefits of recycling.

5.1.1.2 Waste generation and recycling trends on Hornby Island

The current disposal rate for Hornby is 0.247 tonnes per capita. However, due to insufficient data, the trend for per capita disposal rates cannot be determined. Furthermore, a comparison can be made between waste generation, diversion and disposal from 1994 compared to 2000 (Table 5). Generation and disposal of waste on Hornby Island has increased significantly between 1994 and 2000 compared to the Regional District as a whole, whereas diversion of waste on Hornby Island through reduction, reuse and recycling has not increased as rapidly. Although the Hornby Island depot does not keep detailed data on refuse and recycling disposal, records show large quantities of newspaper, cardboard, plastics and office paper are diverted from the waste stream. While Hornby Island has experienced significant increases in the amount of waste generated and disposed, diversion rates have consistently been greater than those achieved by the RDCS. In 2001, RCBC granted a merit award to HIWMC for achieving a waste diversion rate of 50%.

Hornby Islanders have achieved levels of resource recovery greater than at regional and provincial levels. While the data presented fails to reveal how Hornby has achieved such recovery rates, the data supports the premise that the organization is successful at raising awareness about the benefits of recycling and encouraging participation in the operation.

Table 5: Hornby Island Refuse Generation 1994 and 2000

Waste Statistics from Hornby Island and RDCS		
Year	**Hornby Island**	**RDCS**
Generation (in tonnes)		
1994	246	33,871
2000	449	35,508
Reduction, Reuse, Recycling (in tonnes)		
1994	88	4,475
2000	210	12,203
Disposal (in tonnes)		
1994	158	29,396
2000	239	23,305
3Rs percent of generation		
1994	36%	13%
2000	47%	34%

5.1.2 Recycling Resources on Mayne and Hornby Islands

Only aluminum and glass were originally accepted for recycling on Mayne and Hornby Islands; however, the depots have since expanded to handle an increasing variety of recyclable and reusable materials including, but not limited to, all items in the CRD and RDCS recycling schemes[15]. The Regional Districts have contracts with local recycling companies who receive material for processing[16]. From May, 2005 through April, 2012, all CRD blue box program material is processed by Metro Waste Paper Recovery Inc. in Victoria, BC. Vancouver Island Recycling processes the majority of blue box material for Comox-Strathcona.

As processors and markets for a broad range of recyclable material become established in BC, small community depots can therefore encourage source separation beyond what is mandated by the Regional Districts. Luckin and Sharp (2003) suggest that community-based depots pioneered source-separated recycling; source-separation

[15] CRD collects: mixed paper, newspaper, cardboard, metal and glass containers, rigid plastic containers and packaging, aluminum cans and foil (Capital Regional District, 2007a).

[16] Processing refers to the methods employed to ready materials for direct shipment to markets, including baling, sorting, boxing and shipping.

can lead to increased market value for materials due to the higher quality. Providing high-quality products is necessary to gain maximum profit since price volatility is frequently experienced with recycled materials (Stromberg, 2004). Table 6 details the materials accepted for recycling at Hornby and Mayne Island depots, the processing companies, and the applicable policies guiding waste management.

Table 6: Recyclable Materials

Material	Accepted	Processor / Market	Policy
Rigid Plastics (#1,2,4,5 and 7)	Hornby Mayne	Syntal Products Merlin Plastics Metro Waste Vancouver Island Recycling	RDCS and CRD Recycling Bylaws
Styrofoam (#6)	NA	Break Down Recycle	No policy
Polyvinal chloride (#3)	NA	No processor	No policy
Soft Plastics	Hornby Mayne	Break Down Recycle Pacific Mobile Depot	No policy
Beverage containers (excluding milk, milk substitutes, infant formula and meal replacements)	Hornby Mayne (no deposit refunded)	Encorp Pacific Liquor Distribution Branch Brewers Distributors Ltd.	Beverage Container Stewardship Program of the Recycling Regulation
Milk and milk substitute containers	Mayne	Metro Waste Encorp Pacific	No Policy
Metal	Hornby Mayne	Budget Steel	RDCS and CRD Recycling Bylaws
White goods (appliances)	Hornby Mayne	Nanaimo Recycling Exchange Budget Steel	RDCS and CRD Recycling Bylaws
Electronics	Hornby Mayne	Break Down Recycle Compu-Cycle Nanaimo Recycling Exchange Pacific Mobile Depot	Policy forthcoming August, 2007 (BC Recycling Regulation)
Household hazardous waste	Hornby	Product Care	BC Recycling Regulation
Compost (food waste)	Hornby	On site compost barrel On site composting toilet	No policy
Compost (garden waste)	NA	Hartland Landfill compost yard Pigeon Lake Landfill compost residential	CRD Recycling Bylaw (effective June, 2006)
Reusable material (clothes, books, furniture etc.)	Hornby Mayne	Hornby Island Freestore Mayne Island Thrift Shop Mayne Island Book Store	Provincial “no-scavenging” bylaw
Paper	Hornby Mayne	Metro Waste Vancouver Island Recycling	RDCS and CRD Recycling Bylaws
Glass	Hornby Mayne	Used locally as clean fill	RDCS and CRD Recycling Bylaws

Small-scale operations, such as Break Down Recycle and Pacific Mobile Depot, among others, have established a niche for the processing of recyclable products.

Mayne and Hornby Islands support these small enterprizes by collecting a diverse range of source separated material for recycling. Despite the diversity of materials accepted for recycling, Figure 19 outlines additional products that should be incorporated into the recycling programs according to combined survey responses from Mayne and Hornby Islands.

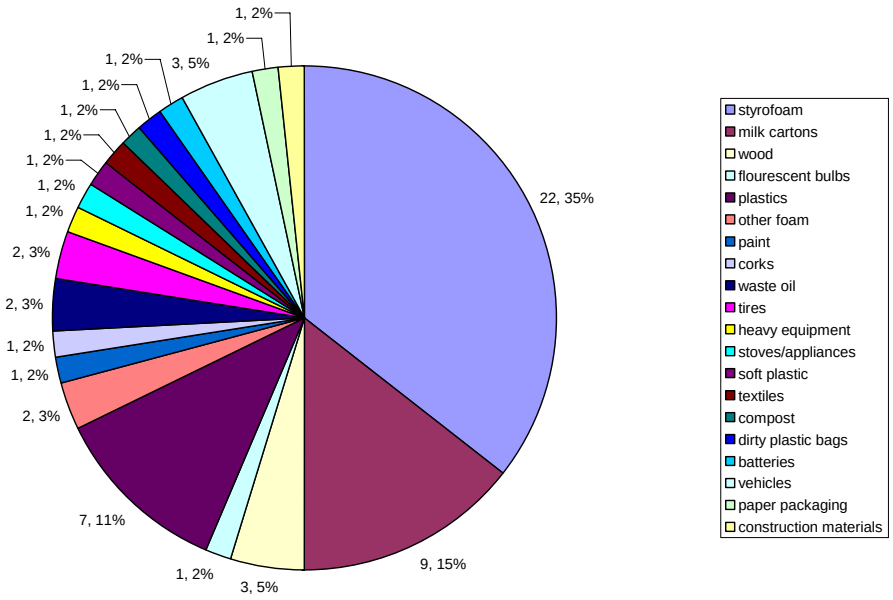
Mayne and Hornby have actively promoted the extension of the beverage container legislation to include all beverage containers, including milk and milk substitutes. Due to powerful lobbying by the Dairy Industry, milk has not been included in the deposit legislation to date: "It's a very strong lobby; the dairy industry is very strong" (Scott, interview, 2006). A recent agreement between the BC Dairy Producers and Encorp Pacific has allowed milk containers to be voluntarily returned to Encorp Depots for processing; however, no deposit refund incentive has been applied at this time. The milk containers will be taken to Metro for processing, as is currently the case with similar beverage container material; however, as one District employee suggests: "They should make it simple for the consumer. Everything that comes in a beverage container, regardless of what it contains, should be in the deposit system. That's our position" (Scott, interview, 2006). 15% (9/62) of combined survey responses felt that milk cartons should be recyclable. When asked what could be improved at the depot, a volunteer stated "we need the government to help us for taking back milk cartons and milk products" (Lisa, interview, 2006).

Electronic waste is expected to become managed under Extended Producer Responsibility legislation; however the implementation of the program in BC has experienced some delays. Materials to be accepted in the program will include

televisions, computers, and computer peripherals such as keyboards, monitors and printers. In anticipation, there are an increasing number of enterprizes accepting electronic waste for recycling.

Styrofoam recycling is widely unavailable in BC. As a Hornby staff person highlights, "there's a couple of things that can be recycled but we don't because it's not cost effective, which is kind of silly you know, like Styrofoam" (Mike, interview, 2006). Markets for Styrofoam in BC are currently scarce; however, Pacific Mobile Depot, Nanaimo Recycling Exchange and a company in North Vancouver will accept it for processing. Overwhelmingly, survey respondents felt that Styrofoam should be recyclable (35% or 22/62).

Figure 19: Materials that should be recyclable



The management of household hazardous waste is overseen by Product Care and funded by industry through EPR legislation. Hazardous materials are accepted at Hornby Island depot, although an employee outlined some barriers to handling these

items: "We really need to build a building for our hazardous waste - all the oils and paints, and batteries. It only just takes one silly kid one day, you know, and it could be bad. We've got buckets of old gas, and stuff we don't know what it is. So it would be nice to keep all that stuff in a sealed building that's vented" (Mike, interview, 2006). Mayne Island does not have the capacity to accept household hazardous waste. This material must be taken directly to the recycling facility at Hartland landfill.

Organic waste consistently contributes to a significant percentage of waste composition in landfills. Although the CRD has implemented a ban on yard and garden waste from landfill, few resources have been allocated to providing outlets for composting. It is common, especially in rural areas, for residents to burn bulky organic waste; this practice contributes carbon to the atmosphere and is a wasted resource of nitrogen for the growth of plants and soil. Although Mayne Island Recycling Depot used to operate a chipping service for bulky organic waste, this was done by volunteers and is no longer operating. Food waste is easily composted at the household level. By 2000, the Regional District of Comox-Strathcona had distributed 7,000 backyard compost bins, representing 17% of households in the District (Regional District of Comox-Strathcona, 2002). The CRD also recognizes the need to reduce organic waste disposal and distributes residential compost bins at a charge. On Hornby Island, however, the number of households with backyard compost bins is estimated at 90% (Comox Valley Social Planning Society, 2004).

5.1.2.1 Reusing resources on Mayne and Hornby Islands

Mayne and Hornby Island Depots are unique to most public resource recovery schemes as they offer materials free for reuse. On Hornby, the freestore is extensive; books, clothing, furniture, bicycles, and kitchen items are accepted. On Mayne Island, books are re-directed to the library, clothes are donated to the Thrift Store, and other small items are available on shelves outside the depot.

More survey respondents regularly donate items to the free shelves on Hornby (55% or 28/51) compared to Mayne Island (27.5% or 11/40), possibly because more diversity of items are accepted. More respondents on Hornby (53% 27/51) regularly take from the freestore compared to Mayne Island (32.5% or 13/40), also possibly due to the variety of items available. One Hornby respondent had never donated or taken items and was a male visitor to the island. All Mayne Island respondents had donated to the free shelves, but only 2.5% (1/40) had never taken items.

One survey respondent from Hornby Island noted: "The freestore changes attitudes towards material goods. You see your clothes on someone else. The idea of attachment to stuff is not as strong." The freestore has "improved our quality of life and reduced our dependence on retailers for replacement and repairs and technological upgrading." The freestore allows lower-income groups to access goods without the stigma that is sometimes attached to thrift stores (Weinberg, Pellow, & Schnaiberg, 2000). The freestore concept promotes reuse and reduction by re-circulating items in the community.

Despite the general popularity of the freestore, government has imposed a no-scavenging bylaw that prohibits salvaging of items from the refuse (Capital Regional District, 2007b). At the Hartland Landfill, staff set aside reusable items and allows

certain Thrift Stores to collect the items for resale. Liability issues are a looming issue at the Hornby Island freestore as highlighted in this quote: "the liability issue and the litigious nature of society is what is going to hurt us. That is the single most, the biggest threat to our sustainability is public liability and nobody wanting to let people walk around a scrap yard and actually salvage stuff and do some good that way" (Sue, interview, 2006). The liability issue is explained by a member of local government:

> And the reason we don't allow the public in is because of liabilities. If they take something and they injure themselves then the CRD will be liable. And with deep pockets, we would be forever in court trying to defend some of these allegations. So these non-profit organizations, they already have an infrastructure in place and they have liability insurance so they are covered and they cover us when they are in the landfill dragging out material. They collect the material on an 'as-is where-is' basis (Scott, interview, 2006).

The ability to access reusable materials free of charge is fundamental for converting waste into resources. The tendency to restrict access to reusable items or to make such materials available only through thrift stores for a cost reinforces the negative stigma towards waste (Weinberg, Pellow, & Schnaiberg, 2000). The act of distributing and receiving items by sharing differs from traditional economic exchanges and the act of gift giving, which is more similar to a commodity exchange in that it is based on reciprocity - the gift cycle is driven by societal obligations to give, receive, and reciprocate (Belk, 2007). Belk (2007) proposes that sharing goods has environmental benefit, by pooling resources, and social benefits, by building relationships. From the perspective of common property research, the notion of entitlement to open access resources is centrally concerned with the problem of

inequality, and with the ways in which formal and informal rules create and reinforce unequal access to common pool resources (Johnson, 2004). Making freely available the excessive amount of reusable items currently destined for landfill is a strategy exemplified on Hornby Island especially that has evident social and environmental benefits.

5.1.3 Summary

Hornby and Mayne Islands have accomplished significant reductions in waste generation and disposal through their community-based recycling program. Of particular importance are the free stores and their contribution to waste diversion through reuse. The volume of material diverted for reuse is not accounted for in statistics. Despite this, the rates of waste diversion on both islands are consistently and considerably less than the majority of communities in British Columbia. Progressive policies for product stewardship, diverse market opportunities for recyclable materials, and acceptance of a wide range of products at a convenient location are reasons why these island communities have achieved such outstanding degrees of waste reduction.

5.2 Participation in Resource Recovery: environmental education

Environmental education is an important component of community-based resource recovery on Mayne and Hornby Islands. Education about waste reduction is achieved through active public participation in source separation of material at the

depots. Further environmental awareness is promoted through the experience of volunteering and engaging in management decisions.

On Mayne Island, monthly articles on waste reduction and recycling are written by volunteers and published in the local magazine, *The Mayneliner*. Educational brochures on composting, hazardous waste, extended producer responsibility and waste reduction are available at the depot. Mayne Island Recycling Society participates in community events such as the annual Fall Fair to promote waste reduction on the island. MIRS was instrumental in establishing a library of used books which has been developed into an official Community Library on the island. MIRS also works closely with the Agricultural Society Thrift Store by accepting used clothing and donating it to the store.

In the past, MIRS has employed an educational coordinator who established a composting demonstration centre, rainwater collection and gardens at the depot. The education coordinator worked closely with students in implementing a school garden and composting program. Currently, there is no hired educational coordinator due to lack of funding:

> They have to have active encouragement. And if we don't have someone that we're paying, I don't think we've ever had anyone who has really volunteered to do it, if we don't have a paid coordinator for the school, it falls off drastically. And they generate an awful lot of paper and a lot of compostable garbage too. We had all sorts of programs there at the school and they'd go for a year or two heavily subsidized and we'd hope that they'd sort of sustain themselves but they never have. It has been very discouraging (June, focus group, 2006).

There are currently no funds allocated from the CRD towards environmental education at Mayne Island Depot. Other strategies for environmental education have been considered, but not always deemed appropriate, as one MIRS member explains:

> This is one of the drawbacks of being in a small community, you hear about people taking green buying groups around grocery stores and I thought about that a few times and I don't think I could face the amount of hostility. So this is where you can do something like that in a bigger community where it's pretty impersonal (June, focus group, 2006).

Hornby Island Waste Management Centre continues to promote education and awareness of waste reduction, as one member explains:

> That's the whole question: *what happens to this*? Because people need to realize that even though you go to the depot and you drop off your batteries, there's no bunch of gremlins going to take them apart to sort this here and this there, right. So, where does it go? So, the big thing is reduction and that always needs to be the message that goes out of the depot (Sue, interview, 2006).

A composting barrel, composting toilet, drought tolerant gardens, rainwater collection system and free store all serve to educate visitors about waste reduction options. When justifying the expenses for the composting toilet project, the Chair of the Recycling Committee suggested: "Education is commonly considered to be the number one consideration when discussing reduce/reuse/recycle. The facility will educate and stimulate the recycling imagination of the general public in a way that is practical, effective, economical in a material sense, artistic, and whimsical" (Hornby Island Residents and Ratepayers Association, 2006b). The Hornby Island Waste Management Centre has also participated in several art exhibitions and fashion shows promoting the use of recycled materials. Two video documentaries have highlighted

the unique approach to environmental education on Hornby Island (Devost, 1996, 2006). Salvaging reusable materials has become a way of life on Hornby Island and many residents come to the depot to collect building materials, furniture, used clothing, and anything that might suit their needs.

5.2.1 Participation Trends

The majority of respondents from Mayne and Hornby Island Depots were females, 45-63 years of age (Figure 2). Steel (1996) also suggests that women are more willing to engage in recycling activities. In a study of public opinion and environmental action in BC, middle-aged women were determined to be more concerned than men or younger women about environmental problems in their communities and globally; women were also more likely to engage in green consumer activities (Blake, Guppy & Urmetzer, 1997).

More seasonal visitors are practicing waste reduction on Hornby Island compared to Mayne Island (82.5% or 33/40 of Mayne Island and 53% or 27/51 of Hornby Island respondents were full-time residents). This may be due to greater publicity, awareness, and/or willingness to recycle on Hornby Island. Vancouver Island and BC Lower Mainland residents had much higher levels of concerns for the environment and green consumerism than in the rest of the province. This could be due to the extensive availability of recycling facilities in these areas (Blake, Guppy & Urmetzer, 1997). Solid waste is generally produced in a much larger volume by tourists than by local residents (Ghina, 2003). Pantin (1999) suggests that tourists staying in hotels generate twice as much solid waste as residents. In the tourist city Malé, capital of the Maldives, per capita waste generation is 2.48 kg per capita compared to 0.66kg in

the rural atolls (Ghina, 2003); here, waste is sent to landfill on a neighbouring island, posing threats to groundwater, mangrove, coral reef and the ocean. In many island situations, waste is often disposed of in beach and ocean environments; or else, waste that is deposited of off-shore eventually drifts to nearby islands and becomes a problem for that island. Despite efforts by rural island communities to combat environmental impacts of improper waste disposal, islands are susceptible to negative environmental impacts resulting from improper disposal at the regional level.

It was determined that most residents visit the depots on a weekly basis (Figure 3). This could be due to lack of storage space or convenience of transportation. Only one (1/51 or 2%) Hornby respondent was visiting for the first time. The average travel distance to the depots was determined to be 2-5 kilometers and the most common mode of transport was by vehicle (Figure 3). Vehicle transport to depots is the most common method probably due to ease of carrying materials to be dropped off on site. On Hornby Island, more diverse modes of transportation were noted, including bicycling, walking and hitchhiking. According to survey responses, it was popular for respondents to combine travel to the depots with other errands. Based on these results, it can be determined that depots are best situated in a central location and within 5 kilometers of residences. Steel (1996, p. 29) suggests that "the best predictors of recycling behavior are structural variables such as accessibility and ease of use. Those people with nearby recycling centres or curbside recycling services are much more likely to recycle than those without such services available or nearby." As a Hornby staff member explains, compared to residential pickup services the depot system is financially efficient: "you can imagine how much money it costs to

run curbside recycling pickup with a big truck and all that. I mean it must be significant" (John, interview, 2006). A government official supports the depot system:

> The depot system is more appropriate for rural settings and the benefits of the depot is the cost, less impact on the environment with regards to emissions from vehicles and the noise and all of that, and it also provides the social environment for the people in the community to interact… [depots] will continue to play a very important role for the small communities, isolated communities, rural communities; it's the only way to go is the depot system (Scott, interview, 2006).

Eighteen percent (13/72) of total combined responses suggested practical issues were barriers to successful community recycling programs (Figure 8, Figure 13). Location and access were the main concerns noted, specifically due to the island nature, transportation off island and for elderly people. Lack of convenient and organized storage space for recyclables was also noted as a practical barrier. The lack of waste's aesthetic appeal was mentioned by one respondent as well. Ten percent (11/112) of total combined responses noted practical issues as assets (Figure 8, Figure 13). The most common practical asset identified was the convenience of the depots including location and hours of operation. Physical assets of the land, building and equipment were also mentioned. The organization and diversity of items accepted were each noted as assets. Similarly, in a study of non-recyclers in the United Kingdom, McDonald and Oates (2003) found that barriers to participation included: effort and convenience, information and knowledge of recycling, context of community and social norms, and incentives. Gilg and Barr (2005, p. 595) outline a spectrum of environmental actions where "voluntary take up is cheaper and more likely to gain widespread public support than more draconian systems." Practical

aspects of the recycling depots were considered by respondents on Mayne and Hornby Islands, however responses in this category were more infrequent suggesting the issues had less importance to the overall functioning of the depots compared to other factors. That visitors frequented the depot regularly suggests the need for convenient hours and an accessible location in order to facilitate ease of use. Levels of commitment to recycling, however, require more than situational considerations.

Environmentally conscious consumer behaviour of respondents was targeted in the survey. Sixty seven point five percent (27/40) from Mayne and 63% (32/51) from Hornby regularly or always feel that concerns over waste disposal influence their consumer choices. Slightly fewer (40% or 16/40 from Mayne and 41% or 21/51 from Hornby) regularly or always avoid purchasing products in packaging when possible. Thirty nine percent (20/51) Hornby respondents sometimes avoid and 8% (4/51) never avoid buying products in packaging. Seventy five percent (3/4) of the respondents who never avoid purchasing products in packaging were visitors to Hornby Island. These figures suggest that environmentally conscious consumer practices are engrained in the recycling ethic of depot users. It is those new to the islands that do not typically practice extensive waste reduction. As one resident states: "everybody buys into it because everybody has garbage… the more you have to sort your garbage at the recycle centre, the more conscious you are at home. Everything gets washed and put here, and the more you handle it, the more conscious you are when you go and buy stuff" (Barbara, focus group, 2006). Thirty seven point five percent (15/40) Mayne Island respondents sometimes avoid purchasing products in recycling and 9/40 (22.5%) did not respond to the question.

Hartwick (2000, p. 1178) emphasizes that political activism includes "a critique of consumption founded on geographical detective work obtaining information highlighting the connections between producers and consumers." Although several authors (Barr, Gilg, & Ford, 2001; Ebreo & Vining, 2001; Tonglet, 2004) highlight that recycling activities are more familiar to the general public compared to environmentally conscious consumer behaviour, that environmentally conscious consumerism is evident on Mayne and Hornby Islands suggests environmental education has resulted in active engagement in waste reduction practices beyond recycling. As BC has the highest density of environmental activist organizations in Canada (Blake, Guppy & Urmetzer, 1997), social pressures encourage the practice of reducing waste. As social structures in small island communities are intimate, norms encouraging environmental education can positively reinforce the behaviour.

Of the combined responses from Mayne and Hornby, the largest perceived barrier to participation was lack of education and awareness (47% or 34/72) (Figures 8 & 13). Responses specific to education included lack of knowledge of how and why to recycle, available information on recycling, informative signage, consistency in volunteers, and training for families and tourists (20/34 responses or 59%). Also coded in the category of education was that of attitude (14/34 responses or 41%). Perceived barriers to participation in recycling due to attitude included ignorance, apathy, indolence, indifference, and laziness. These responses reiterate the ongoing need for experiential education as a solely information-oriented approach is not sufficient in triggering active engagement by citizens. On the islands, the high influx of tourists and seasonal visitors creates an added challenge for education as resource

recovery must be promoted to these visitors over only a short timeframe. Creative pursuits to encourage participation include promoting the depots as social centres and places of activity.

Ten percent (11/112) of the perceived assets of the community recycling depots included the component of experiential education or 'learning by doing' and positive role models (staff and volunteers) (Figures 8 & 13). As one staff member explains: "our focus is always about education, education, education because we're dealing with more materials than we could afford to deal with without the volunteers. So if we don't have people educated, what we do is up the amount of effort that goes into the equation" (Jeff, focus group, 2006). As Pike et al. (2003) explain, all education should be interdisciplinary to highlight the links and promote sustainability. In their study of campus recycling, the authors concluded that educational awareness campaigns combined with practical and convenient infrastructure encourages recycling behaviour (Pike et al., 2003).

5.2.2 Summary

The promotion of environmental education at the Hornby and Mayne Island recycling depots has contributed to high levels of public participation in waste reduction activities (reduce, reuse and recycling) and waste minimization behaviour (environmentally conscious consumerism) compared to regional and provincial levels. The largest perceived barrier to more effective waste management was perceived to be further education and awareness. As few tourists participate in waste management, particularly on Mayne Island, the educational component could more effectively focus on this cohort. An incentive to participate includes the ease of

accessibility of the drop-off depot. As the majority use the depot on a weekly basis, it is important to have a convenient location for ease of access. The interactive educational experience of participating in resource recovery is part of the success of the Hornby Island Waste Management Centre. Lack of this type of education in the local school systems was an issue raised as a barrier. Continuing to provide volunteers with a fun environment to work in is imperative in maintaining their support. By encouraging volunteers to be knowledgeable themselves, awareness of environmental benefits of resource recovery is indirectly encouraged.

Employment of the theoretical framework has allowed for the data to be analyzed in relation to the literatures on environmental education, community-building and social economy. These pillars provide a context where the assets and barriers to community-based waste management can be interpreted. Purely quantitative or economic analysis of these operations would neglect to highlight the robust social component involved with stimulating environmental awareness, pro-environmental behaviour and an alternative economic model. The premise of community-based management is local-level control and the development of networks and partnership arrangements. Hornby and Mayne have succeeded in establishing secure governance structures in light of financial and practical concerns. Community dynamics and environmental education were determined to play significant roles in influencing resource recovery rates whereas the economic structure was considered to be a valuable component as it maintained local ownership.

6.0 Conclusion: Towards Zero Waste Communities

As consumption and the generation of waste continue to increase, there is an urgency to find strategies that promote the sustainable management of waste resources. Developing waste management solutions for rural island communities is especially imperative given their increased susceptibility to environmental damage. Community-based recycling on Mayne and Hornby Islands provides several important insights into waste management strategies for island communities, rural regions, and generally for all populations. This concluding chapter will summarize the key research findings in the context of the theoretical framework, propose innovative solutions for waste management, discuss policy implications and make suggestions for further research.

6.1 Key research findings

The purpose of this research was to determine the assets and barriers to achieving waste reduction on Hornby and Mayne Islands and how community-based waste management can contribute to waste reduction. To examine these issues, a theoretical framework was devised from the literature to investigate political and economic partnerships as co-management arrangements, citizen engagement and participation in recycling, and how waste reduction at the depots is achieved. It was important to consider the political structure of the community-based organizations to determine how they function within the social economy. Levels of participation and engagement in resource recovery implicated social relations and networks that contribute to establishing social capital. Through the analysis of waste statistics, participation rates and modes of environmental education, strategies for waste

reduction became evident. The theoretical framework drew from the three pillars of social economy, community building and environmental education.

6.1.1 Waste management in the social economy

The community-based organizations that manage waste on Mayne and Hornby Islands are situated in the local social economy. The motivation of non-profit organizations is clearly different from for-profit waste service providers, as the goal is not solely economic gain. The success of the non-profit depots is determined by benefits to the communities such as waste reduction, environmental awareness, community pride, participation and local control.

The structure of the co-management arrangements between the community groups and local governments is effective in that it allows some operational decisions to be made by members of the local community. This way, decision-making is accountable, transparent and participatory, allowing for local-scale modifications and adopting local expertise. Networks, such as the Southern Gulf Island Recycling Coalition (SGIRC), are effective at supporting the efforts of several small communities to negotiate contracts with government, exchange information and experiences, and share resources. The ethic of cooperation and sharing among members of SGIRC is another example of how community-based organizations function towards common goals rather than compete independently for resources. Broader networks, such as the Recycling Council of British Columbia and the Product Policy Institute, function in the third sector as umbrella groups for smaller community-based organizations. These groups share information and experiences on a regional and provincial scale and liaise with government for the purpose of ensuring

common benefits to communities. Mayne Island has especially benefited from bridging networks through these regional organizations.

The co-management structure between the Hornby Island Residents and Ratepayers Association (HIRRA) and the Regional District of Comox-Strathcona (RDCS) lacks some of the regional linkages that are experienced by MIRS. The result is a less transparent relationship between HIRRA and RDCS. Negotiating as an individual operation rather than as a network of small island communities has led to misunderstandings between HIRRA and RDCS, such as over the "Spiffy Biffy" and depot upgrades.

Funding from local governments is imperative for the successful operation of local depots. These funds are a contributing factor to the success of local resource recovery on the small islands. Government acknowledges that they could not provide the services in a more cost-effective fashion. A reason for this is the reliance on volunteers and donations to the operations. Because they are community-run, residents are more likely to contribute and donate to the cause. This reciprocal exchange again supports the role of social economy in the successful functioning of these depots.

Competing in a market economy can be challenging for small-scale operators. The Solid Waste Advisory Committee and the Coast Waste Management Association oversee the local recycling industry and markets to ensure compatibility for all stakeholder groups. These networks serve to link the interests of community groups, government, and the waste industry. The result is a platform for voices to be heard, ideas shared, and challenges overcome. Key challenges for small island recycling

depots include the varying price of materials and lack of markets for some items due to lack of storage space and transportation costs. These challenges are also problematic for small-scale recycling industries as it is more difficult to compete due to economies of scale. The ability of communities to divert waste through recycling is negatively affected when industry determines it is not cost-effective to recycle a certain material. A problem faced by small island depots is that, although a diversity of materials are collected for recycling, markets fluctuate and may not provide the cost-benefit to recover the cost of transportation and handling.

The structure of community-based organizations on Mayne and Hornby Islands offer institutional designs within which different forms of participation and community development can be practiced compared to traditional economic structures. Although community-based recycling organizations are not commonly perceived in the social economy, Smith (2005, p. 279) suggests "The common interest that is fundamental to the ethos of social economy organizations is fertile ground for the recognition of a principle of respect for the environment." Clearly, the emphasis each depot places on education and waste reduction has fostered a general respect for the environment. The development of environmental ethics can lead to the recognition of duties in relation to the environment, development of critical and political skills, and realization of the virtue of environmental justice (Smith, 2005). The majority of social economy organizations view themselves as primarily engaged in meeting social needs, and "it should be axiomatic that an enterprise which has a social purpose will have a clear positive environmental policy, for to be environmentally irresponsible is to be socially irresponsible" (Smith, 2005, p. 279).

Community-based recycling depots encompass environmental aspects in their mandate, placing them in a position to challenge other social economy organizations to become more focused on sustainability.

6.1.2 Building communities through recycling

Progress towards sustainable waste management has been achieved on Mayne and Hornby Islands due to the communities' efforts to establish social norms that promote resource recovery and initiate the process of social capital building (Evans and Syrett, 2007). As Goldenberg (2004, p. 2) reinforces, "community-based organizations – with the tremendous human resources that they can mobilize, both through volunteers and paid professional staff – can play an important role in fostering this 'social learning' and providing a context and venue for innovation." Communal ownership of the depots has instilled a sense of pride in residents, triggering motivation to contribute to the common good through participation in waste management, voluntarism, and community leadership.

The most commonly perceived benefit of the community depots is community dynamics, or the feelings of social cohesion, cooperation, connectedness, and mutual benefit. Physically the depots provide a communal meeting place and socially the depots facilitate meaningful interaction and communication. The organizational structure of the depots is such that participation in resource recovery and engagement in decision-making is encouraged. However, the negative aspects associated with social dynamics as expressed in this research are related to contrasts between residents and tourists, wealthy and poor. These social tensions manifest as different practices of consumption and disposal between depot-goers and 'others'; this point

asserts how social norms are built through active engagement in resource recovery at the depots.

The community-based depots offer employment, skills enhancement and stimulate other entrepreneurial opportunities based on an ethic of recycling. Small island communities have challenging economic environments, so any avenue for personal development or employment is an asset. However, common barriers to both Mayne and Hornby depots include the lack of additional time, effort, and funding to pursue innovative ideas for the advancement of the operations. In both locations, volunteers explore creative pursuits, as funding does not allow for that flexibility. Depot staff are concerned about the potential for volunteers to be overburdened, resulting in disengagement. The challenge is to create a stimulating environment that attracts and retains volunteers, provides stable employment, and that has the flexibility to pursue creative ventures.

Providing access to reusable material items is a significant contribution towards waste reduction on the islands. Not only does the free exchange of goods provide those in need with necessary material resources, it also promotes sharing and equality. A major problem with expanding the free exchange of items is liability: identity theft and physical harm are the main concerns expressed by government. Another problem with community organizations facilitating the free exchange of goods is responsibility. By managing and reusing goods, well-intentioned community groups ultimately take responsibility for these items away from manufacturers. The idea of zero waste proposes that industry take responsibility for recycling their products so that no materials are unnecessarily wasted. Until this legislation is widespread,

community groups on Mayne and Hornby will continue to provide a great service by diverting incalculable amounts of reusable goods from the waste stream.

6.1.3 Experiential environmental education through recycling

Waste management authorities in North America attempt to educate citizens about waste reduction but the result has been no significant change in consumer behaviour or recycling actions. Even though per capita waste generation on Mayne and Hornby Islands is drastically below the provincial average, the rates continue to increase. This is despite great efforts on both islands to promote recycling and environmentally conscious consumer behaviour through publications, functional artistic installations, public awareness campaigns and events. However, it is evident that these efforts have been effective in instilling an ethic of recycling behaviour in the local population. The act of visiting the depots and participating in separating materials for recycling offers an educational experience. For example, the "Spiffy Biffy" composting toilet project has provided an educational lesson as this Hornby residents purports: "the philosophical tenant on [the composting toilet] is: we need to learn to deal with our own shit" (Sue, interview, 2006). That the depots offer a central location for recycling allows for ease of participation and commitment to the activity. Locating depots in central locations is possible for small island communities but would pose a challenge for sprawling urban regions.

The largest perceived barrier to successful community-based recycling was determined to be education. Participants expressed concerns about non-community members untrained in local resource recovery. Knowing how to source-separate, where materials get shipped, the process of recycling, and material conversion is a

complicated process that changes continuously. Separating materials on a household level contributes to providing a cleaner and higher value product in the recycling market. Understanding where policies are lacking can empower residents to engage in lobbying for more suitable regulations. Finally, in order to be educated about effective resource recovery strategies, it is important to keep detailed records of waste generation, diversion, disposal and reuse. The CRD and MIRS have been more proactive in this regard, and the historical data can serve to raise awareness of trends and assist in finding local solutions. Although funding for environmental education is limited for Hornby and Mayne Islands and for communities regionally, the value of experiential education must be realized in order to inculcate environmental stewards who understand the interconnectedness of issues affecting sustainability.

6.2 Innovative solutions

Collection of solid waste on islands continues to be a challenge. Many islands have scattered settlement patterns and challenging topography that make door-to-door waste collection financially prohibitive (Georges, 2006). Many small island communities have experimented with landfills or waste incineration with negative environmental results. How waste associated problems are resolved on small islands "will resonate at a global level because the Earth itself is ultimately an island in space" (Georges, 2006, p. 136). It is imperative to develop local solutions to waste management that address the issues specific to each location. Recommendations for addressing sustainable waste management in small island communities are presented here for consideration.

6.2.1 Supervised drop-off depots

Curbside collection of recyclables is generally proposed to be an effective means of achieving high rates of waste diversion and participation due to its convenience. However, the negative aspects of such a system include cost and vehicle emissions. This view is supported by a member of the CRD waste management: "curbside collection will provide the highest diversion rate, the highest participation… the pros are participation, diversion, convenience. The downside is it's expensive and it also impacts the environment" (Scott, interview, 2006). Contrarily, the supervised drop-off depot systems on Mayne and Hornby Islands have proven to achieve high rates of participation and waste diversion by providing a convenient service.

Valeo et al. (1998) suggest that recycling depots can provide a viable alternative to curbside pick-up provided several factors are considered: availability of land, number of depots, trucks available for pick-up of materials, pick-up frequency, size and number of bins, user awareness and program acceptance. Davila and Chang (2005) also support depots (or material recovery facilities) as viable alternatives to curbside pick-up, even in urban environments.

Mayne and Hornby Islands face similar challenges and continuously struggle to overcome them. On Mayne Island, for example, "their space has been taxed. For the amount, the volume of materials that they push through there and the number of people who use those facilities, they're strapped. They can't store very much capacity – it's in and out" (Scott, interview, 2006). The depots continue to be flexible and adapt to operational challenges; however, practical considerations such as these are key in maintaining a successful operation.

Expanding depots to new locations should be considered as a viable solution to waste management, especially for rural and small island communities. Locating new depots, however, is a challenge. Belton et al. (1994) have noted that depot location does influence public participation; for example, in their study of recycling in Glasgow the average distance traveled by vehicle to a depot was 2.64 kilometers. Other challenges to developing new depots are summarized by a CRD employee: "one of the challenges of expanding the depots or siting the depots is because of the fact that the actual availability of land, because prices, and because the cost of land, because of land-use and zoning issues, and also very important, the NIMBY [Not In My Back Yard]" (Scott, interview, 2006). Convenience and accessibility are key considerations when locating new depots; however, the feasibility for many communities depends largely on available economic resources and social acceptance. The autonomy and sustainability of Mayne and Hornby depots are limited due to their lack of ownership of the depot sites.

It is important to not discount the significance of having staff and volunteers to oversee material sorting, operations, and to offer education to depot participants. Without the 'human element' at depots, it is not possible to gain the valuable social interaction and community dynamics that is so central to island life on Mayne and Hornby. The results from this research assert that depots "will continue to play a very important role for the small communities, isolated communities, rural communities; … the only way to go is the depot system" (Scott, interview, 2006). Un-supervized depots would not offer a viable substitute due to issues of quality control.

6.2.2 Partnerships for co-management

Communities can benefit from establishing partnerships with regional governments for waste management. With increased participation in decision-making at the community scale, opportunities for adapting to local needs and accommodating local knowledge can be realized. Devolved approaches to waste management have existed on Mayne and Hornby Islands since the early 1990s and positive benefits have resulted. The partnership arrangements experienced there reveal increased participation in resource recovery, engagement in decision-making and commitment to community-building. Local participation is an asset that can contribute to waste management by increasing levels of resource recovery, knowledge of environmental issues, and adding transparency to decision-making. Governance structures, such as co-management arrangements, that increase the ability for residents to partake in decision-making can result in positive advancements to waste management; similar conclusions have been recommended by others, including Ahmed and Ali (2004), Davies (2003), Luckin and Sharp (2004), and Petts (2001; Petts, 2003, 2005). Such civic models of participation involve mutual exchanges of information and recognizes local experiences as relevant to effective policy making (Davies, 2003). The co-management structures on Hornby and especially Mayne exemplify models for effective participation in local waste management.

Partnerships between communities can aid in expanding knowledge by sharing experiences, sharing of resources, collaborating and negotiating. Networks can serve to create supportive relationships and increase capacity of organizations through information transfer, collective bargaining and mutual motivation. Alliances of

recycling groups, such as the Recycling Council of British Columbia, can also increase influence on waste policy development and implementation.

Partnerships between local community recycling initiatives creates potential for collective commercialization (Gutberlet, 2007). Such economic partnerships can benefit small communities by increasing capacity to sell quantities of materials and to share resources. While this strategy was deemed not feasible by the participants on Hornby and Mayne Islands, a detailed examination of the potential was not conducted. The possibility for collective commercialization among small island communities is recommended for further research.

6.3 Reflections

This research adopted a case-study approach to conduct an in-depth analysis of two small island community recycling operations. The flexibility and utility of a mixed-methods qualitative research approach, including phenomenology and modified grounded theory, allowed me to explore the diverse perspectives of the participants and interpret their experiences and offered flexibility for data collection. The approach, combined with ethnographic methodology, was valuable as it permitted detailed data collection at a local scale over an extended timeframe. While the research design limited focus to two communities, the ability to compare and contrast two similar cases allowed for an extensive review of local policies, resource recovery, economic models and social relations. A broad-scale analysis of community-based resource recovery would not have allowed for this intensity of detail. However, in any analysis of waste issues, a global perspective is also desirable

as the production, consumption and disposal of waste spans political borders and geographical boundaries.

Drawing from political ecology literature aided this research process as it stresses a tri-pillar approach to environmental policy issues by considering political, economic and social repercussions. Political ecology literature was also useful when considering the challenges surrounding access to waste resources for small-scale community enterprizes. Large corporations in North America predominantly control the waste industry and influence market demand and processing. Therefore, the lens of political ecology allowed for a bigger-picture perspective on local waste management issues.

The study of community-based management struggles with determining a scale of focus. When studying small-scale community-level issues, a local scope is often preferable; however, often a myopic view will detract from the importance of global or inter-community networks. In the cases of Hornby and Mayne Islands, regional and provincial linkages were imperative to local-level operations and global connections should also not be overlooked. At the same time, by restricting the focus to small island communities, definitive boundaries of 'local' could be adopted. By studying two similar island communities, subtle differences could be determined both in operating techniques, political structures, and community dynamics. Community-based management stresses the need for local-level solutions in the face of global challenges.

6.3.1 Utility of Theoretical Framework

The theoretical framework (Figure 1) developed inductively from the data and drawn from the literature is a model that merits further exploration. Too often, the problems associated with waste are considered narrowly within a narrow engineering, economic or resource context only. Analyzing waste independent of social systems excludes a dimension that is inextricably linked to the issue of solid waste. The framework provides an alternative perspective to evaluating successful resource recovery by weighing in the value of social dynamics, experiential environmental education and third sector economic models. The intent is that by studying the implications of waste through a composite framework, new models for resource recovery can be elaborated and disseminated.

The theoretical framework merits expansion to reflect various scales and to further define community groups. The realms of social economy and community-building in the theoretical framework developed for this research intertwined and at times were difficult to discern; however, by incorporating scale into the framework, distinctions between the two theoretical pillars could be made more definite. Vertical relationships (bridging social capital) could be more clearly expressed in relation to political structures, showing the linkages between grass roots non-profit organizations, residents, and local, regional, and provincial governments. Further defining the spectrum of vertical relationships could aid in detecting co-management governance models within the context of social economy. By establishing more distinct vertical scales, efforts to distill meaning about community-building should become more focused on horizontal relationships (bonding social capital), levels of participation and the development of social services for the common good.

The positive impacts from environmental education can be more clearly articulated in a theoretical framework that adopts distinctions in scale. In my case study, impacts such as access and convenience could be explored at the depot level, awareness and behaviour of residents could be explored at the community level, environmental impact of resource recovery highlighted at the regional level, and policy implications being generally a broad concern could be explored at the provincial and national level.

The framework was developed to study co-management approaches to resource recovery in small island communities. Small islands offer a distinct unit of study and present unique challenges in terms of sustainability. The framework also allows for flexibility in the context of rural communities or urban neighbourhoods as, in these cases, various governance models and scales could be supplemented.

6.4 Recommendations for further research

There are numerous issues warranting further research and analysis in order to gain a better understanding of the topic. Firstly, I will discuss policy implications for waste management in Canada before touching on broader repercussions for small island sustainability.

The dominant thrust of waste management in Canada is waste disposal – a focus on methods to conveniently and efficiently alleviate consumers of waste by transporting it to landfills and incinerators. These are superficial solutions that do not address the larger social and environmental implications of rampant consumerism and improper waste disposal. It has only been in the previous decade that governments have touted recycling as a solution to overflowing landfills and associated negative

repercussions of waste. However, recycling has only been adopted so far as it reaps economic gains. Companies have only been successful at recycling materials that are in excess and can be easily transported and processed, such as aluminum, paper and certain plastics. The lucrative nature of certain recyclable materials has created competition for these resources, resulting in the market being engulfed by large companies and excluding local communities' access to the potential gains.

Without widespread Extended Producer Responsibility (EPR) legislation, products will continue to be manufactured in a 'cradle-to-grave' mentality – without consideration for material de-construction and reuse – and financial responsibility for waste management will remain a burden for governments and communities. Indeed, EPR is more simply implemented for single-material products, but the challenge is successfully implementing a cradle-to-cradle model for complex products. Monitoring the linkages from raw resource extraction to material processing to product manufacturing to consumption warrants considerable attention. It is important to map the flow of waste resources from production to consumption to disposal through to recovery in order to highlight the local and global impacts of ramped consumerism. A more thorough analysis of policies for zero waste and product stewardships must also be conducted.

EPR in Canada is a patchwork of provincial regulations and legislation thereby creating inconsistency and public misinformation. Education campaigns have largely failed to convey public understanding of how, what, where, when and why to recycle and fall short of inculcating a passion for resource recovery; also, door-to-door waste collection has been unsuccessful in necessitating the direct engagement of citizens in

waste handling and management. The scope of issues associated with waste are multi-faceted and, without consistent and direct involvement by individuals in resource recovery, awareness will not be achieved. As environmental problems escalate, it is imperative that the role of experiential education in inculcating environmental ethics through recycling is investigated.

Waste must remain a central component to life in any community as keeping it in the public eye fosters awareness of its management, compared to strategies that conceal waste from the public realm (the Not In My Back Yard syndrome). By maintaining waste in the forefront of any community agenda, negative connotations can begin to dissipate. The communities of Hornby and Mayne have embraced waste and it has become positively associated with community spirit on those islands. In order to invite participation in waste management, depots must be sited appropriately. Further research could explore the relationship between depot siting and participation rates in waste recovery, the role of community places in fostering social capital and the impacts of social norms on establishing pro-environmental behaviour.

Comprehensive research on the role of community-based waste organizations in addressing sustainable development has yet to be accomplished. British Columbia hosts a concentration of small island community-based depots; however, the scope of this thesis could not encompass them all. Participatory action research could be conducted that involves a detailed cost-benefit analysis of community depots over time, including an inventory of waste diversion, transport costs, handling, storage, prices received for market sales, with the aim to assess viability of collective commercialization for the community operations. These issues pertain to small island

sustainability globally, and challenges to waste management including remote locations and transportation of materials must be overcome.

A valid assessment of progress towards sustainable waste management is missing from many small island communities. As humanity stresses the earth's ability to support material economies and absorb wastes, progress towards sustainability requires reduced reliance on resources, efficient production processes, reduced consumption and increased rates of recycling and re-use. The result would be less production, consumption, waste disposal, pollution and threats to environmental integrity. Community-based waste management can play a significant role in waste management as social, economic and environmental aspects are valued. The experiences from Hornby and Mayne Islands display many of the essential elements needed for waste reduction, including high levels of environmental education, participation, and social economy models. In small island settings, local control over waste management decision-making should be pursued in partnership with willing local government partners.

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Appendix A: Survey Questions and Consent Form

COMMUNITY RECYCLING SURVEY

You are invited to participate in a study entitled "Community-Based Recycling: evaluating assets and barriers" that is being conducted by Emma Taylor, a Master of Arts student in the Department of Geography at the University of Victoria. You may contact her if you have further questions by email: emtaylor@uvic.ca or phone: (250) 642-1094. You may verify the ethical approval of this study by contacting the Associate Vice-President, Research at the University of Victoria (250) 472-4545.

You are being asked to participate in this research because you are a public user of a community recycling depot. This survey will take approximately 10 minutes of your time and your identity will remain anonymous. Survey data will be kept only until the research is finished, at which point it will be destroyed.

Your participation in completing the survey indicates that you understand the above conditions of participation in this study and that you have had the opportunity to have your questions answered by the researcher. The research will be available to the public through a presentation upon completion. The presentation will be advertised at the recycling depot and will be open to the public.

Please take this sheet for your information.

1. **What is your age category?**

   □ 0-14 □ 15-24 □ 25-34 □ 35-44 □45-64 □65+

2. **Please indicate your gender:**

   □ Male □ Female

3. **Where do you live and how long have you lived there?**
   Please indicate your street name and postal code.

4. **How often do you visit the recycling depot?**

   □ First time □ Weekly □ Monthly □ Annually □ Other_____

5. **What happens to your non-recyclable waste?**

6. **How far did you travel to the recycling depot today?**

   □ Less than 1 km □ 2-5km □ 6-10km □ More than 10km

7. **How do you usually travel to the recycling depot?**

   □ Car/Truck □ Carpool □ Bicycle □ Walk □ Other _____

8. **Did you combine your trip to the recycling depot with other errands today?**

   □ Yes □ No

9. **Characterize the items that you dispose of on average by ranking the material based on the quantities disposed of (1 being the greatest amount and 6 the least):**

   Plastic _____ Cardboard _____ Paper _____ Glass _____
   Metal _____ Tetrapak _____ Other (please describe)_____

10. **Are there items you wish were recycled at the depot but currently are NOT accepted? Please list them.**

11. How frequently do concerns of waste disposal influence your consumption preferences?

□Never □Once □Sometimes □Regularly □Always

12. Do you know the final destination of the recyclables collected from this depot?

13. How often do you avoid buying products in packaging that can NOT be recycled?

□ Never □ Once □ Sometimes □ Regularly □ Always

14. How often do you donate items to the free shelves?

□ Never □ Once □ Sometimes □ Regularly

15. How often do you take items from the free shelves?

□ Never □ Once □ Sometimes □ Regularly

16. How do you participate in local waste management? Check all that apply.

□ Recycling □ Volunteering □ Reusing □ Reducing
□ Community leadership □ Management □ Do not participate
□ Decision-making (please specify) _____ □ Other _____

17. Do you feel your participation is effective at influencing local waste management decision-making?

□ Not at all □ A little □ Somewhat □ Greatly

18. What are the barriers to successful community recycling?

19. What are the assets of the community recycling depot?

20. Would a private recycling business have the same effectiveness as this community initiative? Why or why not?

Thank you for completing this survey on local waste issues. The results of this research will be presented to the public through a presentation which will be advertised at the depot.

Appendix B: Interview Questions

Interview Questions for local government

1. How does the Mayne Island depot compare to other communities in the District in terms of waste generated and recycled?

2. How does the CRD monitor the waste stream from Mayne Island?
   - Are there recent statistics available on the volume and composition?

3. Who are all the stakeholders involved in waste management decision-making for Mayne Island?

4. Could you describe the relationship between the stakeholders?
   - How are decisions made?
   - How is the depot funded?
   - How are conflicts mitigated?
   - How frequent are meetings between CRD and other stakeholders?

5. How would you compare the rates of participation in recycling on Mayne to other communities in the CRD?

6. How would you compare the rate of volunteerism on Mayne to other communities in the CRD?

7. How does the promotion of education/awareness about waste on Mayne compare to other communities?

8. What factors prevent the ability of depots to accept more diversity of products for recycling, such as Styrofoam and milk cartons?

9. What policy changes would have to be made to increase the diversity of recyclable products?

10. Could you comment on informal resource recovery (scavenging) as a component of waste management?

11. Are there policies that encourage or discourage scavenging?

12. Economically, what are the barriers to waste management on islands?

13. Politically, what is unique about waste management on Mayne Island and the Gulf Islands?

14. What could other rural communities learn from the Mayne Island system?

15. Why are there low rates of illegal dumping on Mayne Island compared to Sooke?

16. Has something changed over the past years in terms of waste management in the region? If so, what were the significant differences?

17. What are the greatest strengths of the Mayne Island Recycling Society?

18. What are the greatest barriers to the future of MIRS?

Questions pertaining to Coastal Waste Management Association

1. When and why was CWMA formed?

2. Who are the stakeholders involved in CWMA?

3. What has CWMA accomplished in the field of waste management?

4. Why is an organization such as this important?

5. Do you see community-based recycling initiatives being able to compete in the field of waste management as it becomes more technologically and industrially oriented?

6. What role do community-based recycling depots play in the provincial waste scene?

Interview questions Southern Gulf Islands Recycling Coalition

1. Could you explain what the function of the SGIRC is?

2. Why did the coalition form?

3. When did it form?

4. How much influence does SGIRC have over waste management decision-making?

5. Is it enough influence?

6. How much representation of SGIRC is there in decision-making?

7. How many people are involved in decision-making/ attend meetings?

8. How often are meetings held?

9. Do you think the coalition is effective?

10. Who in the CRD is responsible for waste management on the islands?

11. Could you describe the relationship between the CRD and the coalition?

12. Are there other stakeholders involved in waste management decision-making on the southern gulf islands?

13. How are the islands' recycling depots funded?

14. How are decisions made?

15. Do you think waste management on the islands is effective? Is there enough funding and resources?

16. What are the strengths of the community-based system compared to municipal systems?

17. What could be improved in terms of waste management on the islands?

<u>Questions pertaining to depot operations</u>

1. How many staff are employed at the depot?

2. How many volunteers work at the depot?

3. Are there materials currently NOT accepted at the depot that you think should be?

4. To what degree to residents and tourists participate in reduce, reuse and recycle?

5. Do commercial businesses participate in 3R's?

6. Is there enough funding and resources to operate the depot?

7. What are the strengths of the recycling depot?

8. What are the barriers to waste management on the island?

9. What are the strengths/weaknesses of the community-based system compared to private systems?
10. What could be improved in terms of waste management on the southern gulf islands?

Questions pertaining to management structure

1. How did HIRRA develop into what it is today?
2. How much influence does HIRRA have over local decision-making? Is it enough influence?
3. How many people attend meetings? How often are the meetings?
4. How many people contribute to decisions?
5. How would you describe the sense of community on Hornby?
6. What makes this place unique?
7. What advice would you give to other communities struggling to become more autonomous in decision-making and planning?
8. How would you describe the level of community participation in waste management?
9. What are the assets to community-based waste management?
10. What are the barriers to community-based waste management?
11. Do you know of other similar communal arrangements in terms of waste management?
12. Is there anything you would change in terms of the current arrangement?

Appendix C: Focus Group Questions and Consent Form

Focus Group Participant Consent Form

Emma Taylor
Department of Geography
University of Victoria
PO Box 3050 STN CSC
Victoria, BC
V8W 3P5

You are being invited to participate in a study entitled "**Community-Based Recycling: evaluating assets and barriers**" that is being conducted by Emma Taylor. Emma Taylor is a Master of Arts student in the department of Geography at the University of Victoria and you may contact her if you have further questions by email: emtaylor@uvic.ca or by telephone: (250) 642-1094.

As a graduate student, I am required to conduct research as part of the requirements for a Master of Arts degree in Geography. It is being conducted under the supervision of Dr. Jutta Gutberlet. You may contact my supervisor by email: juttag@uvic.ca or by telephone: (250) 472-4537.

The purpose of this research project is to determine the assets and barriers to achieving capacity for community-based waste management. Research of this type is important because the generation of waste is a threat to environmental and social sustainability. Determining successful strategies of reducing and recycling waste are useful for future policy-making both in this region as well as internationally.

You are being asked to participate in this research because you are a member or volunteer of a community recycling depot. If you agree to voluntarily participate in this research, your participation will include involvement in a focus group discussion which will be video-recorded in order to keep a record of the dialogue and to then be transcribed. There is space at the bottom of this form where you may give your consent for the use of video-recording in the session. The activity will take two hours of your time. The focus group will take place in-person at the Church House on June 22nd at 2:00pm. Participation in this study may cause some inconvenience to you, including a time commitment of two hours. There are no known or anticipated risks to you by participating in this research.

The potential benefits of your participation in this research include involvement in a study that will increase knowledge of community-based waste management, public participation and local governance. The research will be available to the public through a presentation upon completion. The benefits to participants include sharing experiences and knowledge regarding social assets, community and recycling.

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without consequences or explanation. If you do withdraw from the study your data will not be used in the research; however,

due to the nature of a group discussion, key themes from your dialogue would be used only to indicate the flow of conversation. Your contributions to the diagramming session will also be used due to the collaborative aspect of this activity. Transcribed dialogue will be kept under lock only until the research is complete, at which point it will be destroyed.

The diagramming material and video footage will be used at public and academic presentations after the research is complete only if your consent is given for this use. There is space at the bottom of this form where you may give consent for the use of video footage and/or diagramming material from this session.

If you agree to participate in this discussion, you will have the choice to be kept anonymous or not. However, due to the small sample size of the research, it may be possible for others to identify you. An additional limitation to your confidentiality would include the dissemination of the research results via a public presentation in each community.

It is anticipated that the results of this study will be shared with others through the presentation of a thesis as well as at a public presentation in each community involved. Therefore, the video-recordings will NOT be destroyed after use. However, your confidentiality and the confidentiality of the data will be protected in a locked cabinet.

In addition to being able to contact the researcher and academic supervisor at the above phone numbers, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Associate Vice-President, Research at the University of Victoria (250-472-4545).

Your signature below indicates that you understand the above conditions of participation in this study and that you have had the opportunity to have your questions answered by the researchers.

_____	_____	_____
Name of Participant	*Signature*	*Date*

Your signature below indicates that you give consent to the video-recording of this session.

_____	_____	_____
Name of Participant	*Signature*	*Date*

Your signature below indicates that you give consent to the use of video footage and diagramming material from this session in public presentation.

_____	_____	_____
Name of Participant	*Signature*	*Date*

Community Recycling Focus Group Discussion

The focus group discussion is intended to brainstorm what the assets and barriers are to successful community waste management as determined by the participants. Strengths and weaknesses of stakeholder relationships and how the recycling depot contributes to community cohesion will also be discussed. Participants will include depot staff, volunteers, elected government representatives and other related community associations/stakeholders. Up to ten participants will be recruited for this activity. Recruitment will occur through snowballing and an information poster will be erected at each depot. The focus group will be held at the community recycling depot or another determined publicly accessible location in the community. The session should not take more than three hours. Refreshments will be provided.

~ *Please introduce yourself and give a brief description of your role at the depot.*

~ *What are the areas in the community that are significant in terms of waste generation and disposal?*
Indicate on the map areas in the community that are significant in terms of waste generation and disposal.

~ *What are the assets and barriers to a successful community recycling program?*
On the cards provided, indicate assets and barriers to successful community waste management. These can be with regards to government policy, funding, information, knowledge, participation etc. Pin the cards up on the wall under the headings "assets" and "barriers".

~ *What are the strengths and weaknesses of stakeholder relationships?*
Using a diagram indicate how the community recycling depot interacts with various stakeholders (i.e. government, public etc.). Also identify any other stakeholders associated with the depot that might not be represented. Size and proximity of circles can be used to indicate strengths and weaknesses of the relationship.

~ *How does the recycling depot contribute to community?*
How does the community-based recycling depot differ from private or government systems of management? Why would one system be more beneficial?