

Waste system responses to peak tourist visitation periods:

Case study of Barra de Valizas, Uruguay

by

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BSc, University of British Columbia, 2007

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of the Requirements for the Degree of

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Abstract

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Rural communities that depend on tourism for their economic well being, such as Barra de Valizas, Uruguay, rely on their social and ecological integrity to attract tourists to their communities. Peak tourist seasons and associated augmented consumption patterns can saturate the solid waste systems of these tourist destinations. Peak periods of waste production in these communities can lead to the degradation of ecological and social integrity, and can pose the threat of reduced tourist visitation rates and consequent downturns in the local economy. The degradation and worries for the local economy can generate awareness about the implications of increased waste production and can thus be a driver to develop waste reduction and diversion strategies. As part of developing this thesis, I implemented a case study of the waste management system in Barra de Valizas, Uruguay. The condition of interest in this study is communities that are economically dependent on tourism, have a small permanent resident population, experience peak periods of tourist visitation, and have difficulty managing their fluctuating waste system. This case study, founded in Participatory Action Research, identified waste system components and processes and determined some feasible improvements by way of iterative processes of research and action. Seven semi-structured interviews, 54 household structured interviews, four focus groups and community mapping were applied with diverse stakeholders to collaboratively develop and implement waste system improvement strategies. The implementation of these strategies elucidated upon waste system components, processes, linkages and general state. This research demonstrated that permanent residents of Barra de Valizas consume more packaged goods during the tourist season and as such produce, on average, four times more waste during the peak tourist season as compared to the off season. Peak periods of waste production, associated with the peak tourist visitation period, were found to saturate the local waste management

system and weaken local social and ecological integrity. Research participants highlighted awareness building, improved waste containment, and waste diversion as key strategies for reducing this saturation.

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Dedication

A Diego Sburlatti que sigue brillando.

1. Introduction to the problem and relevance of the study

Addressing the consequences of rapid and convoluted change involves being able to characterize a system, to assess resilience, to create a vision for the future and to mobilize scientists and other practitioners in conjunction with the public (Kim & Oki, 2011). These are important considerations for tourism, consumption and waste management, which have similar trends of increased and increasing wastefulness (Patterson, Niccolucci, & Bastianoni, 2006). The small town of Barra de Valizas, Uruguay has quite recently become economically dependent on a yearly three-month tourist season and is having difficulty managing their fluctuating waste system. I implemented a case study in Barra de Valizas through Participatory Action Research (PAR) and aspects of resilience to identify and address concerns related to waste management in this tourism dependent community. The significant components, processes, structures, and feedbacks of the Barra de Valizas waste system were teased out by coupling theory with community-driven practice.

The objectives of this study were to identify, through the voices and perspectives of community members, key waste system components and processes in Barra de Valizas to better understand the observed and desired states, including pathways and roadblocks to achieving those state(s); and to provide reflection on the PAR based approach. Specific research questions were the following: 1) What are the current waste disposal and management practices in Barra de Valizas? 2) How does the peak tourist season change waste disposal and management practices in Barra de Valizas? 3) What is happening within the different components and processes of the waste system to address these changes? and 4) What are the key challenges and opportunities?

In this thesis, I will provide an overview of the thematic context of waste management in tourism dependent communities. I will then introduce the context of tourism development and waste management in Barra de Valizas, Uruguay. Following this I will delve into Participatory Action Research and supporting theories that made up the theoretical framework for this research. I will outline the research design, including approaches for engagement and methods used. The

results of implementing this design will then be overviewed followed by a discussion chapter on how these results tie back into the literature. I will then wrap up with concluding remarks and final considerations.

2. Solid waste and tourism

2.1 Thematic Overview

This chapter broadly overviews literature related to waste and tourism and focuses on applicable arguments for the case study region. I begin by defining what I mean by waste, waste management and waste systems. I then describe key trends in the management of waste systems and, relatedly in the relationships and processes of the waste system components (with a particular focus on waste diversion and individual and institutional behaviour associated with waste). I then briefly highlight the relevant aspects of the evolution and implications of tourism and tourist destinations and conclude the chapter by connecting the relationship between tourism and waste. This chapter overviews literature relating to diverse contexts, and thus includes experiences and concepts from cultural and socio-economic contexts (such as the UK) that differ from the case study context of Barra de Valizas. Waste, for example, is a global issue and ideas and examples presented in this chapter demonstrate the existing diversity in waste management and associated issues. While there are cultural, geographical, and socio-economic differences between the global north and the global south, the contextualized information presented here was chosen purposefully. These experiences and concepts were supportive in understanding the Barra de Valizas context (overviewed in Chapter 3) and providing some insight into possible pathways for research and action.

2.2 The waste system

There is a positive correlation between population growth and waste production (Fehr, 2010). This phenomenon has led to urban landfills needing to be replaced every 16 years and will lead to 6% of global urban land use as landfill by 2080 (Fehr, 2010). Increased urban land used for land filling shrinks the available living area, which implies increased ecological marginalization whereby vulnerable populations will be forced to live in vulnerable landscapes (such as near the landfill or on a flood

plain) (Kousis, 1998). In response to consequences of waste trends such as these, there are many waste components and processes to consider.

For the purposes of this study the solid waste system (hereon referred to as waste system) is constituted of human and non-human components and their relationships and processes. These include, but are not limited to, the following: physical infrastructure (e.g. trucks), laws, solid waste, organizations (e.g. recycling cooperatives), management methods (e.g. recycling or burning), power (e.g. who is affected by and who is making waste related decisions?), community networks (e.g. how are people connected through waste), groundwater (e.g. contamination from leachates) and human behaviour (e.g. high consumption of plastics). These components all interact with and influence one another. For example, increased contamination of groundwater through leachates may stimulate a community environmental network to build their network to leverage power to influence management methods and human behaviour that are leading to organic waste in the landfill because organic waste in the landfill contributes significantly to contamination of groundwater through leachates due to the chemical reaction between non-organic and organic waste in the landfill. Dynamics between components fluctuate, in some cases drastically, with changes such as heightened consumption and waste disposal levels associated with a peak period of tourist visitation.

2.2.1 Contradictory relationships with waste

Waste is defined as being a commodity, as belonging elsewhere, and as having no value (Whitson, 2011). This contradiction of waste having no value, but being a commodity brings out the social inequalities associated with varying relationships with waste (Whitson, 2011) and highlights the complexity of waste management. The popular phrase “one person’s trash is another person’s treasure” exemplifies varying relationships with waste. Whitson (2011) argues that these varying relationships generate social inequality between those who have no want or need for an object and those that want or need that object. For example, in a situation

where one is “chucking” an object in a dirty bin to be sent to the dump and another retrieves that object as a means of livelihood, a stigma of filth and neediness has (in some cases) attached to the retriever. Despite this stigma, the retriever is filling an important environmental protection and resource recovery role.

2.2.2 Waste management within neoliberalism

Bulkeley and Askins (2009) found that with the rise of neoliberalism in the UK in the 1980s came the shift to contract out waste management services. The many debates surrounding neoliberalism are beyond the scope of this paper. Nevertheless, decentralization and the privatization of public responsibilities are central components of the neoliberal “project” (Bulkeley & Askins, 2009; Clay, Gibson & Ward, 2007; Liverman & Vilas, 2006). This shift opens opportunity for restructuring the governance of the resource that is waste. In many cases this implies the contracting of waste services, which can lead to monopolies (Chukwunonye, Fazakerley, & Roberts, 2013). However, the decentralization of the provision of infrastructure, for example, has also driven opportunities for community innovation in waste management such as inclusive waste management. Inclusive waste management has been shown to generate positive spin-offs for economic, social and environmental well being and involves deliberative democracy that aims to eliminate coercion and manipulation from decision-making (Gutberlet, 2008). Inclusive waste management also breaks apart the above-mentioned stigma by creating more opportunities for understanding the reality of the other (Gutberlet, 2014). Dominant ideology drives waste management in a number of directions. There are many other drivers of waste management, which result in diverse trajectories.

2.2.3 Waste Management Drivers

Over time, the concept of waste management in general has shifted from waste being a nuisance that must be thrown “away” from the population by dumping it somewhere else, to the somewhere else being a sanitary landfill, to the possibility of

zero waste¹ (Fehr, 2010). Location, history, and other contextual aspects lead to diverse drivers of waste management; some specific drivers include public health, environmental protection, increasing technical standards, climate change, the resource value of waste (closing the loop to go from waste management to resource management), and heightened awareness related to any combination of these drivers (Wilson, 2007). These diverse drivers result in responses in the waste system, such as the following: reduced consumption in response to scarcity and environmental protection; waste diversion schemes like recycling and composting in response to technological innovation, environmental protection, scarcity and higher values associated with waste; and informal dumping in response to inadequate institutional/ governmental policy (Wilson, 2007).

There are many manifestations worldwide of these drivers and their consequent disposal methods. For example, in the UK it was found that increased environmental awareness, reduced urban land available for landfills, and more stringent policy has led to a shift in municipal solid waste towards increased waste diversion (Bulkeley & Askins, 2009). Other drivers and consequent shifts in waste management may arise with the growing focus on sustainable consumption as a framework for resource management (Clay et al., 2007).

Challenges to achieving sustainable waste management include the following: institutional responsibility issues associated with increased involvement of the private sector, high costs associated with municipal waste systems, inter-municipal cooperation to achieve economies of scale, extending producer responsibility, and designing the appropriate consumer accountability scheme (e.g. landfill taxes, pay-as-you-throw type schemes, and/or public awareness in hopes of behaviour change) (Wilson, 2007). The concept of analyzing products throughout their life cycle (from cradle to cradle or cradle to grave) has extended more responsibility to

¹ As the name suggests, zero waste is a waste and consumption philosophy that fosters the generation of zero landfill waste (Krausz, R., 2012). The philosophy was developed to provide alternative responses to the socio-economic, technical, and environmental tribulations of the globally mounting “throw away society”.

producers for the externalities of their products (Wilson, 2007). Extended producer responsibility (EPP) is based on the premise that producers are liable for damage associated with their products and, as such, are economically and physically responsible for their products (see for example, Palmer & Walls, 1999). Product producers must therefore provide sufficient information pertaining to the life cycles of their products and ensure that they provide the economic and technological means for mitigating their impacts (Roy, 2012). EPP and life cycle analysis have developed into widely accepted ideas that are applied to policy and law around the world, including in Uruguay (discussed below in section 3.5). However, some business is measured solely on an economic level and the economic benefits of some products are high. In these cases where companies with high profit margins render the cost of producer responsibility insignificant, EPP laws and policies do little to change waste production practices.

2.2.4 Reduce, Reuse, Recover value

While waste diversion (away from the landfill and into streams of recovering value and reuse) is not a panacea to issues related to waste, it will support the sustainability process until less waste is created from less consumption (Fehr, 2010). Source separation is considered a key strategy for achieving landfill diversion (Fehr, 2010). Waste diversion activities, like recycling or composting, reduce the environmental, social and economic costs of landfills, costs that are currently on the rise (Mazzanti & Zoboli, 2008), and benefit the economy (Clay et al., 2007).

A divided waste processing model is used to increase differentiation and efficiency of waste streams (Fehr, 2010). Within this model, dry waste is separated from humid waste at the source (e.g., the home) (Fehr, 2010). To recover value, dry waste is recycled (if possible), and humid waste composted. Creating alternative waste streams for biodegradable waste is important because otherwise it "breaks down to create an acidic solution that can leach heavy metals from other wastes, contributing to water pollution...[Biodegradable waste] also decomposes to create methane, a greenhouse gas that contributes to climate change" (Bulkeley & Askins,

2009, pg. 252). Similarly, nitrogen accumulation and mismanagement in landfills have negative environmental implications because they behave as "groundwater contaminants in the form of nitrate; as a surface water contaminant in the form of ammonia; as a component of acid rain; [and] as a contributor to the formation of ground level ozone and smog" (Forkes, 2007, pg. 75). Alternatively, the end result of properly composted organic material is a valuable growing medium (Environmental Canada, 2013). Creating alternative streams for organic, plastic, paper, metal, and glass products is important because these materials can be re-used and/or recycled into new products, thus reducing resource extraction and land filling. Fehr (2010) has seen positive results with creating alternative waste streams in Uberlandia, Brazil. While there is a growing body of literature on waste diversion methods and considerations, operationalizing waste diversion policies and strategies is a situation specific endeavor.

2.2.5 Policy and operations shifts

Regionally differing waste management trends (e.g. availability of waste removal services, consumption patterns, disposal methods ranging from backyard burying to incineration), along with the vision that sustainability in waste management is a process, indicate the need for situation-based management strategies that include realistic targets (Dahlen, Aberg, Lagerkvist & Berg, 2009; Fehr, 2010). Transformation in waste management is a process. Developing innovative technologies for waste processing and reuse, encouraging alternative waste streams (like composting or recycling), and promoting responsible consumption seem appropriate responses within the current neoliberal economic growth model. For example, going from informal dumping to zero waste may not be an option. As such, there may be a number of intermediate targets that support adaptation to changing waste system dynamics. For example, recycling can act as an intermediate target in reaching an end goal such as zero waste (Fehr, 2010). Cohesive management that stems from rigorous research will increase the efficiency and reproducibility of such endeavours (Bulkeley & Askins, 2009). An initial waste audit is essential for determining these location specific strategies. Reliable data on waste

generation and composition is important for creating waste management policies (Dahlen et al., 2009). Sources of waste flow data could include local authorities' statistics, waste management companies' logs, producer statistics, waste treatment facility statistics, and interviews (Dahlen et al., 2009).

2.2.6 The Role of Individual and Government Behaviour in Waste Management

For effective waste management change to occur, policy and technology change efforts must be linked with behavioural change campaigns, and these campaigns must go beyond preaching to the converted (Bulkeley & Askins, 2009). In this light, the motivations that lead people to change (e.g. to recycle) must be considered when developing a waste management system (Martin, Williams & Clark, 2006). These motivations may explain the difference in willingness (attitude) and actual (behaviour) actions towards waste reduction, reuse and diversion. Connecting attitudes with behaviour can be encouraged "across the production and consumption cycle through the establishment of innovative partnerships, [and works] towards the goal of high factor improvements in resource efficiency" (Clay et al., 2007, pg. 782). For example, connecting compostable waste to farmers and private composting facilities (Fehr, 2010).

Waste diversion activities, like recycling or composting, reduce the environmental, social and economic costs of landfills and benefit the economy (Clay et al., 2007). However, diverting "more and more of an ever-expanding waste stream is neither a sustainable nor an economic alternative to using fewer resources in the first place" (Clay et al., 2007, pg. 783). There must then also be a focus up the waste hierarchy to production methods and consumption patterns. This focus is supported by the significant economic cost of waste disposal associated with resource inefficiency (Clay et al., 2007). Given that more recycling usually correlates with more general waste, significant changes in consumption behaviour are required for systemic waste reduction and diversion (Dahlen et al., 2009).

There is a growing onus on consumers for mediating environmental problems (Barr, Shaw, Coles & Prillwitz, 2010). A globally expanding culture of mass

consumption has been identified as unsustainable (see for example Lukas, 2012). Deciphering between needs and wants and managing for needs and not wants are central to generating consumption related behavioural change (see for example, Patterson et al., 2006). In order to simplify the complex relationship between humans and resource use, consumption behaviour around the home has been the focus of research and mitigating programmes (Barr et al., 2010). As Barr et al. (2010) illustrate, waste and consumption behaviour change around the home is a valuable approach to reducing and diverting household waste and promoting community awareness. This is particularly true if those individuals are transferring the learned behaviour to their places of work and recreation. However, many people find it difficult to transfer home environmental behaviours to other contexts and more research is needed to understand environmental behaviour in leisure and travel contexts (Barr et al., 2010).

How we define waste can influence our behaviour around waste. For example, is waste a resource, or of no use? Through the definition of waste as a resource, the burden of waste management on the public sector may be alleviated (Bulkeley & Askins, 2009). A shift in waste management responsibility to include consumer (whether individual or commercial) responsibility for waste is key for this alleviation (Bulkeley & Askins, 2009). This shift is necessary because the private sector (individuals included) generally benefits from the use of resources until the resource is deemed waste (in the "of no use" definition), at which point the public sector is expected to take care of that waste (Bulkeley & Askins, 2009). Collaboration amongst the multiple actors in a waste management system is essential for achieving shared responsibility for waste management.

Government policy can play an important role in instigating behaviour changes up the waste stream to avoid complicated and damaging "end of life" management (Bulkeley & Askins, 2009). Similar to the disconnect between individual attitudes and behaviour, there is a disconnect between policy and practice in waste management. For example, while legislation around waste management in Latin American countries often calls for environmental and public health protection (for

example, Law 17.849/004 – the Law of Non-returnable Packaging - in Uruguay which places responsibility on producers for ensuring that packaging waste is not landfilled), control of these measures is often very limited (Terraza, 2009). To reconnect policy and practice, we must first understand the “everyday contexts within which making waste is practiced” (Bulkeley & Askins, 2009, pg. 251) and then understand how policy interacts with everyday practice (Bulkeley & Askins, 2009). The examination of institutional (governmental, NGO's, private companies etc) arrangements and infrastructural (landfill sites, trucks etc) networks can assist in achieving this understanding (Bulkeley & Askins, 2009). Bulkeley & Askins' (2009) experience in the UK showed that individuals must be engaged throughout the change process, as policy alone is not the only driver of change. Furthermore, everything from colour of bins to face-to-face time can change the impact of a management plan and therefore must be considered (Bulkeley & Askins, 2009).

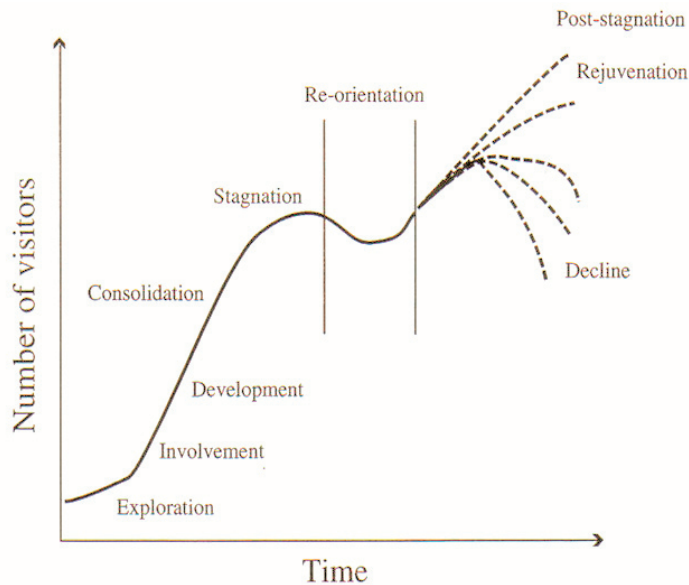
2.3 Tourism

Tourism is a significant global industry. “By 2010, tourism was generating as much as \$919 billion in export earnings, and more than 980 million trips were taken internationally” (World Tourism Organization, 2012 as cited by Gibson, 2013, pg. 466). Britton (1991) brought to light the developing capitalist form of the tourism industry worldwide and in this, highlighted differences of class and power related to tourism. Gibson (2013) reflected on this in the following statement: “How tourism catalyzes entanglements of class, social relations, mobilities, and working and recreating lives – and in particular material, architectural spaces – is increasingly an agenda for geographical research” (pg. 469). This section will speak briefly to this entanglement.

Richard Butler, a geographer, has contributed greatly to the study of tourism. His heuristic for Tourism Area Life Cycles (TALC) has been a catalyst for inquiry into the evolution of tourist destinations. The TALC (first published by Butler in 1980) describes processes of exploration, involvement, development, consolidation, stagnation and then rejuvenation or decline (Butler, 1980). As seen in Figure 1,

Butler also identifies trends of growth, rigidity, bust and reorganization in tourism area development.

Figure 1: Modification of the Butler's Tourism Area Life Cycle Model (Agarwal, 2006)



The intensive consumption and production patterns associated with tourism are related to relatively slow and degrading change over large time periods and spatial scales (Patterson, Niccolucci & Marchettini, 2008). There are both positive and negative consequences of increased tourism-related activity. Foreign exchange, small capital investments, environmental protection funds, and local employment can increase due to tourism (Patterson et al., 2008). However, subsequent land use changes and host community environmental perception changes can also lead to environmental degradation (Patterson et al., 2008). For example, agricultural and/or natural areas are transitioned to commercial and/or residential areas geared towards maximizing economic profits within a short tourist season. Furthermore, the influx of visitors to a community can shift the behaviour of host community residents (United Nations Environment Programme [UNEP], n.d.). Diminishing environmental and social attributes in the tourist destination increase the risk of economic downfall from destination burnout (Patterson et al., 2008). Destination burnout occurs when the environmental and/or social attributes of a host community are transformed to the effect that the destination is no longer

considered a desirable destination for tourism activities (Patterson et al., 2008). This is particularly impactful in communities that have developed economic dependence on the tourism industry. This economic dependence can be solidified by a number of factors, including strong advocacy of ecotourism by environmental organizations seeking to ensure environmental protection (Mowforth, Charlton & Munt, 2008).

As seen in Butler's heuristic, once dependence on a particular tourist development path has been established, it can be very difficult to create other development trajectories. The community is often locked into tourism by the significant number of individuals and organizations that have chosen to rely on the increasing returns and self-reinforcement experienced in tourism activities (Butler, 2011). Furthermore, in communities where the services and goods offered require little financial input (because, for example, of a prevalent informal economy and/or lax building regulations), individuals are not restricted by difficult access to lofty credit for investment; a commonly experienced barrier in more formalized tourist destinations (Mowforth et al., 2008, pg. 57). In more informal communities the noted barrier is oversupply of goods and services from the host community and thus significant competition between community members who are operating with insignificant regulation, and often within a peak period of tourist visitation (Gibson, 2013; Butler, 2001).

In relation to the "discovery" of new destinations, Gibson (2013) states that "[s]pace continually emerges for small operators, itinerant stallholders, artisans, sex-workers, drug-dealers, and musicians to seek livelihoods" (pg. 467). This emerging interest in the destination leads to increased tourist visitation. With growing tourist visitation comes "inward-investment, property development, and corporate encroachment" (Gibson, 2013, pg. 467). This explanation echoes Butler's heuristic and findings.

A distinct and varied relationship between tourists and the host community develops in situations when tourists visit host communities that are less

economically developed than their home community. In some cases this relationship is the subject of great interest to tourists. For example, there are those who travel to less economically developed destinations to experience what it is like to “be” poor and there are those who do the same to “see” what it is to be poor (Mowforth et al., 2008, pg. 20). There are also those who are attracted to the local natural environment and are ignorant to the significance of discrepancies in economic wealth. This is not to paint an entirely negative picture of tourists; there are responsible tourists who are “aware of and [are] concerned about the impact of their holidays on others” (Weeden, 2008, pg. 35).

While in some cases tourism has been found to alleviate exploitation, for example in relation to poaching, there are also many cases where tourism develops into exploitative socio-economic and environmental patterns rather than alleviate exploitative behaviour. For example, tourism-related employment is often “seasonal and highly exploitative” (Mowforth et al., 2008, pg. 28). The “exploitation” of the socio-economic and environmental condition of a host community is frequently overlooked in favour of the prospect of economic development; “many communities in the LAC [Latin American and Caribbean] countries view the [tourism] industry with great hope” (Mowforth et al., 2008, pg. 53). This economic development, however, often develops deepened inequality rather than shared prosperity in a situation where “tourists give little in the way of finance (as most of the moneys paid are repatriated to parent companies in the First World), the local cultures become westernized (for good or bad), and local pollution associated particularly with western consumer lifestyles increases” (Mowforth et al., 2008, pg. 15). To this effect, there is an evident need for some sort of standards for social and environmental responsibility on the part of both tourists and tourism goods and service providers.

Eco-tourism, protected areas and tourist boards are among the strategies for more socially, economically and environmentally equitable forms of tourism. Tourism boards in particular have been found to develop and/or enforce regulations around tourism, to include the voice of host communities, to provide opportunities for capacity development, to promote tourism-related goods and services, and to

advocate to funders and the government for pro-tourism policy and investment (Butler, 2011). Standards often ensue; however, these standards are not always effective if voluntary and have been known to digress into a mere marketing or public relations ploy (Mowforth et al., 2008).

2.3.1 Tourism and Waste

Waste and tourism have similar trends of increased and increasing excessive throughput (Patterson et al., 2006). Tourism, like waste, is somewhat of “a hybrid economic formation blending people, different industries, the state, “nature,” the informal sector, the capitalist and non-capitalist economies, and all manner of technologies, commodities, and infrastructures” (Gibson, 2013, pg. 468). This section will overview the phenomena of tourist consumption and waste production patterns and the shifts in host community waste and consumption behaviour in response to peak tourist visitation periods.

Many people tend not to transfer their ecological behaviours from home to travel, and some people even use the holiday as a chance to get away from home-time ecological behaviours (Barr et al., 2010). Tourists generally consume more away than at home and consume more than the residents of their host community (Patterson et al., 2006). Peak tourist seasons and associated excessive consumption patterns can lead to the production of more waste than a community's infrastructure and socio-economic resources can handle. Furthermore, local populations' patterns of consumption can begin to mimic those of the visitor population, thus exacerbating the social and environmental impacts of tourism (Patterson et al., 2006; Butler, 2001).

The implications of tourism on the waste stream are further complicated by drastic seasonal fluctuations. Increased levels of consumption in a host community often result in local production of goods and services not meeting the demand for goods and services. This discrepancy, along with increased demand from tourists and locals for global products such as Coca-Cola, leads to increased importation (particularly of packaged goods). Increased wealth, though not necessarily

increased equity in wealth, is experienced in burgeoning host communities. However, waste generation tends to increase proportionally with income, leading to increased landfilling, which is increasingly costly (Mazzanti & Zoboli, 2008).

There are two drivers contributing to waste-related social and environmental degradation in small tourist destinations that have recently transitioned from a primary resource dependent to a tourism-dependent economic model: 1) increases in local wealth have been found to increase consumption and resultant waste production, and 2) the tourists themselves contribute extra levels of consumption, and thus waste, than what would otherwise be present (Mbaiwa, 2003). These are distinct because they involve different groups, different interests, and potentially then, different types of solutions. There are mechanisms for managing tourism to avoid destination burnout, such as tourism boards and protected areas. However, as discussed above, these strategies are rife with their own challenges for implementation and success, particularly when they do not resonate with the host community. Further collaborative work is required in this area. As is discussed in Section 5.4.3 below, collaboration (through such exercises as Participatory Action Research) has been known to improve knowledge mobilization, increase compliance with regulations and norms, generate diverse approaches to problem solving, contribute to social capital, and reduce transaction costs (e.g., Ostrom, 1990; Wiber, Berkes, Charles, & Kearney, 2004; Gutberlet, 2008).

3. Barra de Valizas - Case Study Context

Chapter 2 introduced key elements from the literature related to waste management and tourism that I found useful for understanding the broader context of the situation in Barra de Valizas, Uruguay. The following chapter will now review the literature and documents related more specifically to the case of Barra de Valizas.

3.1 Case Study Context Introduction

There are many communities around the world that are economically dependent on tourism, have a small permanent resident population, experience peak periods of tourist visitation, and have difficulty managing their fluctuating waste system. Barra de Valizas, Uruguay was chosen for this research because it resonates with the condition of interest, has a high level of civic engagement and interest around waste management, and I had developed relationships of trust with individuals and groups in the community. My ex-husband is Uruguayan and prior to this research, I had lived off and on in Barra de Valizas since 2007. I ran a small business and was actively involved in community activities, including participation in the Barra de Valizas Environmental Management Group. This chapter will overview the condition of interest in relation to Barra de Valizas and will highlight civic participation and interest in this area. Section 5.6.1 provides more detail on the methodological form and function of the case study in this research.

3.2 Overview of condition of interest

Ruggiero (2011) highlighted that waste disposal methods in Latin America generally pose risks to ecological and human health and tend to landfill valuable resources. The municipal solid waste situation in Uruguay is reflective of this regional trend. Moreover, Uruguay, like other Latin American countries, is increasingly relying on tourism for economic growth (Ministerio de Turismo, n.d.). As discussed above, tourism can be effective for economic stimulation, but there are associated environmental impacts, such as those associated with the increased generation of waste (see section 3.4 and 3.5 for further explanation). These impacts are salient in the case of Barra de Valizas and many similar communities, where tourist visitation

numbers depend upon the ecological integrity of the area and where a heightened seasonal pressure on environmental and social resources is experienced.

3.3 Barra de Valizas, Rocha, Uruguay

Uruguay is a relatively small country both in physical size (176,215km², slightly larger than Florida State in the US) and in population (3,286,314, half of which live in the capital city of Montevideo) (Instituto Nacional de Estadística [INE], 2011). The coastal department (similar to Canadian province-type jurisdiction) of Rocha, Uruguay has a physical size of 10,551km², a population of 68,088, and almost 200km of Atlantic coastline (INE, 2011). Barra de Valizas is located on this stretch of Atlantic coast, 60km from the Brazilian border (see Figure 2).

Figure 2: Map of Barra de Valizas, Rocha, Uruguay (Rocha Tourism Corporation, n.d.)



Barra de Valizas is situated between the Cabo Polonio National Park and the planned Laguna de Castillos National Park (Sistema Nacional de Areas Protegidas [SNAP], 2009). The wetlands within these parks are a valuable source of fresh water

and biodiversity and have thus been included in Ramsar's list of Wetlands of International Importance (SNAP, 2009). There is no sanitation system in Barra de Valizas and most buildings have cesspools rather than septic tanks (Ecologia Costera, 2011). Rapid filtration through the sandy soil has led to groundwater contamination (Ecologia Costera, 2011). Improperly managed solid waste (e.g. littering, informal dumping, insufficient infrastructure) is also contaminating this important source of fresh water and biodiversity (Ecologia Costera, 2011). Involuntary consumption of plastic bags is the leading cause of death for local sea turtles, whose population numbers are rapidly decreasing (Grupo Karumbe, Personal Communication, October 15, 2012). Waste is a problem in this area and this problem is exacerbated by tourism. Barra de Valizas is an important focal point for this research because of its rapidly changing socio-economic situation, its ecologically unique and fragile landscape, and because of its concerned and committed citizens.

3.4 Description of Barra de Valizas population and tourism development

The typical course of [tourism] development has the following pattern. Painters search out untouched and unusual places to paint. Step by step the place develops as a so-called artist colony. Soon a cluster of poets follows, kindred to the painters: then cinema people, gourmets, and the jeunesse doree [golden youth]. The place becomes fashionable and the entrepreneur takes note. The fisherman's cottage, the shelter-huts become converted into boarding houses and hotels come on the scene. Meanwhile the painters have fled and sought out another periphery - periphery as related to space, and metaphorically, as 'forgotten' places and landscapes. Only the painters with a commercial inclination who like to do well in business remain; they capitalize on the good name of this former painter's corner and on the gullibility of tourists. More and more townsmen choose this place, now en vogue and advertised in the newspapers. Subsequently the gourmets, and all those who seek real recreation, stay away. At last the tourist agencies come with their package rate travelling parties; now, the indulged public avoids such places. At the same time, in other places the same cycle occurs again; more and more places come into fashion, change their type, turn into everybody's tourist haunt.

(Christaller, 1964, pg. 98)

According to the most recent census data (2011), Barra de Valizas, Uruguay has a population of 330 (INE, 2011). Barra de Valizas was inhabited, after colonization

took place, by Spanish colonizers because of its natural wealth, which includes fresh water, fish, the Atlantic Ocean, fertile soil, sandy beaches, dunes, the Valizas River, and the lagoon of Castillos (Curto et al., 2011). From 1970-1990 hundreds of people fenced off land and built cabins on this government owned land to take up permanent residence or a vacation home in this informal settlement (Servetto, R. [Mayor of Castillos], Personal Communication, June 22, 2012). This activity was considered illegal, but not stopped because the area was of little importance to government at that time (Servetto, R. [Mayor of Castillos], Personal Communication, June 22, 2012). In 1990, the coast of Rocha was declared a National Tourist Reserve (Curto et al., 2011). Tourism increased in the area and some of the incoming tourists (enamored with the natural beauty and rugged, off-the-grid lifestyle of the town) began purchasing fenced off land and cabins without formal land title (Curto et al., 2011). In 1996, the Coastal Ordinance of Rocha declared Barra de Valizas as an area of urban tourist development and order 5/996 was written to control the expansion, separation and conservation of lots in Barra de Valizas (Curto et al., 2011). At this point, informal lot-holders began to (re)purchase their lots from the government (Curto et al., 2011). In 1999, Law 17.160 declared Barra de Valizas and the surrounding area as national interest for tourist development and charged the Ministry of Tourism (now Ministry of Tourism and Sport - MinTurD) and the Ministry of Housing, Zoning and Environment (MVOTMA) with the job of planning the area as a tourist destination (Legislative Power of the Oriental Republic of Uruguay, 1999).

The principle economic activities in Barra de Valizas are currently tourism and associated construction, with artisanal fishing, farming, and forestry also playing a small role in the economy (Curto et al., 2011). Increasing tourist visitation rates exacerbate the degradation associated with tourism and construction; tourism in the region has increased twofold in the last decade. In 2001 the coast of Rocha had 65,138 tourists and in 2010 they had 135,883 (Ministerio de Turismo y Deporte [MinTurD], 2011). There are no large hotel chains in town. Rather, the majority of tourists rent houses or camp in the many informal campsites that emerge during the

tourist season on residential lots. The Barra de Valizas tourist season runs from mid-December to the end of March. The community hosts around 5,000 tourists at a time during peak tourist season (December 26th to January 20th and the week of carnaval – generally in February) (MinTurD, 2011). There are fifteen tourists to every local during the peak of the tourist season. Barra de Valizas is noted for being liberal and, as such, is often referred to as “no [wo]man’s land”. People from all walks of life come to enjoy the landscape and the socialscape, including many young artists and artisans aiming to inspire and market their talents. The town hosts mainly sun and beach seeking backpackers, some of whom are attracted to fishing, surfing, diving and eco-tourism activities in adjacent parks (MinTurD, n.d.).

Punzo and Liberoff (2009) identified a lack of clear rules and control standards related to tourism development in Rocha. Reports available for tourism in general in the Department of Rocha focus on tourism as an economic development model (see for example, MinTurD, 2009a). Further research is needed for tourist visitation numbers, associated services and social-ecological impacts for each locality, such as Barra de Valizas. This is currently only being done in the larger tourist centers such as Punta del Este (in Maldonado, the neighbouring Department) and la Paloma (also in Rocha, see map on pg. 18). This would enable a more concrete evaluation of the impact of tourism on, for example, the waste system.

3.5 Key Developments in the Barra de Valizas Waste System

Informal recyclers and recycling cooperatives play a fundamental role in materials recycling and environmental education around the world (Gutberlet, 2014; Wilson, 2007; Zia, Devadas & Shukla, 2008). This is no different in the Uruguayan context. Approximately 65% of recycling in Uruguay is achieved by informal recyclers and recycling cooperatives (Centro Interdisciplinario de Estudios sobre el Desarrollo Uruguay [CIEDUR], 2011). State and NGO recognition and support of informal recycling activities has contributed to the development of several recycling cooperatives throughout the country (Ministerio de Desarrollo Social [MIDES], n.d.). These cooperatives acquire infrastructure and equipment such as plastic bailing

machines, scales, warehouses, carts, bicycles and uniforms (Estudio Pittamiglio, 2011). They also collectively achieve health insurance, capacity building activities and safer working conditions (Centro Interdisciplinario de Estudios sobre el Desarrollo Uruguay [CIEDUR], 2011). Some informal recyclers still prefer to work independently so as to maintain freedom to work when and as desired; as such there is still a prevalent group of recyclers, of all ages, classifying waste in their homes (CIEDUR, 2011).

Apart from changes in consumption and waste behaviour through population and tourism changes, the following six key influences on the Barra de Valizas waste system are apparent. One, the shift from burying, burning, reusing and composting as primary management methods to waste collection (with associated taxation and landfilling) in 1996 (Servetto, R., Personal Communication, June 22, 2012). Two, the extension of responsibility to packaging producers and packaged product producers through the *Law of Non-returnable Packaging* in 2004. This law led to the establishment of a 'per kilo of packaging waste sent to the landfill' fee for packaging and packaged product producers through decree 250/007 in 2007. Three, the nationwide implementation of a social inclusion program for informal recyclers entitled *Uruguay Classifies* through Ministry of Social Development in 2006 (Comuna de Rocha, 2010). Four, the pilot implementation, during the 2009-2010 tourist season, of the *Uruguay Classifies* program in Barra de Valizas (project title: "Your package serves us"). Five, the formalization of the Rocha Recycling Cooperative through support from the Uruguayan Chamber of Industry (CIU), the Ministry of Social Development, and the Department of Rocha in 2010 (CIU, Personal Communication, October 2012). Six, the formation of the Barra de Valizas Environmental Management Group (EMG) which focuses its efforts on waste management activities (2011). I further describe these influences in the Results and Discussion Chapters.

4. Methodology - theory and methods

4.1 Rationale and objective

This thesis, developed as part of my Masters of Arts degree requirement for the University of Victoria (MA student in Geography, Community Based Research Laboratory), is based on my field research, conducted in Barra de Valizas, Uruguay from May 2012 to April 2013 (see section 4.2). My interest in waste management in tourism development communities developed over my time living in Uruguay and is fueled by the dedication of residents of Barra de Valizas to address the impacts of their economic trajectory on their social and ecological reality. Barra de Valizas is one of the many communities worldwide that are facing the challenge of managing increased rates of consumption and waste production during peak tourist visitation periods.

The objectives of this study were the following: 1) to identify, through the voices and perspectives of community members, key waste system components and processes in Barra de Valizas to better understand the observed and desired states, including pathways and roadblocks to achieving those state(s); and 2) to provide reflection on the Participatory Action Research (PAR) based approach. Objective one was identified through discussion with various stakeholders in the Barra de Valizas waste system. I chose to include reflections on the use of PAR to allow a space to expand on my experience in the PAR process; further, I have found other people's reflections on their use of PAR to better my research and community development work (for example Hochachka, 2009).

This chapter will provide a brief summary of the research design, followed by an overview of some of the relevant theoretical aspects of PAR. Relatedly, I will describe resilience theory in relation to PAR and the thematic context (see Chapter 2 for more details on the thematic context). I will then delve into the approaches and tools used for this research. In doing so, I hope to provide some context for my ontological and epistemological framework and then clarify the research approach, including activities and timelines. PAR was central both for theoretical and practical approaches and is thus found in both the theoretical overview and the approaches

sections.

4.2 Research Design Summary

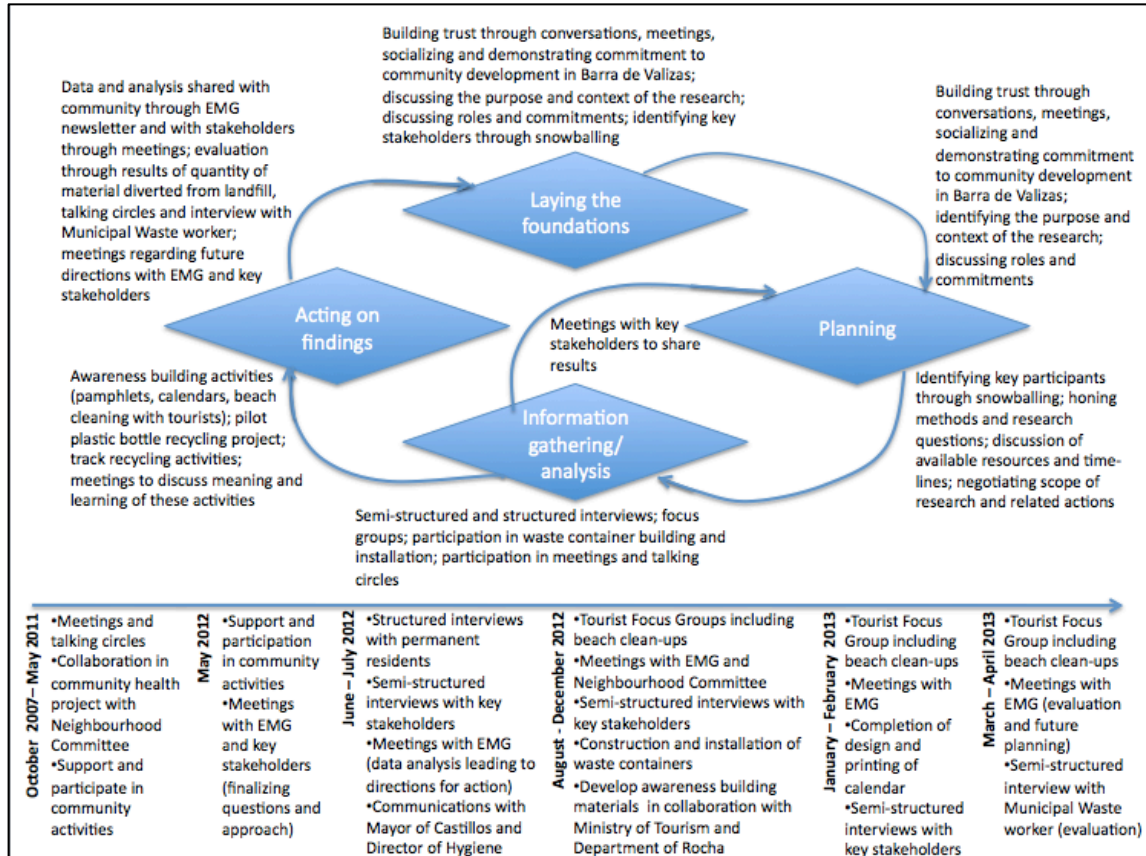
This thesis is based on my field research, conducted in Barra de Valizas, Uruguay from May 2012 to April 2013. Prior to beginning my fieldwork in Barra de Valizas, I applied to and was approved by the UVic Board of Ethics (Ethics Protocol 12-158).² I implemented a case study, supported by Participatory Action Research (PAR) approaches and within a PAR framework, to collaboratively develop and implement strategies for waste system management in Barra de Valizas, Uruguay with particular attention on aspects of resilience that were made evident during or through the PAR process. The PAR approach supports social capital, community participation, inclusion of multiple perspectives, and knowledge co-creation while the single case study binds the scope of the study and develops situated knowledge and in-depth information on the phenomenon.

This research structure was chosen to couple theory with practice, and to tease out key components, processes, structures, and feedbacks by actively participating in waste system related activities and responding to research results and community requests. Research, and in particular action research, can impact space, place, environment and how lives can be lived (in both intentional and unintentional ways). I thus aimed for an open, inductive, and inclusive framework that valued community needs, desires, opinions and processes as much as, or more than, my academic rendering thereof. The research design and process will be described further in sections 4.3 – 4.9; Figure 3 below outlines key steps often found in PAR and associated activities that shaped this PAR experience. Explicit action within the

² As my research began, I identified a demonstrated cultural preference for verbal over written consent. In June 2012 I modified my ethics application and was approved to use verbal consent in focus groups and interviews. In April 2013, I extended my ethics protocol to April 2014 to accommodate for any continuing or additional research activities in Barra de Valizas beyond my original field research period that ended in April 2013.

Barra de Valizas waste system was developed with the community to stimulate change in a direction identified by the community.

Figure 3: Iterative PAR cycle (adapted from Ochocka & Jenzin, 2016)



4.3 Participatory Action Research

Participatory research is not a set of ideas that can be applied at random with predictable results. It is not neat, it cannot be rounded off to two decimal points, and it is even difficult to translate into charts. It does not eliminate the need constantly to evaluate the political implications of ones work. It provides no guarantee for ideological or scientific purity (does anything?). What it does is to offer an alternative way of conceiving and executing research which may suit both the needs of our work and our own values more closely, while serving more faithfully the interests of those with and for whom we work. (Hall, B., 1982, pg. 15)

In PAR the researcher investigates questions, ideally generated with the study community, and works with that community in an iterative process of knowledge development and mobilization (Riel, 2010; see Figure 3 above). The results can be

increased understanding of the situation, immediate action and change based on increased knowledge, and increased capacity amongst partners to inquire and change (Tandon, 2008). In this section I will briefly overview my relationship with PAR (and thus how I chose to use this approach for this research), the development of PAR over the last few decades, the form and function of PAR (including participation and conscientization), and the coupling of aspects of resilience within this PAR approach.

4.3.1 My relationship with PAR

I was first exposed to the concept of Participatory Action Research (PAR) during my undergraduate courses in the Faculty of Land and Food Systems at the University of British Columbia (UBC) from September 2005 to April 2007. Kerry Strand et al.'s (2003) book *Community-based research and higher education; principles and practices* was our prescribed guidebook for how we would be connecting with real-life situations to further our understanding of food systems and how, in the process, we would contribute a tidbit to those real-life situations. I was hooked. PAR resonated with me for its emphasis on engaged co-learning, its commitment to societal well-being, its ethics of engagement with those involved in the research process, and its action-oriented commitment to the issue at hand (Tandon, 2008). I finished my degree and began working in Integrated Coastal Management (ICM) in Uruguay as an intern for the Canadian International Development Agency. This work was housed in the University of the Republic of Uruguay and again, PAR was a central component of the ICM process. I then worked for a non-profit in Vancouver, day in and day out dedicating my time and energy to action related to urban food security and community development. After having my son, I was living in the town of Barra de Valizas, Uruguay and participating in a lot of community-based community development activities. In line with the speed of the world today, there was a lot of doing, doing, doing with little time for reflection. From my experience in the non-profit in Vancouver and in community development in Barra de Valizas, it was evident that all that action-oriented time and energy needed to be balanced with analysis, reflection and documentation. From my experience, universities

offered the time and resources for analysis, reflection and documentation. Hence, I began the journey of taking that on with the support of graduate studies with Jutta Gutberlet in the Community-Based Research Lab in the Department of Geography at the University of Victoria. In this, I remained dedicated to ensuring a community and action-oriented approach to contribute to changes on the ground.

4.3.2 A brief history of PAR

Through the diverse developments and applications of research practices that are rooted in community, by and for community, in collaboration with researchers (and in many cases their associated institutions) PAR has been called many things: PAR, Community-Based Research, Action Research, Participatory Research, Community Engaged Research, Community-Based Participatory Action Research (see Bergold & Thomas, 2012; Ochocka & Jenzin, 2016). In the 1940's Karl Lewin began writing about action research for democratizing workplace relationships (Strand, Marullo, Cutforth, Stoecker, & Donohue, 2003). In the 1970's Paolo Freire began studying and promoting the power of engaged education for social transformation (see more in section 5.4.4; Strand et al., 2003). From there, PAR really began to grow and expand. Budd Hall and Rajesh Tandon began publishing on their experiences of using PAR for knowledge democratization, as well as social change (Tandon, 2008). They now co-chair the UNESCO Chair on Community-Based Research and Social Responsibility in Higher Education. The creation of this UNESCO Chair in 2014 and the growing number of universities with community based research and learning as key components of their research plans (see for example UVic Strategic Research Plan 2016-2021) demonstrates institutional recognition of PAR-type approaches to teaching, learning and research. As with all theories and practices of burgeoning popularity, it is an important time for reflection on PAR and its application in community.

4.3.3 Forms and functions of PAR

The key elements in PAR are that the research is community situated, participatory, and action-oriented (Ochocka & Jenzin, 2016). I will describe this further. The community, with input from the researchers, determines the research topic based

on the practical significance of the research to the community. Further, the research is carried out in the community. There is equitable control of the research agenda, with researchers and community members contributing to and taking reasonable responsibility for research design, implementation, and dissemination (Ochocka & Jenzin, 2016; This is discussed further below in the discussion on partnership and participation). Additionally, “the process and results are useful to community members in making positive social change and to promote social equity” (Ochocka & Jenzin, 2016, slide 7). This is also in line with the Latin American PAR tradition which demystifies research, shifts the role of researcher as expert, invokes respect and support for local knowledge, and contributes to community and social movements (Gutberlet, Tremblay & Moraes, 2014).

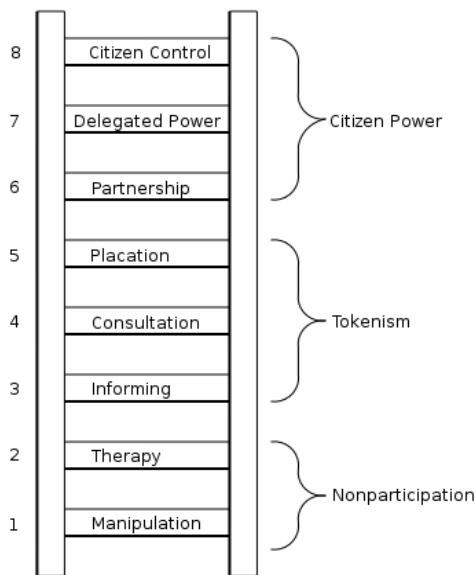
The process of PAR can vary, but is often described as an iterative cycle of observation, thought, and action. Ochocka and Jenzin (2016) expand on this cycle by highlighting the significant phase of laying the foundations, and emphasizing the back and forth between planning and information gathering/ analysis (see Figure 3 above). The foundations for this PAR work were laid during my time living and working in Barra de Valizas, prior to this Masters thesis work. Not all moments in this PAR research mirrored the described PAR cycle. This fits with Hall’s (2005) work, which expresses how there is not a prescribed PAR model. I will expand on these digressions in the discussion section (6.3).

The role of the researcher is significantly different in PAR than in other, more traditional forms, of research where “rigidity, presumed objectivity, and authority of research and research expertise undermine community development” (Strand et al. 2003, pg. 6). The various roles of the PAR researcher are planner, leader, catalyzer, facilitator, teacher, designer, listener, observer, synthesizer and reporter (O'Brien, 2001). Many of these roles relate to skills required for developing meaningful and appropriate partnerships.

Morford (2004) states, “if both researchers and involved community members feel a sense of ownership for their research decision-making process, then it *is*

participatory research” (p. 3). Choosing the appropriate level of participation is an important consideration in PAR to avoid glorifying consultation, or aiming for levels of participation that are not desired by the community; both of these situations can reduce research validity and success (Hall, 2001). Moreso, meaningful participation is fundamental for the process of conscientization (see section 4.3.4). Arnstein’s ladder of citizen participation highlights various levels of citizen participation from the non-participation of manipulation, to the tokenism of consultation, to the citizen power of partnerships and citizen control over the research project (Arnstein, 1969; see Figure 4).

Figure 4: Arnstein's Ladder of Citizen Participation (Arnstien, 1969, p. 217)



Most of the literature on integration, collaboration, participation, interdisciplinarity, multi-level stakeholders etc. has come to the same conclusion in different words. That is, collaboration improves knowledge mobilization, increases compliance with regulations and norms, generates diverse approaches to problem solving, contributes to social capital, removes academics from the isolating world of academia, and reduces transaction costs (e.g., Ostrom, 1990; Wiber et al., 2004; Gutberlet, 2008). These are all key factors for success in this study. However, challenges associated with collaboration include the following: the significant time and resources needed for true and fulfilling cooperation; the appropriate capacity

building for all participants; the flexibility for addressing divergent management goals; and the genuine release of responsibility to community partners (Wiber et al., 2004).

True participation requires local capacity building and leadership development, communication as a means to conflict reduction, and sharing and inclusion in responsibility (Perrons & Skyers, 2003). Roles and responsibilities must therefore be charted out, mutually agreed upon, and recognized so that participation is not a means to passing on responsibility and time-intensive involvement, but rather a means to achieving improved knowledge mobilization, increased compliance with regulations and norms, diverse approaches to problem solving, reduced transaction costs and increased social capital (e.g., Ostrom, 1990; Wiber et al., 2004; Gutberlet, 2008). Further, and as expressed by Banks et al (2013), “Partnerships also evolve over time as trust is built, which means that partnership agreements and norms need to be constantly under review” (pg. 237). As such, I fostered open communication regarding roles and responsibilities throughout the research process.

4.3.4 The road to conscientization

Freire (1970) wrote that “[o]nly to the extent that he reflectively feels and knows his own transforming praxis will his thought and expression gain significance beyond that world” (pg. 477). Freire is describing a process of conscientization, whereby learning involves an iterative process of critical reflection in the internalization and externalization of knowledge. Just as there is a continuum of participation (see section 4.3.3), so too is there a continuum of the relationship with and impact of knowledge, with conscientization at one end and simply hearing something at the other.

Many PAR research projects have fostered conscientization through their process (see for example, Gutberlet, 2014). However, just as PAR must meet the continuum of participation for a particular context at an appropriate place of significance for that context, so too must PAR meet the continuum of awareness at an appropriate

place of significance for that context. Freire (1970) also wrote that “[t]he more active an attitude [wo]men take in regard to the exploration of their thematics, the more they deepen their critical awareness of reality and, in spelling out those thematics, take possession of that reality” (Freire, 1970, pg. 78). Further, in a process of conscientization, “the investigators and the people (who would normally be considered objects of that investigation) should act as *co-investigators*” (Freire, 1970, pg. 78). In this light, members of the Barra de Valizas Environmental Management Group and I (those most involved in the research process), were in a process of conscientization through this research, but our efforts for information sharing and participation focused at a level of awareness building.

4.4 Coupling complementary theories

Ideas of building social capital³ and capacity for self-organization have been evident throughout this description of the evolution, form and function of PAR. In light of these elements, PAR is often coupled with such frameworks as asset-based community development (see for example Tremblay, 2013) to complement the approach and analysis in the research process. Based on the added element of rapid change in the Barra de Valizas waste system associated with peak periods of tourist visitation, I leaned towards resilience theory to complement the PAR framework because of its focus on response to change.

4.5 Resilience

Liggy Webb’s (2013) book on individual resilience is titled, “How to cope when everything around you keeps changing”. In today’s fast changing and highly interconnected world, this concept of coping with change has been applied to scholarship in many fields, such as waste management (see for example, Winne et al., 2012). Resilience relates to the ability of a system to absorb shock and maintain the same essential structure, processes, and feedbacks; the capability of the system

³ I recognize that *capital* has an economic connotation and can be an oversimplification of such complex matters as the social realm, but use *capital* for lack of a better term (see for e.g. Navarro, 2002; Haynes, 2009).

to self-organize; and the capacity of the system to build ecological, social and economic capital for learning and adaptation (Folke, 2006).

Resilience recognizes the links between and within social-ecological systems. As described in section 2.2 above, there are many interconnected components and processes in the waste system. For example, Rathje (1984) highlighted through his study of waste in the United States that you can learn a lot about people's consumption patterns and behaviour through their waste. Further, waste is a resource that is tied to our environment not only through possible contamination with its disposal, but also from the extraction, production and consumption practices associated with the product that has become waste, exacerbated by certain activities like tourism. Resilience theory can offer insight into such question as the following: If extraction, production and consumption patterns in a community are changed through tourism, how is that tourist host community responding to the shift? Further and in light of the principles of PAR mentioned above (section 4.3), looking at waste in this context through community-based, collaborative and action-oriented inquiry inevitably sheds light on the ability of the host community to absorb shock; self-organize; and build ecological, social and economic capital. To elucidate, I will outline below the development of resilience theory and some of its salient features.

4.5.1 Resilience Theory Development

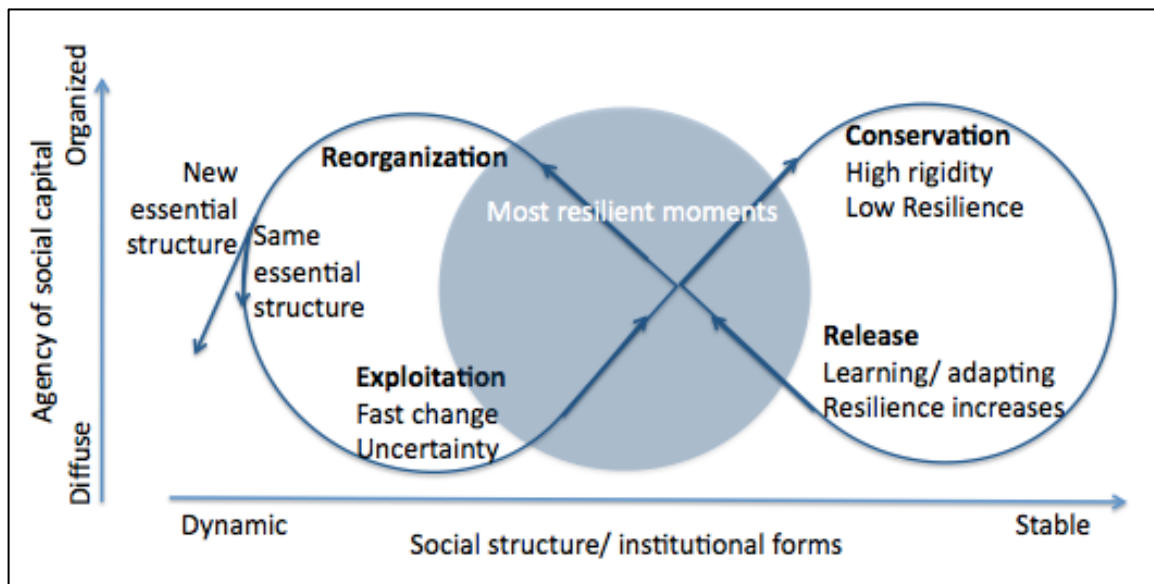
Resilience theory stemmed from ecological research in the late 1960s (see for example Holling, 1973) that identified the possibility of multiple stable states of ecological systems. Until then, despite scientific integration and transdisciplinarity, systems theorists were locked in the theoretical shackle of a stable equilibrium (Zimmerer, 1994). The combination of research in ecology and in other disciplines then led to a broadening concept of resilience, with significant application in social-ecological systems. Resilience theory has evolved over the last 20 years with Marxist elements such as dialectics and emancipatory knowledge; feminist elements such as critical reflexivity and the role of power; geographic elements of time and space

(Goodchild, 2008); structuralist elements such as political economy and political ecology; humanist elements such as agency; post-modern elements such as plurality and relativity; and post-structuralist elements such as subjectivity and the power of discourse (Hickey & Lawson, 2005; Stephens, 2012). These elements demonstrate how a more dynamic approach to understanding system actors, processes, and states has been incorporated into understanding our social and natural world through resilience theory.

4.5.2 Learning, adapting, self-organizing and transforming in cycles of change

There seems to be a trend to better foster understanding of a phenomenon by determining the cycles of that phenomenon. Participatory Action Research highlights iterative cycles of building trust with community, co-designing research, learning, mobilizing knowledge and evaluating process and outcomes to continue to build trust and inform future research design (Ochocka & Jenzin, 2016). Tourism destinations have their cycles of exploration, involvement, development, consolidation, stagnation and then rejuvenation or decline (see Butler, 1980). And resilience has the adaptive cycle with phases of exploitation, conservation, release, and reorganization (Gunderson & Holling, 2002; see Figure 5).

Figure 5: Adaptive cycle (adapted from Gunderson & Holling, 2002; Pelling & Manuel-Navarrete, 2011)



The phases of the adaptive cycle have been identified and described based on decades of research. As such, understanding these phases sheds light on system components, processes, linkages, and directions (see for example Gunderson & Holling, 2002; Pelling & Manuel-Navarrete, 2011). Further, it has been identified that resilience can be gained or lost depending on the adaptive cycle phase. For example, resilience decreases while moving towards the rigid state of conservation, increases while moving towards reorganization, and increases with each movement through the entire adaptive cycle (Gunderson & Holling, 2002). That is, with increased resilience the system is then more capable of processing change, self-organizing, and developing for increased learning and adaptation. The front-loop movement of growth and accumulation, from exploitation to conservation, is generally slow and increasingly predictable; while the back-loop movement, from release to reorganization, is generally fast and uncertain (Gunderson & Holling, 2002). Adaptability is the capacity of the actors of a system to respond and shape system dynamics in an informed manner that increases resilience (Folke, 2006).

4.5.3 Building resilience

An active probing of the system, through pilot policy or action projects, "reveal[s] processes that build or sustain resilience" (Folke, Carpenter, Elmqvist, Gunderson, Holling & Walker, 2002, p. 439). As such, the action-orientation of PAR and in this case the 'active probing' (via pilot waste reduction and diversion initiatives) and concurrent observations of the waste system in Barra de Valizas, Uruguay, increased the general understanding of the dynamic and interconnected components and processes of the system. This understanding is important for effective systems management and can be facilitated by reflecting on the adaptive cycle heuristic (Gunderson & Holling, 2002; Pelling & Manuel-Navarrete, 2011).

Resilience does not necessarily imply a desired state, but rather adaptability to change through cycles of learning and renewal (Walker et al., 2002). When managing for resilience, the goal is "[t]o prevent the system from moving to undesired system configurations in the face of external stresses and disturbance"

(Walker et al., 2002, pg. 3) and “[t]o nurture and preserve the elements that enable the system to renew and reorganize itself following a massive change” (Walker et al., 2002, pg. 7). In some cases this management relates to symptoms and in others to root causes, for example developing recycling systems to alleviate excessive waste landfilling versus waste reduction campaigns to shift unsustainable consumption patterns that lead to excessive waste production. Whether the focus of system’s research and management is on symptoms and/or root causes is determined, for example, on goals, feasibility, and the emergency of the situation at hand. Nevertheless, managing for resilience means managing for increased ability to shape, adapt to, and cope with change (Folke, 2006). This is a significant shift from earlier systems theorists whose focus on the stable equilibrium resulted in prescriptive management practices towards a pre-determined goal.

Processes of resilience building - “learning to live with change and uncertainty [...] nurturing diversity for reorganization and renewal [...] combining different kinds of knowledge [...] and creating opportunity for self-organization” (Berkes & Seixas, 2005, Pg. 5) - are supported via system diversity, redundancy, modularity (component self-sufficiency), agency, inclusiveness, innovation, and social capital (Walker & Salt, 2006). Further, resilience scholars have identified aspects of social-ecological systems that build resilience such as: trust, desire for change, confidence in the feasibility of presented actions, political willingness for change, leadership, space for creativity from within the community, and inter-institutional communication and bonds (see for e.g. Anderies, Walker & Kinzig, 2006; Olsson et al., 2006; Berkes & Seixas, 2005). Anderies, Walker & Kinzig (2006) also note “the consequences of structural properties of systems are context-dependent” (pg. 4).

4.5.4 Resilience, PAR, and this research

The question of resilience of what and for whom must constantly be present in social-ecological analysis and management to avoid consolidating and/or generating inequalities (Leach, 2008). This carries important ties into PAR ethics (see section 4.4 above). Managing peak periods of waste in Barra de Valizas is a complex social-ecological problem, which can be better understood through a PAR process that

incorporates consideration of system resilience and avenues for building resilience. As stated above, social-ecological resilience relates to the ability of a system to absorb shock and maintain the same essential structure, processes, and feedbacks; the capability of the system to self-organize; and the capacity of the system to build ecological, social and economic capital for learning and adaptation (Folke, 2006). Based on this definition, participatory and action-oriented approaches to research have been found to contribute to resilience, though PAR researchers do not often identify this in relation to resilience (see for example, Gutberlet, 2008; Hall, 2001; Tandon, 2008).

4.6 Approach

As seen in Figure 3 above, there are common phases (laying the foundation, planning, information gathering/ analysis, and acting on findings) within the iterative cycle of PAR. This section will provide further detail to the approach of this research.

4.6.1 Case Study

Case studies typically involve in-depth analysis of individuals, groups, places, and/or processes over a period of time and are typically researched in situ (Hardy, 2005; Hay, 2005). A case study can afford an excellent approach for developing theory, evaluating programs, and designing interventions (Baxter & Jack, 2008). "Rigorous qualitative case studies afford researchers opportunities to explore or describe a phenomenon in context using a variety of data sources" (Baxter & Jack, 2008, p. 544). Multiple lenses of information are pursued in a case study to uncover multiple perspectives on a phenomenon (Baxter & Jack, 2008). Multiple perspectives serve to confirm data and contribute to the credibility of the research via triangulation (Hall, 2001).

Baxter and Jack (2008) advise implementing a case study when a particular contextual condition is of interest. The condition of interest in this study is communities that are economically dependent on tourism, have a small permanent resident population, experience peak periods of tourist visitation, and have difficulty

managing their fluctuating waste system. Barra de Valizas, Uruguay typifies this condition and is therefore of *contextual* importance. Uruguay was an interesting contextual focus because many of its communities are facing similar challenges due to rapid expansion in the tourist sector, particularly after the economic crisis of 2002 (MinTurD, 2009b). A single explanatory case was chosen to acquire more in-depth data through inquiry in one particular town and of one particular phenomenon. This case study is also relevant to other coastal tourism dependent small communities in Latin America and particularly in the coastal areas of the southern cone. Previous contacts with the community, a previous internship at the University of the Republic of Uruguay, family ties in Uruguay, and a strong community and personal commitment to improving the waste system situation in Barra de Valizas improved the logistical feasibility of this case.

Chapter 3 overviews the waste system and tourism developments in Barra de Valizas, Uruguay. Documents, personal observation, and informal conversations prior to the inception of this research highlighted challenges associated with shifting consumption patterns (particularly increased purchasing of products with plastic packaging) and lack of waste diversion activities to separate increased waste (particularly plastic packaging) away from the landfill. As such, the case for this study focused primarily on probing the waste system through the experience of collaboratively developing and implementing a pilot intervention for waste reduction and diversion in the waste system of Barra de Valizas, Uruguay. This waste system includes the following actors and components: waste, consumers, tourists, residents, producers, businesses, municipal employees, recycling cooperatives, soil, groundwater, policy makers, the local and regional hygiene departments, the Ministry of Tourism and Sport, community groups, infrastructure (trucks, landfill, garbage bins, etc.), laws, policy, economic climate, and relationships between components. Binding my case in time (May 2012 to April 2013), activity (pilot intervention experience for waste reduction and diversion), place (Barra de Valizas, Uruguay), and definition and context (defined waste system in Barra de

Valizas, Uruguay) ensured a reasonable, though at times still somewhat mammoth, scope for this study (Baxter & Jack, 2008).

Various actors brought attention to the importance of addressing the waste system challenges in Barra de Valizas and were involved in defining the direction of this research (Comuna de Rocha, 2010; personal communications with Mondeja, EMG, Barra de Valizas Citizen's group, 2010). The research questions in this study correspond to the specific case and are outlined in Section 4.1 (*Rationale and Objectives*).

4.6.2 Partnership

The participatory and active structure of this research was fundamental for achieving research goals. From June 2012 to April 2013 I participated in weekly Environmental Management Group (EMG) meetings (including those with local and regional government officials) and related activities. These activities included community consultation meetings, organizing waste container and plastic bottle deposit site construction, and liaising between waste workers and the general community. I continuously observed and participated in the waste system, and continually communicated with the community about research direction, which stemmed from these observations, collaboration with the EMG and consultation with local and regional government officials and waste workers. These efforts were time-consuming. However, they were essential for generating a trusting relationship with the Barra de Valizas community and for developing a textured understanding of the Barra de Valizas waste system.

Partnership was sought in order to foster engagement and negotiation between the community and myself and thus support citizen power in the research process (Morford, 2004). Building the trust and associated structures of transparency and communication necessary for a solid partnership that supports citizen power in the research process is a time and energy intensive endeavor. This was only achieved with the EMG, who became the primary partner. The community of Barra de Valizas, Uruguay organized the EMG within the Barra de Valizas Roundtable on Tourism in

order to educate tourists about the ecological value of their region and to promote environmentally responsible behaviour around resource use and waste. The EMG, a volunteer group composed of five permanent residents of Barra de Valizas, was excited to partner in this research because they were already committing time and resources to waste system advocacy and action, and was interested in bringing in methodical reflection related to the waste system and their activities. The EMG was involved in honing the survey (which developed into structured interviews), semi-structured interview and focus group questions, and in developing and implementing the active probing of the system. I proposed questions that were relevant in the literature and brought forward in the 'laying the foundation' phase of the PAR cycle. These questions were discussed and decided upon over a series of meetings, both formal and informal. Informal meetings occurred throughout the research process. These conversation circles provided the important opportunity to be together and to make decisions. Data analysis was supported by discussion with the EMG and consequent actions came from these discussions. Given time restrictions, the EMG and I decided that research questions would focus on presenting details of waste behaviour in Barra de Valizas and that quantity of plastic bottles diverted from the landfill, observation, and experience would be used to evaluate pilot activities. Given the significant experience of the local waste worker with the pilot activities, he was also interviewed to better evaluate the pilot activities.

Other stakeholders provided opinions and suggestions for research directions (for example the Barra de Valizas citizens group, the Director of Hygiene and the Mayor of Castillos); participated in interviews, focus groups and community mapping sessions (described in section 4.7); and participated in, provided input to, supported (through advocacy, dissemination, and material resources), and contributed to the active probing of the system. I acted as a node and instigator within this network of stakeholders (including waste managers such as the Director of Hygiene) who were trying to better understand and improve the solid waste system in Barra de Valizas. This arrangement established connections between the stakeholders and proved to

be appropriate to the level of commitment, time, and resources that stakeholders were able to provide.

4.6.3 Stakeholders and study participants

As mentioned, I had (previously) worked extensively in Barra de Valizas and had established relationships with a number of stakeholders prior to field research. These stakeholders included: the principal and teachers of School #61 (the school community is important because many community activities, particularly awareness campaigns, are instigated and sustained at the school level), permanent residents of Barra de Valizas, tourists, waste sector workers (both formal and informal), the Barra de Valizas Citizens Group, the Environmental Management Group of the Barra de Valizas Roundtable on Tourism (hereafter EMG), citizen groups in the region that are facing similar waste system challenges, the local municipal council, and researchers from the University of the Republic of Uruguay (UdelaR). I created five stakeholder groups to organize the various perspectives on the waste system based on type of relationship with the waste system. These groups were: permanent residents, community organizations, administrators, waste sector workers and tourists. Through interactions during my off-and-on residence in Barra de Valizas from 2007-2012 when the research began, all of these groups had identified waste system management during the tourist season as an important issue to be addressed (see Table 1 for stakeholder group participation in research activities). The EMG, the local municipal council, researchers from the UdelaR, and permanent residents of Barra de Valizas were involved in forming the groundwork for this project. Once the fieldwork began and relationships and intentions progressed and solidified, the key stakeholder group emerged. This group consisted of the EMG, the local municipal council, permanent residents of Barra de Valizas, tourists, the regional recycling cooperative, the Director of Hygiene for the Department of Rocha, and the Ministry of Tourism. Stakeholders were particularly involved in developing and implementing the active probing (elaborated upon above) of the system. As found by Hall (2001), stakeholders benefited from the collaborative nature of the research not only through the process of knowledge generation and exchange, but

also by establishing ownership of the developed knowledge to encourage the sustainable continuation of stakeholder efforts.

Table 1: Overview of stakeholder group participation in research activities

Overview of Research Tools		
<i>Tool</i>	<i>Participant stakeholder group</i>	<i>Total participants</i>
Structured interviews	Permanent residents	54
Focus groups and waste container construction	Permanent residents (18), Waste sector worker (1), Community organizations members (5), Tourists (10)	34
Community Map	Permanent residents (8), Community organization members (2), Administrators (2), and Waste sector worker (1)	13
Semi-structured interviews	Administrators (2), Waste sector worker (1), Community organization members (2), Permanent resident (1), Tourists (1)	7
Recycling efforts	Permanent residents, Community organization members, Administrators, Waste sector workers	
Awareness-building efforts	Permanent residents, Community organization members, Tourists, Administrators, Waste sector workers,	
Participant observation	n/a	n/a

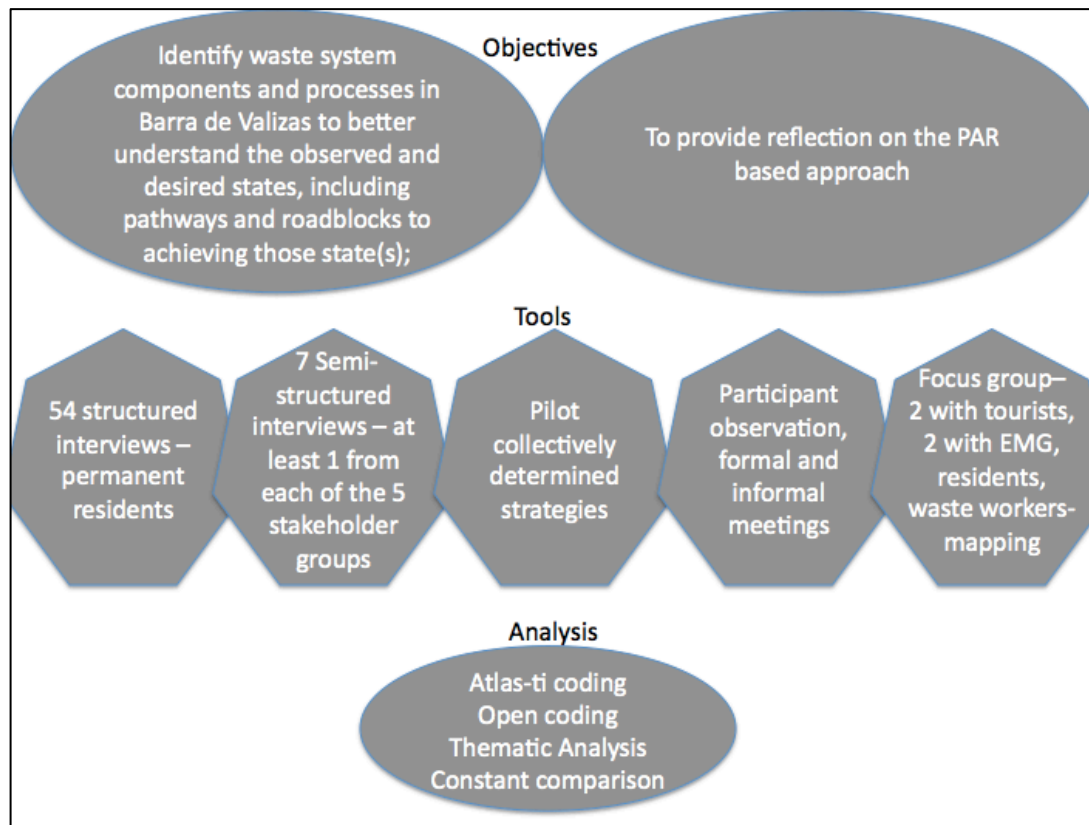
4.7 Methods

In response to the research questions (see above), I outlined some data collection and analysis techniques for my research and asked stakeholders, particularly the EMG and the Mayor of Castillos, for feedback. These techniques (described in further detail in the below sections) were based on commonly used tools in PAR and/or waste systems studies, and highlighted some of the information that was required for achieving my research goals (according to previous conversations with various community stakeholders; see Table 2 and Appendix: Table 10). I applied mixed methods (interviews, surveys, focus groups, and community mapping) to triangulate findings. I kept a research journal and filled out contact summary sheets to assist me in maintaining constant critical reflexivity on research findings, directions, partnerships, impacts, processes, ethics, and outcomes. All guides and forms were translated into Spanish by myself and checked over by a resident of Barra de Valizas to ensure culturally appropriate language use.

Table 2: Required information and how to achieve it - based on research objectives and key activities

Objective/ key activity	Required Information	Methods
1) Identify key waste system components and processes in Barra de Valizas to better understand the observed and desired states, including pathways and roadblocks to achieving those state(s)	Empirical data on waste production and flow	Structured interviews with permanent residents
		Document analysis/Literature review – memoing
		Semi-structured interviews with 2 waste sector worker, 1 community organization representatives, 1 permanent residents, & 2 administrators
		Community mapping sessions
		Participant observation
	Stakeholder perceptions of current waste system functionality	Same as tasks for acquiring empirical data on waste production & flow
		Focus groups
		Participant observation
	Stakeholder suggestions for waste system improvements	Same as tasks for acquiring stakeholder perceptions of current system functionality
Document analysis/Literature review – memoing		
2) Pilot collectively determined strategies to move towards desired state(s)	Objective 1 contributes	Informal and formal meetings – conversation circles
	Implement pilot intervention strategies and evaluate	Collaboratively develop written survey of permanent residents – develops into structured interviews
		Semi-structured interviews with 2 waste sector worker; 1 community organization representatives; 1 permanent residents; 1 tourist; and 2 administrators
		Focus groups
		Knowledge mobilization – field notes
		Participant observation
3) Provide reflection on the PAR based approach	Objective 2 contributes	Use resilience theory & PAR as research frameworks – field notes
		Evaluate experience of applying these frameworks based on field notes, memoing, & strategy results from tasks.
		Participant observation
	Trends in research related to waste systems in tourism dependent communities	Document analysis/Literature review – memoing
	The current role of social-ecological resilience theory & PAR in waste systems in tourism dependent communities	Document analysis/Literature review – memoing

Figure 6: Methods overview



4.7.1 Document Analysis/Literature Review

In line with the dialectic between lived and documented experience that is part of the PAR approach, I used a number of written sources throughout the course of my research. Apart from my initial literature review to familiarize myself with the theoretical and practical context of my research, I searched for and analyzed relevant literature as themes emerged throughout my interaction with the community. This literature was primarily related to methodological, community development and resilience theory. Similar case studies were also useful because there is scant available literature pertaining specifically to the waste systems of coastal Uruguay. The emerging themes were solidified, broadened and, in some cases, contested through the literature.

4.7.2 Sampling

Participants were brought into the research through snowballing. Data was

collected based on theoretical sampling, which collects data samples based on “concepts that have proven theoretical relevance to the evolving theory” (Strauss & Corbin, 1990, p. 176). When concepts “are repeatedly present or notably absent [...] and are of sufficient importance to be given the status of categories”, they have proven theoretical relevance to the study at hand (Strauss & Corbin, 1992, p.176). Within theoretical sampling are open sampling and relational sampling (Strauss & Corbin, 1990). Open sampling selects participants in interviews, and other sources of data, somewhat indiscriminately in order to develop consistent categories and make new conceptual discoveries (Strauss & Corbin, 1992). Relational sampling is discriminate and involves selecting sources of data that will “constantly compar[e] hypotheses against reality (the data)” (Strauss & Corbin, 1992, p. 187). This grounding of concepts being identified and explored is fundamental for ensuring rigour (Morse, 2007).

4.7.3 Structured interviews

To achieve a baseline understanding of the waste system in Barra de Valizas, I needed to first learn how much waste is being produced, by who, where, and how it is being disposed of (Fehr, 2010). Apart from an estimate of waste production in the nearby city of Rocha, there is no baseline data available. To acquire this baseline information I conducted 54 structured interviews - composed of open and closed questions related to respondent attributes, behaviour, attitudes, and beliefs about the waste system in Barra de Valizas - with permanent residents (Hay, 2005). The interview questions were initially to be administered as surveys, but interviews were adopted based on an evident cultural preference for oral communication. Likert scales, combined with open-ended questions, were included throughout the interview in order to show tendencies and then clarify those tendencies with more detailed responses. I created a draft of questions and shared it with the Director of Hygiene, members of the Barra de Valizas Environmental Management group, community residents, and the local Mayor. After consulting these stakeholders on possible additions or other changes, I finalized set of questions to be used (see Appendices: Sample Questions 1). I administered these interviews in the homes of

respondents, in the Barra de Valizas Community Room, or in my office in Barra de Valizas; and they were completed in person. Consent information was included in all interviews.

4.7.4 Community Mapping

I worked with permanent residents, community organizations, administrators, and waste sector workers to produce a community map of the current waste system and of the barriers and opportunities for future system improvements. Ideas shared during the community mapping sessions complemented data from interviews and focus groups. Community maps are an open and inclusive research tool and are commonly used in Participatory Action Research because of their contribution to democratizing knowledge (Amsden & VanWynsberghe, 2005). I constructed a birds-eye view map of the town manually using printed sections of the town from Google maps (2012) and pasted them together on a large poster board. From past experience with community mapping, I had envisioned this process as focused and immediately interactive. However, time restraints and community dynamics led to the development of the community map over several sessions and with varying combinations of stakeholders present. EMG members were present at each session. Other participants included permanent residents, a waste sector worker, a member of the Barra de Valizas Citizen Group, and an employee of the office of the Mayor of Castillos. As stakeholders contributed to the map during focus groups and meetings, the map brought together diverse perspectives. These perspectives related primarily to waste infrastructure assets and challenges; participants discussed for example, where recycling and waste education activities were prominent, where waste containers were lacking, where waste containers were causing problems, where additional waste containers would be best placed and how trucks could navigate that new placement. I recorded observations after each session. Oral consent was attained at the beginning of the community mapping session. Participants contributed data in words, images, and/or numbers to create a map of the waste system in Barra de Valizas (see Figure 7).

Figure 7: Community map after first session



The final product of the community mapping session - the waste system map - was used as a visual aid and idea guide in the development of one pilot initiative for waste reduction and one pilot initiative for waste diversion. The waste system map was edited and digitalized using Google Maps and with the Graphic Design expertise of Uruguayan Ministry of Tourism employees. The map was printed and shared in a calendar (focused on raising awareness) that was distributed throughout the community (see Figure 13, Section 6.4). The process of collaboratively creating the map was not video-recorded due to community dynamics, but was analyzed and reflected upon to capture the rich sources of data provided through the dialogue and relationship-building (Amsden & VanWynsberghe, 2005). Participants were fascinated by this birds-eye view of the town and took pleasure in finding their homes and identifying sites of interest on the map. This was a rewarding reaction that I had not anticipated.

4.7.5 Focus groups

Four focus groups were held: two with permanent residents, the EMG and a municipal worker (see Table 3) and two with tourists (see Table 4). Here I outline the participants and format of these focus groups.

Table 3: Focus group participants

	Participation numbers based on affiliation			Total Participants
	EMG	Residents	Municipal worker	
11/08/12	4	8	1	13
22/09/12	4	10	1	15

Table 4: Tourist focus group participation and country of origin

	Country of Origin of Participants				Total Participants
	Spain	Brazil	Uruguay	Canada	
29/01/13	1	1	4	1	7
13/02/13	1		5		6

Focus group participation took on a different form than anticipated. With the exception of the administrators, the stakeholders were much more comfortable sharing their ideas and suggestions in the context of a work party. These informal focus groups were thus organized around community participation in garbage container construction because this was identified as a priority action for waste system improvement (see Figure 8). Verbal consent was attained at the beginning of all focus groups. As found by Hay (2005) focus groups allowed for interactions between respondents and thus teased out different information than during one-on-one interviews. These focus groups, which were coupled with active work parties, generally attracted participants who preferred to act on the waste system rather than talk about the waste system. In these sessions, discussion focused on areas of the town where waste system infrastructure improvements were required and on strategies for reducing the burden on the current waste infrastructure (such as building awareness).

Figure 8: Garbage container construction with community



Two informal focus groups were held with a total of 18 permanent residents, one waste sector worker and 5 EMG members in the Barra de Valizas Community Room (see Table 3 above). These participants responded to an open call for participation and some were informed about the focus groups through snowballing. These focus groups were originally intended for participation from at least one permanent resident of Barra de Valizas, one waste sector employee, one administrator and one community organization representative. My understanding of the relationship between administrators and the rest of the stakeholders would have been enriched though the participation of administrators during focus group meetings. However, the presence of administrators in community activities was not considered a priority and was outside of the organizational capacity of the stakeholders (for example, organizations and institutions are understaffed). In the first focus group, the community map was introduced and common themes were teased out (see Appendices: Sample Questions 5). In the second focus group, the group continued to work with and contribute to the existing data to further understand the barriers and opportunities for effective waste system management in Barra de Valizas, and to develop possible initiatives for waste reduction and diversion. These ideas were developed further with the Environmental Management Group during multiple meetings.

Two further focus groups were implemented with a total of ten tourists – in a local café - to understand tourist perceptions of the waste system in Barra de Valizas (see Appendices: Sample Questions 2; see Table 5 above). These tourists responded to an open call for participation; given that they chose to take the time during their vacation to participate in this activity, it is evident that they represent tourists with interest in the waste situation in Barra de Valizas. More research activities with the general tourist population (likely in the form of a brief survey) would bring forward a representation from a more diverse group of tourist voices. These focus groups began with a beach cleaning activity based on successful weekly community interventions already being led by Ginkgo Biloba of Clowns Without Borders (see Figure 9), elaborated upon below in the *Building Awareness* section of the *Results Chapter* (Section 5.4). The community map of the Barra de Valizas waste system was then presented and participants shared their perspectives in relation to challenges and opportunities and their suggestions in terms of waste system improvements. Participants also shared information about resource use and waste behaviour while in Valizas compared to while at-home. This information was solicited via the use of waste material flashcards distributed, by each participant, between waste behaviour pockets and the resulting discussion. I hired a research assistant from the EMG to assist me with organizing the tourist focus groups and processing the data.

Figure 9: Beach cleaning activity tourists during focus groups



4.7.6 Participant observation

Participant observation was used to “gain understanding of the participants and their group dynamics” (Valentine, 2002, pg. 46) and was key in understanding the relationship building process, the interactions within the system, and the possible pathways for future interactions. Observations were made and analyzed in my field journal and on contact summary sheets that were filled out after many participant interactions. This process highlighted differences and similarities between my perception of the situation and that mapped out with the community. These observations developed into further inquiry, both in the literature and with the community.

4.7.7 Semi-structured interviews

One waste sector worker; two community organization representatives; one permanent residents; one tourist; and two administrators were interviewed one-on-one in a semi-structured format - in the Barra de Valizas Community Room, in my office, or in their respective offices - to further understand barriers and opportunities for effective waste system management in Barra de Valizas (see

Appendices: Sample Questions 3; see Table 5: Overview of interviews). As found by Hay, “[s]emi-structured interviews have “some degree of predetermined order but still ensure[d] flexibility in the way issues [we]re addressed by the informant” (Hay, 2005, p. 80). Written consent was attained at the beginning of all interviews. I filled out a contact summary form after each interview to keep my initial observations, codes, and reflections organized (see Appendices: Data Management Tool 1; Miles & Huberman, 1994).

Table 5: Overview of interviews

Date	Hours	With whom	Location
22/06/12	1.5	Mayor of Castillos	Municipal office
02/07/12	1	Permanent Resident	Interviewee residence
17/07/12	2	Ex-EMG member	Interviewee residence
30/07/12	1.25	Director of Hygiene	Departmental office
14/11/12	1	RRC	Recycling plant
22/01/13	2	Tourist	BV community room
17/04/13	1	Municipal waste worker	My office

4.7.8 Learning through doing

The pilot implementation of two specific initiatives decided upon with community – one for waste reduction through building awareness and one for waste diversion through recycling - elucidated the feasibility of the key ideas brought forward and created a better understanding of the waste system in Barra de Valizas (elaborated upon in the Results and Discussion Chapters). These activities were chosen (by the EMG and I) based on interviews, community mapping sessions, focus group discussions, and informal and formal meetings, as well as from obvious momentum in the community towards these initiatives. I led the pilot initiatives with the Environmental Management Group, and all stakeholders participated when they could and desired to. The initiatives were bound by time (within the field research time-line) and by resources (within the capacity of project funding and community involvement). Apart from measuring the amount of plastic bottles diverted from the landfill, formal project evaluation was not given importance in the Barra de Valizas context. With consideration of the time-line for this research, the EMG and

administrators prioritized data related to waste behaviour over evaluation of pilot activities. We (the EMG and I) evaluated the pilot throughout its process and after the 2013 tourist season. This evaluation was based on our experiences and informal comments and questions received from other stakeholders (field notes and meetings were particularly useful for this). The Rocha Recycling Cooperative also provided data related to the quantity of plastic bottles diverted from the landfill. I further evaluated these pilots through an interview with the municipal waste sector worker.

4.8 Analysis

Most information was analyzed qualitatively, though quantitative measures were used as an initial analysis of structured interviews, documents, and literature (see Table 6 for analysis techniques). I entered all structured interview data into a categorized spreadsheet using excel. The responses for each structured interview were tabulated. As such, I was able to establish the percentage rates of the multiple respondent answers, identify trends in the data, and develop graphs and charts of this data. I hand coded the open answered structured interview questions and again used excel to identify response trends. I shared these responses with the community and used the results of the structured interviews to stimulate further conversation in meetings, focus groups, and community mapping sessions. This sharing of information also verified that my translations of the data from Spanish to English were culturally appropriate.

Table 6: Analysis methods associated with applied research tools

Tool	How Analyzed				
	E	CA	OC	TA	Atlas-ti
Structured interviews with permanent residents	*	*	*	*	
Document analysis			*	*	
Semi-structured interviews with 2 waste sector worker; 1 community organization representatives; 1 permanent residents; & 2 administrators		*	*	*	*
Community mapping sessions		*	*	*	
Participant observation			*	*	
Focus groups		*	*	*	*

* E (Excel), CA (Content analysis), OC (Open coding), TA (Thematic Analysis)

I transcribed all interviews and focus groups (initially in Spanish and then translated to English). I used an N-Vivo type program (Atlas-ti) to begin the coding process of this data. This content analysis was useful for repeatedly identified key points in the data, but was not useful for understanding their meaning or context. I then hand-coded the focus group and interview transcriptions, based on categories and codes identified in the surveys and community mapping sessions and including emerging categories and codes. I mind-mapped the identified codes and categories, including ideas found in the literature. I found this three-step analysis (first with the computer program, then by hand, then mind-mapping) useful for pursuing a comparative analysis that organized and contextualized the emerging information.

Constant comparative analysis was useful for identifying emerging codes and categories through “active and repeated scrutiny of data” (Bryant & Charmaz, 2007, p. 35). The iterative process of content analysis, descriptive and analytic coding, and memoing allowed important relationships and themes to be pulled from the data (Strauss & Corbin, 1990). As themes emerged from the data, I looked further into that theme in the literature and the other data. Conversely, as themes that were relevant to my data emerged in the literature, I looked further into that theme in the data. This constant comparison allowed me to understand the data within the context, while being relevant to the literature.

I memoed throughout the research process to organize ideas, to compare and contrast literature with the data, and to move from description to conceptualization (Lampert, 2007). I also attended local meetings organized by or for the above stakeholders to build trust, to further understand stakeholder perspectives, to contribute to my field notes (extremely important for providing context), to support the cause, and to encourage continual stakeholder networking and project involvement. I filled out a contact summary sheet (see Appendices: Data Management Tool 1) after most encounters and found this to be a concrete and effective method for organizing my thoughts and developing my future questions. I

also met with stakeholders to discuss my thoughts that were developing about the research. As such, I constantly incorporated stakeholder feedback in the analysis process.

I analyzed through constant comparison during my field research period and concluded analysis upon arrival back at UVic. I consulted with participants and partners throughout the analysis process to ensure that I was appropriately interpreting the data. Data collection ceased when theoretical saturation was reached; that is, when no new data emerged for any of the fully developed categories and “the relationships between categories [we]re well established and validated” (Strauss & Corbin, 1990, p. 188). This saturation ensures that the data are meeting the criteria for rigour (Morse, 2007).

4.9 Dissemination

Results from the research process were shared with research partners and key stakeholder groups via meetings, emails and poster announcements in the Barra de Valizas community center. The Barra de Valizas Environmental Management Group (EMG) used results from this research for their successful application (for waste reduction, diversion and awareness building activities) to the United Nations Environment Programme Small Grants Fund. I contributed twice to a series of publications created by the EMG in February 2014. I also presented initial findings and thoughts at the Canadian Association of Geographers conference in August 2013.

5. Results

The research identified several prevalent themes related to the Barra de Valizas waste system; these were tourist season saturation and influence, physical infrastructure, *concientizacion*, consumption and waste behaviour, and social assets (in particular responsibility, communication, power, trust and leadership). This chapter focuses on results related to the research objectives of understanding observed and desired states, including pathways and roadblocks to achieving those state(s); and providing reflection on the PAR based approach.

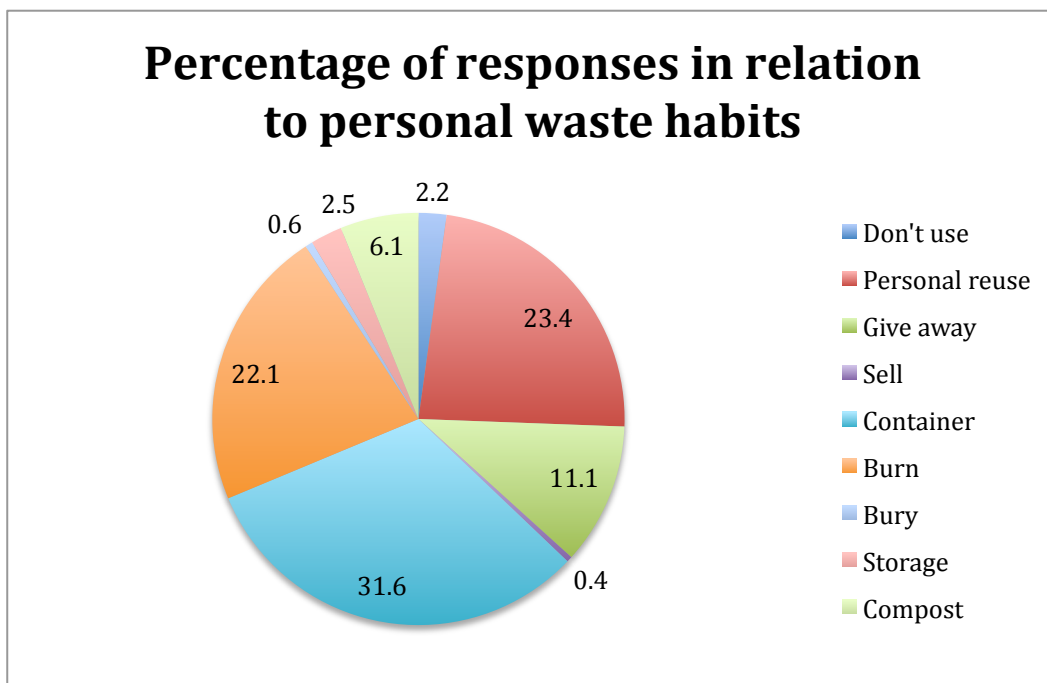
I will elaborate on how the abovementioned themes were clarified and the objectives were met through interviews, document analysis, focus groups, community mapping, and engagement with/ participation in the waste system. Some identified themes are beyond the scope of this research and are identified as areas for future research. Following is a description of the waste system in Barra de Valizas in relation to waste system developments, plastic bottle recycling, and awareness building as identified through the research process. These overviews demonstrate observed and desired states, including pathways and roadblocks to achieving those state(s) and illustrate some key elements of the PAR process.

5.1 Waste System Development in Barra de Valizas

Solid waste in Rocha, Uruguay is a responsibility of the Department of Hygiene of the Environmental Management Division of the Departmental Government of Rocha (Estudio Pittamiglio, 2011). There are three final disposal sites in Rocha, one of which is in the Municipality of Castillos (Servetto, R., Personal Communication, April 20, 2013). The Castillos disposal site is an open dump, once a quarry, where waste is dumped, scavenged (for materials of value, such as metals and plastics), covered with gravel, and burnt daily (personal observations, July 26 2012 and April 14 2013; permanent resident interview responses). The municipal government of Castillos, under the direction of the Director of Hygiene, is in charge of solid waste management in Barra de Valizas.

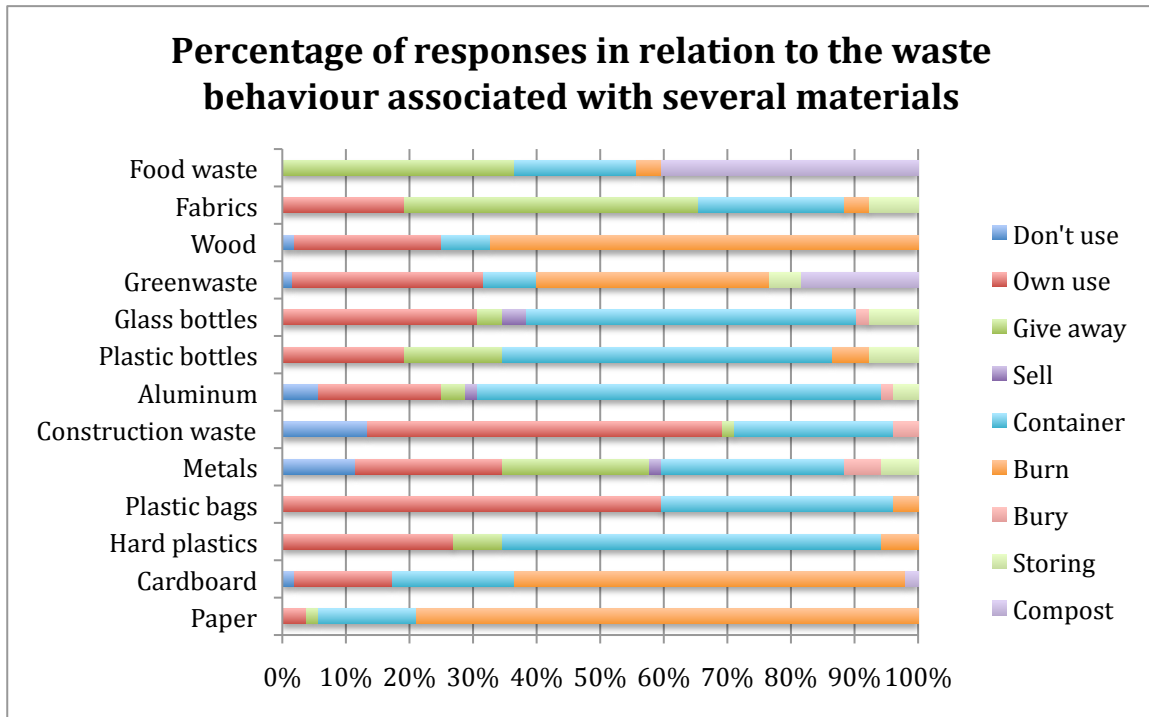
Waste collection and associated tax collection began in Barra de Valizas in 1996 (Servetto, R. Personal Communication, June 22, 2012). Until 1996, all solid waste was buried, burned, reused, or composted in the backyards, open plots and ditches of Barra de Valizas (Servetto, R. Personal Communication, June 22, 2012). According to results from the permanent resident structured interviews, container disposal, personal reuse of materials, and burning are currently the primary personal waste habits (see Chart 1 & Chart 2).

Chart 1: Permanent resident personal waste habits



*Note: *Don't use* refers to a personal choice to not use a certain material.

Chart 2: Permanent resident personal waste habits with material details



*Note: *Don't use* refers to a personal choice to not use a certain material.

This visual representation of waste disposal or reuse behaviour (see Chart 2) demonstrates the amount of compostable and recyclable waste being sent to the landfill via waste containers; the amounts and diversity of waste being reused within the household or given away for reuse or recycling; and the significant use of certain waste materials as fuel for cooking or heating.

Except in the case of greenwaste, burning of materials such as wood, paper and cardboard waste is an essential fuel source for heating and/ or cooking in many households. Greenwaste is generally not used as a fuel source and rather burnt on the side of the road, primarily by the local waste worker. Chipping and composting of greenwaste were suggested as alternatives to the current practice of open burning of greenwaste. According to interviews and focus group participants, the toxicity of burning plastic is commonly recognized; as a result, plastics are generally not burnt as a fuel source.

Interviewees and focus group respondents expressed that they are sending more materials to the landfill than they would like. Many respondents took responsibility for much of their food waste through composting; their construction, plastic bag and other material waste through re-use; and their wood, paper and cardboard waste through burning for fuel. Further, interviewees and focus group respondents also demonstrated a cultural norm of re-using and re-circulating materials. For example, one focus group participant stated that she saved her food waste to give away to a neighbour with pigs (the pigs eat the food waste) and another commented that he receives and gives fabric waste to use for sewing projects and cushion stuffing. Respondents expressed a sense of pride in their resourcefulness with materials that would otherwise be destined for the landfill and a joy in the sense of community built through the cycling of resources.

The tourist focus group brought to light an array of perspectives relating to tourist waste and consumption behavior in Barra de Valizas. There were respondents who expressed satisfaction in being able to participate in recycling and composting while on vacation and/ or felt that vacationing in Barra de Valizas provided them with an opportunity to experiment with more sustainable waste habits than were possible in their home communities. Other respondents spoke of the contingent of tourists who come to Barra de Valizas to completely let loose and who demonstrate irresponsibility in their consumption and waste disposal habits. Indeed, these two divergent tourist behaviours were evident throughout the town.

Some waste literature highlights the power differentiation between those who give their used materials and those who accept those materials (see for example Section 2.2.1). However, respondents did not express this sentiment in terms of how they felt about those who worked with waste or how they felt about working with waste. Further, one interviewee spoke of the contribution of waste workers (informal and formal) in keeping Barra de Valizas clean and stated the following: “it's a bit difficult to do because it's dirty work and not a pleasant job”.

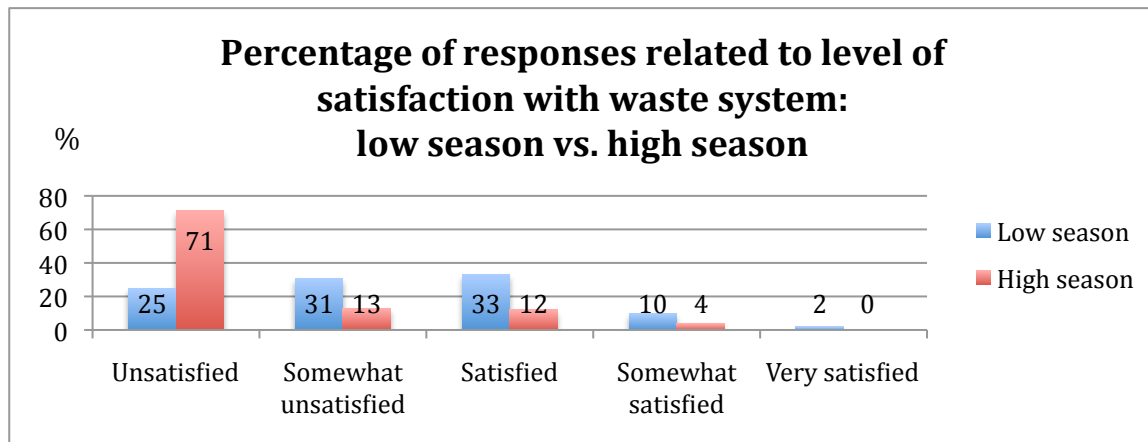
There is a significant difference between peak tourist season and the rest of the year in relation to satisfaction of permanent residents with the waste system (see Table 7; Section 6.4 highlights in more detail where respondents would like to see improvements in the waste system). One interviewee overviewed some of the impacts of the concentration of tourists in the following statement:

In winter there have been improvements in that waste is collected very often, and it's enough because there is less concentration of population. When the [tourist] explosion comes, things get complicated and it's pretty complicated in Valizas. Then the major difficulties I attribute to the government to deal with. I do not think it's a problem of tourists being dirty because tourists usually comes from places with better educational norms, where there are enough containers for example, then the difficulty is the number of tourists or the concentration of tourists that we have there [in Valizas]. And the vehicles can not achieve the desired satisfaction.

-Interviewee

Individual waste behaviour was a principle factor for waste system dissatisfaction. 71% of permanent resident interview participants replied that they are unsatisfied with the Barra de Valizas waste system during the tourist season (see Table 7). Lack of street cleaning was highlighted by 92% of permanent resident interview participants as a reason for waste system dissatisfaction. Lack of infrastructure, individual waste habits of tourists and residents, and lack of control mechanisms around these behaviours were also highlighted; these concerns were further identified in other interviews and focus groups as underlying causes of heaping waste containers and litter-covered streets. One tourist focus group participant stated, "It's gross. So we need to have the proper infrastructure so that [the waste] is really inside the container, contained inside, because if it's not, it's disgusting and it can also cause illness".

Table 7: Permanent resident waste system dissatisfaction – high versus low season



It is commonly stated that Barra de Valizas is a difficult place to organize services and infrastructure, partly due to the ‘no [wo]man’s land’ characteristic of the community (as mentioned above and this could be an area for further study). Infrastructure issues are also evident in areas of electricity (frequent power outages), drinking water (many households, particularly those used only during the tourist season, do not have safe drinking water), roads (frequently in disrepair and/or flooded), and health care (most health care attention, beyond primary care, requires travel twenty minutes by car to Castillos). This is similar to infrastructure difficulties identified by Butler (2001) in other tourist destinations that experience peak periods of tourist visitation. Furthermore, permanent residents and summer residents have organized groups that work at the local level for the environmental, social and/or economic wellbeing of the community (e.g. Neighbourhood Committee and Environmental Management Group).

Interviews, focus groups, community mapping and personal observation demonstrated that there is an evident component and process of self-determination and self-sufficiency in the town, including in issues related to the waste system. For example, several neighbourhoods have built and maintain their own landfill waste containers. There was some animosity however in the varying level of participation and commitment; one focus group participant stated the following:

There are people who are enjoying the infrastructure [house] that they built 15 years ago and they are enjoying the rent from that infrastructure. That's only possible because the space [town] is self-organized by the neighbours, and the people come and do absolutely nothing, just do coke and drink wine.

Relatedly, another focus group participant commented that some people feel that their taxes should be enough of a contribution to the waste system. This participant therefore says “no” to requests for contributing time or resources to waste system improvements.

A number of waste system components and processes were identified through this research process. This section focused on general waste system developments whereas the next section will focus on saturation of the waste system during the tourist season and the associated priority need to address waste containment.

5.2 Tourist season saturation and waste containment

The two following quotes highlight the sentiments of research participants in regards to saturation of waste system human and physical infrastructure components during the peak tourist season.

There are people that rent a cabin for 4 people and the head of the guy who comes is thinking, 'if we divide the price in 4 it's this much, and what if we have 6 or 8 people staying to make it cheaper' and so you get 20 people packed into a cabin for 15 days and the cabin explodes, the septic, the water, the waste, this is it.

-Tourist Focus Group Participant, February 13th, 2013

But in the beach towns it's worse [...] because so many people come and if you have 20 containers, 100 people of which 10 are uncivilized and these 10 throw their garbage outside the containers, and the others inside. When the people invade, it goes from 100 to 10000 which means there are 1000 uncivilized and there are still only 20 containers. That's the problem you have. It's an event that happens every year. 2 trucks come. The 2 trucks from winter are the same and the guys put in 16 hours instead of 8 hours. And they're getting old. They put in 16 hours, many more kilometers, much more weight. And so the 4th of January the pistons start falling apart. We enter in chaos. Not only because there is more garbage but because there are many more elements to cover and that is the big egg.

-Interviewee

Permanent resident interview participants produced an average of four times more waste during the tourist season, primarily from increased consumption of packaged goods and home businesses. Respondents highlighted waste produced by businesses as a key contributor to waste system saturation. Despite the legal obligation for businesses to contain their waste until the collection truck passes (Servetto, R. Personal Communication, June 22, 2012), waste containers are heaped with business waste, particularly restaurant waste such as food scraps and food containers. The intense seasonal aspect of business implementation complicates study with these groups and this is an area for further research.

Given that funds were not sufficient for augmenting waste trucks and associated personnel, waste containment between waste pick-up was considered imperative. Waste containers were deemed to be insufficient and inadequate. 17% of permanent resident interview respondents had to walk more than 6 blocks from their residence to access a waste container. One elderly permanent resident interviewee stated that this distance to the container meant that she was unable to bring her waste to the container and had to rely on her son or another neighbour to do this for her. 77% found that there were too few containers for the amount of waste produced during the tourist season, particularly given that commercial waste (especially restaurant waste) is deposited in the town containers. In some instances this results in piles of waste being formed where no container is available. These piles of waste are then exposed to the high coastal winds and to wild dogs, which leads to waste scattered throughout the town. The need for more waste containers was highlighted by interviews with the Director of Hygiene, the local Mayor, and local municipal waste workers; meetings with the EMG; and personal observations of overflowing containers. Figure 10 shows the waste from one business and dozens of households (both tourist and permanent resident) after one day of accumulation.

Figure 10: Overflowing waste containers December 28th, 2012



The mixed methods approach to this research made it possible to hear the opinions and experiences of many community members and key stakeholders. Focus group participants and semi-structured interviewees echoed the structured interview participants' calls for increased waste containment possibilities. During focus groups and through the community map it was identified that an additional 30 large containers and 20 small waste containers were needed to meet the needs of the community during the peak tourist season. "We need more containers around the whole town" was a commonly heard phrase. Furthermore, an effort to improve waste containment was supported by the EMG, by local and regional government authorities, and by waste sector workers.

The EMG had already made some containers for the community and had received wood and money donations from the municipal government and an NGO (Ecologia Costera) respectively to build more containers. Ten waste containers, with hand-painted instructional signs attached, were made. The EMG, led by a member of the group who is a carpenter, and myself did the bulk of the construction and sign painting. Community volunteers assisted during two well-attended work parties (that were coupled with focus groups) and several drop-in sessions. The local community radio promoted the effort and encouraged volunteers to contribute. Approximately 30 permanent residents contributed to the waste container

construction and signage painting. Another 20 or so came by to serve mate (prominent local tea drink), and/ or offer refreshments, and/ or chat with volunteers. Community 'buy-in' was high, demonstrated by participation in and support for the effort.

After five months the containers were installed (see Figure 11 below), based on locations deemed as priority during a community mapping session, as appropriate by local municipal waste workers, as allowed by hygiene laws and as convenient by the EMG. A permanent resident with a horse and buggy transported the majority of the containers and the remainder were transported by the municipal waste truck. The municipal waste worker and permanent residents did the lifting and installing.

Figure 11: Example of installed waste container and sign



Despite community engagement in waste container construction and participation in defining container installment locations, five out of ten of the containers were repositioned based on complaints from residents about the inconvenience of having a waste container close to their residence. Complaints were received either by the Mayor of Castillos or the EMG; these parties responded differently to the complaints. The Mayor of Castillos made unilateral decisions for change while the

EMG consulted further with the community and other stakeholders to resolve the issue. The majority of these complaints were related to previous experiences with overflowing waste containers throughout the tourist season (see Figure 10 above). This “not in my backyard” (NIMBY) response was interesting, coming (in four of the five instances) from the same community members who called for more waste containers and despite participation in the research process, both with EMG and I. These complaints highlighted the impact of other waste system components on the reduction of waste container problems such as overflowing containers. For example, the “inevitability” that a truck will break down and the containers will go a day or two without being emptied. As the Mayor of Castillos (June 22nd, 2012) pointed out about the precarious state of waste vehicles to manage waste in the peak tourist season, “the 4th of January the pistons start falling apart”. In cases where the Mayor of Castillos responded to complaints, residents voiced discontent with not being consulted after the container placement decisions had originally been based on community consultation.

The EMG responded to container placement complaints and, from the experience, decided to incorporate public notification of actions into future projects. This ability to adapt and continue relates to the ability to absorb shock and maintain the same essential structures, processes, and feedbacks; the capability to self-organize; and the capacity to build social and economic capital for learning and adaptation - all key factors of resilience (Folke, 2006). Through the trust, networks and knowledge of waste system actors developed in this experience, the community is better prepared to deal with shock and disturbance in the waste system. While the containers themselves are not going to solve the systemic waste system challenges, such as waste production patterns, the community process in building these containers was demonstrative of resilience. Community members demonstrated commitment to waste system improvements through participating in these activities. The EMG, the municipal waste sector worker, and the Director of Hygiene demonstrated leadership and social cohesion in co-developing and co-implementing these waste containment improvements.

5.3 Plastic bottle recycling

In 2004, the Uruguayan national *Law of Non-returnable Packaging* was passed. This law charged packaging producers and packaged product producers extended responsibility for their products. It was put into place in 2007 with decree 250/007 and established a 'per kilo of packaging waste sent to the landfill' fee for these producers. The Uruguayan Chamber of Industry (CIU) won the bid to manage the implementation of decree 250/007 (Giordano, R. [Recycling Cooperative Coordinator], Personal Communication, October 2012) and uses these funds to administer the program and to support the formalization of recycling cooperatives throughout the country (CIU, Personal Communication, October 2012). Since 2009, the Rocha Recycling Cooperative (RRC), which functions in the city of Rocha, is supported primarily by the CIU, the Ministry of Social Development, and the Department of Rocha. Recycling efforts in the Department of Rocha are centralized to the RRC.

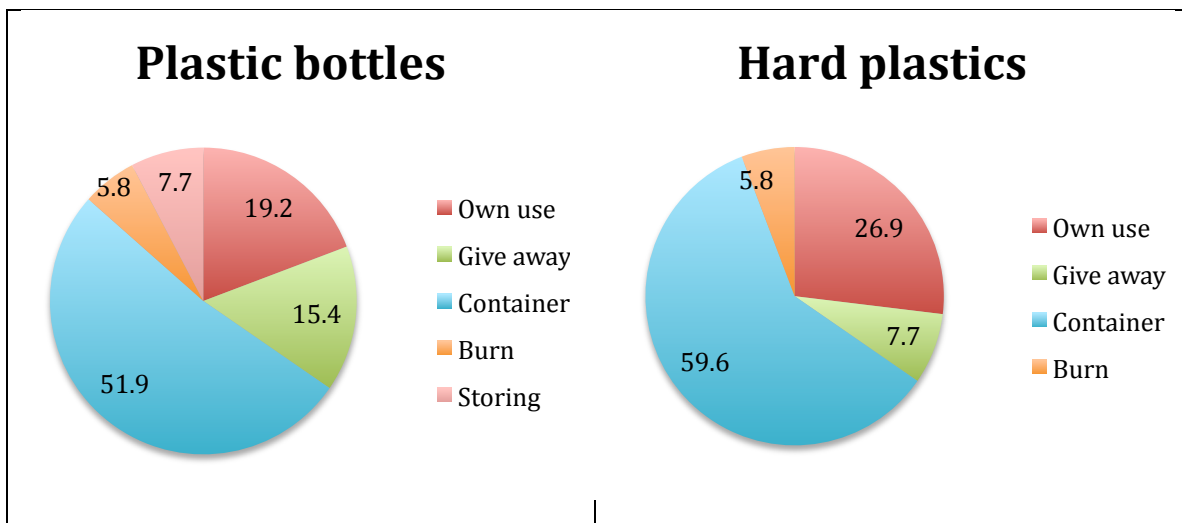
In 2006, the Ministry of Social Development began a program, *Uruguay Classifies*, aimed to improve the social inclusion of informal recyclers (Comuna de Rocha, 2009). Plastic bottle recycling projects were piloted throughout the country. In 2009, Barra de Valizas was the focus of one such pilot. Uniforms, salaries, infrastructure and promotional materials (targeted at tourists and permanent residents) were funded through this pilot, but the community was unwilling and/or unable to continue the project beyond the original, funded year (discussed further below). While *Uruguay Classifies* no longer functions in the interior of Rocha, pockets of community-led recycling projects are functioning in Punta del Diablo, Cabo Polonio, La Paloma, and Lascano, all in coordination with the RRC (de Leon, F. [Rocha Director of Hygiene], Personal Communication, July 23, 2012). This is indicative of self-organizing capacity.

The Director of Hygiene, the EMG, and focus group participants deemed plastic recycling a priority for improving the waste management situation in Barra de Valizas. As one focus group participant stated, "It doesn't make sense for plastic bottles to be going to the landfill in Castillos, finally to be burnt which is what

usually happens there. Those bottles have value and right now it's being wasted." However, waste diversion is not a panacea to waste related issues. As stated by another focus group participant: "The amount of plastic bottles used is a problem. It's great that there is recycling, but there is still too much plastic bottle consumption." Nevertheless, waste diversion supports the sustainability process by removing materials from the landfill and creating waste awareness (Fehr, 2010).

60% of permanent resident interview participants send their hard plastics to the landfill and 52% send their plastic bottles to the landfill because the only option for plastics recycling at that time was personally transporting materials – one hour by motor vehicle – to the City of Rocha (see Charts 3 & 4). Hard plastics and plastic bottles were found to make up a third of household waste during the off-season and nearly half of the household waste during the peak tourist season. This shift is the result of more bottled sodas, alcoholic beverages and water consumption during the peak tourist season. Furthermore, restaurant beverage distributors have, in the last five years, changed their packaging from reusable glass bottles to plastic bottles.

Charts 3 and 4: Plastic waste habits of permanent resident interviews



All permanent resident interview participants stated that recycling is important for the local environment (except one who was unsure due to lack of exposure to recycling). 94% were willing to take the time and energy to participate in a

recycling program, if there were one in the town. Explanation of why there is a discrepancy between willingness to participate, yet the failure of the 2009 *Uruguay Classifies* program in Barra de Valizas can be found further down in this section. First, I will overview the reasons provided by respondents for why they were or were not willing to recycle.

The reasons in favour of participating in recycling were varied. Many of the responses were short and direct including responses such as “It’s simple”, “It’s important”, “For the earth”, “To not waste”, “To reduce waste”, and “Recycling is life”. Most reasons related to reducing landfill waste and not wasting materials. A few respondents elucidated a cultural norm of recycling through phrases such as “The kids already have it incorporated” or “It’s what you do”. Some of those who were willing said that their willingness was conditional to the program being different than the previous recycling pilot in Barra de Valizas (in 2009).

The reasons against participating in recycling were diverse. One response was, “I bury my waste”. One respondent voiced that she was not physically capable to recycle. She said, “I am too old and weak for that.” Some of those who were not willing to participate in recycling referred to a sense of disillusionment with the plastic bottle recycling pilot project.

According to interview and focus group data, and documents analysis, the key factors for disenchantment with the past recycling project were as follows: inappropriate collection containers (they flew in the wind), inappropriate deposit site (they were simply piled beside the police station and from there, flew around the town), lack of continuity (the project was funded for three months, only during the peak tourist season), lack of awareness for the community, lengthy wait time for the bottles to be transferred to their processing site (several months), and a rumored final deposit in the local dump. In relation, one interviewee stated the following: “They weren't organized. They have other things to do. And when summer begins, things get complicated; people start working and have no time. This was the reason for which the project ended in Valizas”. Similar issues have

been identified in other waste management studies as well (see for e.g. Penpece & Celik, 2011 and Tobias, Brügger & Mosler, 2009). In addition to these issues, the primary municipal waste worker in Barra de Valizas highlighted the importance of increased human resources. He agreed to collecting the recyclables, granted that the Department of Hygiene provide an additional municipal worker be assigned to Barra de Valizas for the tourist season. This demonstrates the importance of a two-pronged approach whereby grassroots initiatives are supported by decision-makers of significant influence. Concerns were thereby clarified and addressed to avoid further community disillusionment with recycling.

Meetings and interviews with the Director of Hygiene, the RRC, and their accompanying non-governmental organization responded to these concerns. These waste system actors had already worked together for several years on the *Uruguay Classifies* program (in the towns and cities where the program was active) and this provided significant insight to recycling efforts in Barra de Valizas. It was determined that the best starting point for recycling would be plastic bottle recycling based on minimal odour production, ease of transport and processing, and economic viability (seven pesos – or around 37 cents - per kilo). Further, the Director of Hygiene highlighted the importance of working from current waste system strengths. For example, he stated the following: “There's a group of recyclers in Rocha. For this model that is already functioning, we need to find a way to have several centers transporting their material to them [in Rocha] for resale. In principle, the first thing I would do is this. Engaging all the actors, also including the recyclers. And I think this would be a very important base for Valizas”. Furthermore, metals were collected and sold by a permanent resident of Barra de Valizas; cardboard and paper were, for the most part, burnt for heating and barbecues; and glass containers were frequently reused; these materials were therefore not considered priority for recycling.

Community members donated waste materials from their construction sites to build the plastic bottle deposit site. The local departmental councilman donated the physical space for the deposit site and the deposit was built with the departmental

councilman, three permanent residents, and an EMG member. The Director of Hygiene was already creating educational materials for recycling efforts in the City of Rocha and offered to print these materials for Barra de Valizas with Departmental resources. In recognition of the nuances in the waste system activities of each locality, he was open to the EMG and I drafting the content and design of educational materials for Barra de Valizas. Educational materials were designed, based on interview and focus group results regarding educational priorities (discussed further below), and sent to the Director of Hygiene to be printed. These materials were distributed to residences (primarily via rental agencies) and businesses throughout the community.

Plastic bottle collection containers were provided by the Director of Hygiene and installed in five key locations in the community; these sites were chosen primarily based on interview data from local municipal workers who are most knowledgeable about plastic bottle waste distribution. In response to requests from the EMG and the municipal waste worker, an additional waste sector employee was assigned to Barra de Valizas to assist with waste collection, including street and beach cleaning, for the tourist season. The collection containers withstood the fierce coastal winds, were continuously filled with plastic bottles, and were emptied twice daily by the municipal waste workers. The deposit site was filled five times from January to March and the RRC responded promptly to the call for transfer each time the deposit reached the truck's capacity (about eight cubic meters). Materials were brought to the warehouse in Rocha, then compressed, bailed and sold by the RCC to "Deposito Padernal" in Montevideo for final processing. Approximately 20,000 kg of plastic bottles were retrieved, from which the RCC made approximately 140,000 pesos (or ~US\$ 7,370). The municipal waste worker stated:

...I didn't find the recycling program difficult. Not at all. Having someone to help out it was great this summer. The plastic recycling worked really well and having the recycling containers was great...And the place for plastics storage [at the councilman's] worked really well too...It was all very neat and well done...Yes, the town was much cleaner...

The system remains in place, though quantities are reduced outside of the tourist season. The EMG received an official letter from the Municipality of Castillos congratulating their successful efforts in improving the waste system in Barra de Valizas. The EMG, the local municipal waste worker and the Mayor of Castillos expressed that increased community buy-in, fostered by responding to grievances with previous recycling efforts (such as heavier bins and an extra staff person), supported the success of these efforts.

5.4 Building awareness

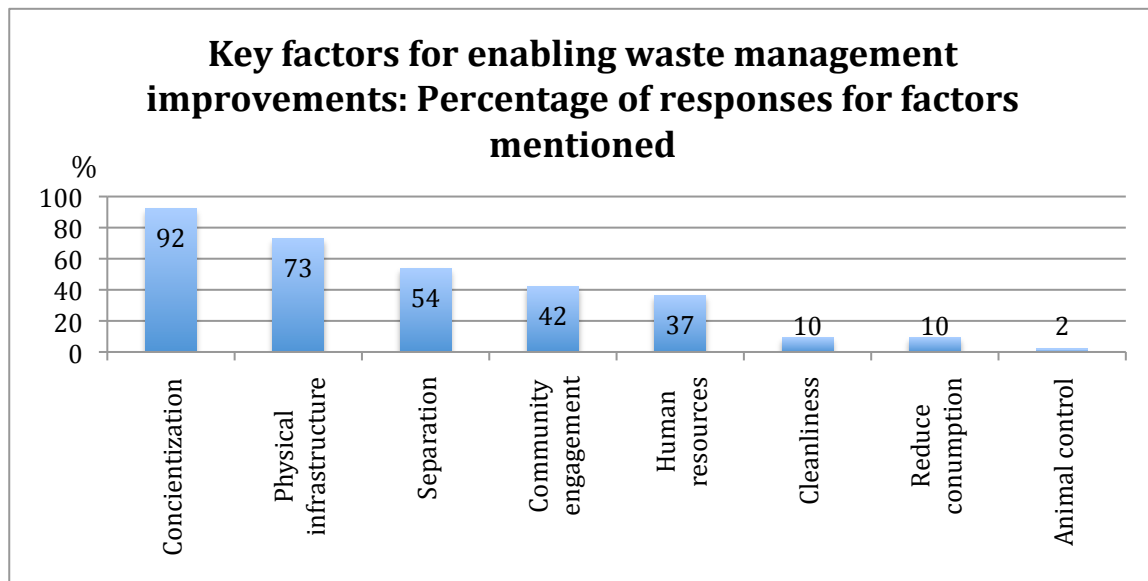
Your beliefs become your thoughts, your thoughts become your words, your words become your actions, your actions become your habits, your habits become your values, your values become your destiny. – Mahatma Gandhi

For effective waste management change to occur, policy and technology change efforts must be linked with behavioural change campaigns, and these campaigns must go beyond preaching to the converted (Bulkeley & Askins, 2009). There was rarely an interaction, be it interview or passing conversation, related to waste that did not highlight the importance of awareness building (see section 4.3.4 for explanation of the use of awareness building rather than conscientization). Barra de Valizas is already considered an area of significant environmental and waste conscience compared to neighbouring towns. One interviewee stated the following: “Valizas already has the youth conscious in school and also the adult that comes from other places and so there is an embarrassment factor. That is, if nobody litters, I will not litter.” This presented an opportunity to build on strength, using an asset rather than deficit approach.

Within rapid shifts of waste production, permanent residents in Barra de Valizas demonstrate a perspective that awareness building has contributed and will contribute to reduced waste production and better waste disposal habits. 92% of permanent resident interview participants found *concientizacion* to be the most important factor for bettering waste management practices in Barra de Valizas (see Table 9). Conscientization relates to a problem posing, rather than a “banking”, form of education (Freire, 1970) and is often a component of Participatory Action

Research. While conscientization and awareness are very similar, conscientization implies deep reflection on the why as much as the what, particularly in relation to personal and systemic behaviour. Further, conscientization relates to dialogue (verbal, artistic, emotional etc.) between individuals and between individuals and their lived experience. As expressed by Freire (1970), “...no one teaches another, nor is anyone self-taught. [Wo]Men teach each other, mediated by the world, by the cognizable¹ objects which in banking education are “owned” by the teacher” (pg. 67). This being said, *concientizacion* is the language used in the Uruguayan context for the spectrum from awareness building to conscientization. You will thus see this language in Table 8 below. Further research would be required to clarify the level of *concientizacion* that these respondents are referring to.

Table 8: Factors proposed by permanent residents for waste system improvement



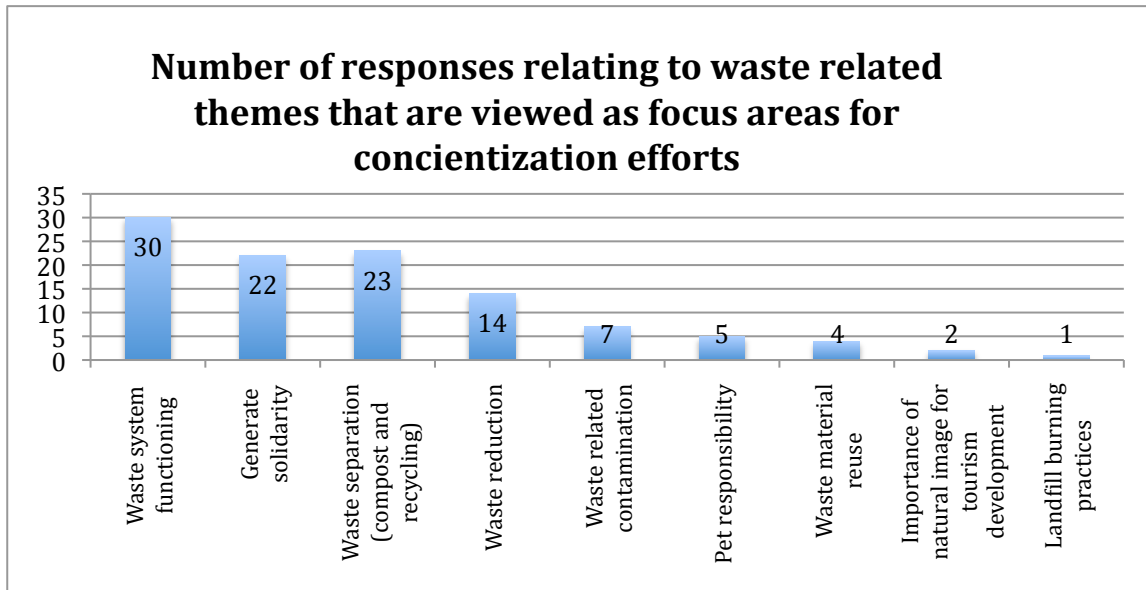
Other factors highlighted by respondents for enabling waste management improvements can be found in Table 8. Physical infrastructure, human resources and separation are addressed in previous sections. Through further questioning related to conscientization, it became evident that community engagement, cleanliness, reduced consumption and animal control were considered aspects to address through conscientization. For example, building awareness amongst dog

⁴ Perceptible; clearly identifiable (Oxford Dictionary)

owners about the negative impacts (primarily waste scattered throughout the streets) of allowing their pets to run wild and scavenge in waste containers.

The respondents highlighted several additional areas where building awareness would be effective in improving the waste system. Interviews and focus groups with tourists exposed a total lack of communication about how the waste system works in Barra de Valizas. Similarly, one interviewee stated that “tourists do not know how the waste system works here, they think an [municipal] employee is going to come and take the waste from their door and separate it for them”. It was expressed in almost all interviews and focus groups that further communication and awareness building would improve waste behaviour and a number of key areas were highlighted. For example, why and how to contain waste away from animals, eliminate batteries from the landfill, and compost organic materials. A tourist focus group participant from Brazil stated, “Here, you need to work in ideas, in education. Each garbage container needs to have signs that say not to throw the garbage outside of the container”. Further, one focus group participant stated that “It would be good to do a little more education about what plastics can and can not be recycled.” Other areas for awareness building were also highlighted in the permanent resident interviews (see Table 9). Two respondents spoke specifically to building awareness amongst residents by focusing on the importance of maintaining Barra de Valizas’ natural image for tourism development. One respondent found that people needed to be more connected to the ‘away’ of throwing away their waste, by learning more about the burning practices at the landfill and the negative consequences this practice entails. Further, fostering solidarity and separating waste through composting and recycling were identified in focus groups and interviews alike as significant focus areas for awareness building efforts.

Table 9: Areas identified for awareness building efforts



Conscientization occurs through action and reflection (Freire, 1970). This action and reflection manifested in experiential learning through involving residents and tourists in the research process and in community efforts to improve the waste system (e.g. two beach cleaning activities and waste container construction). It resulted in the communication of learning with the broader public, particularly relating to areas of concern as identified through interviews and focus groups. This communication took the form of educational leaflets (mentioned above in the recycling program section), an interview session on the local community radio, signage on the waste containers (as mentioned in section 5.2), and an informational calendar. The leaflets were printed by the Department of Hygiene and the calendars were printed by the Ministry of Tourism and Sport (MinTurD).

The educational leaflet focused on the following themes: general waste system functioning and recommendations, battery and plastic bottle disposal, and organic matter separation (see Figure 12). The informational calendar was designed (as per ideas brought forward in the interviews and focus groups) to showcase recent waste system improvement efforts in Barra de Valizas; to give tips on composting, recycling, reusing, and refusing waste materials; to guide tourists and residents to appropriate sites for disposing batteries, recyclables, and organic waste; and to

display images of Barra de Valizas outside of the tourist season (as provided by permanent residents and returning tourists). Waste system information contributed through the community map were digitalized and shared in the calendar (see Figure 13). 210 copies were sold to permanent residents and tourists, at U\$2.50 each, to make U\$525 for the EMG. The rest (790 copies) were given away to residents, tourists and EMG supporters to increase exposure to the material.

Figure 12: Educational Leaflet

Valizas Limpia, Limpia Valizas!

✓ Compacta tu basura.	✓ Ponla en bolsas cerrada.
✓ Tírala adentro de los contenedores.	✓ Elige los productos que tienen menos envase.
✓ No la tires en contenedores llenos.	✓ Reutiliza todos los materiales que puedas.

Restos Orgánicos:

Haz un Pozo y Devuelvelo a la Tierra!



 **Las Pilas:**

Desechalas apropiadamente en Villa Invisible en frente al Puente y opta por pilas recargables.

Las Botellas de Plástico:

Depositálas en los contenedores de reciclaje que se encuentran en el pueblo.






Figure 13: Edited and digitalized community waste system map as shared in calendar



The tourist beach cleaning activities were combined with tourist focus groups and were spearheaded by a returning tourist who voluntarily cleans the beach during the tourist season. This tourist takes on the role of a clown, pseudonym “Gingko Biloba”, and interacts with tourists on the beach as he collects waste, mostly cigarette butts. When interviewed, “Gingko” reflected that he does this because he sees tourism-related waste transforming the natural and social landscape of Barra de Valizas. He stated in his interview, “...one wants the things to improve, and it doesn't seem so hard to improve things, but you need to have the patience to achieve change”. As a returning tourist who benefits economically from work in the town during the tourist season, he is compelled to use his clowning talents as a vehicle for change. This creative initiative showcased the diversity of elements that are responding to Barra de Valizas’ rapid shift from small fishing village to tourist destination and the associated changes in the waste system. Further research is

needed to understand the role of tourists who are committed to the social and environmental well-being of Barra de Valizas and similar tourist destinations.

Awareness building efforts were aimed at controlling ecological contamination and building social cohesion related to waste responsibility in the face of increased waste production during the tourist season. This was facilitated through the product and process of specific educational activities, of recycling endeavors, and of participation in the research. The EMG, the MinTurD, the Director of Hygiene and “Ginko Biloba” nurtured and preserved social learning, leadership and creativity in the waste system through these activities.

6. Discussion

This chapter will connect the above results to the relevant waste, tourism and methodological literature that was overviewed in Chapters 2, 3 and 4. The objectives of this study were to identify key waste system components and processes in Barra de Valizas to better understand the observed and desired states, including pathways and roadblocks to achieving those state(s); and to provide reflection on the PAR based approach. The experience of implementing pilot actions with the community, the participant responses, and the literature all contributed to meeting these objectives.

6.1 Waste system discoveries: components and processes, pathways and roadblocks

Based on structured interviews with permanent residents, waste production in Barra de Valizas was found to be four times greater during the peak tourist visitation period as compared to the off-season; this occurs without a four-fold increase in waste management infrastructure. This phenomenon, coupled with a desire for the town to remain clean and continue to attract tourists who support the key local industry, is driving action at various levels of the waste system.

A number of challenges emerge as the waste system is put into “all hands on deck” mode during the tourist season, particularly because most of those hands are focused on acquiring their annual income in the three months of the peak tourist season. The effectiveness of waste system responses often hinged on one component and this generated significant vulnerability. In human resources for example, if the carpenter member of the EMG had not continued with leading waste container building efforts, the waste containers would not have been built, as there was no-one to replace his role. Walker and Salt (2002) highlight that redundancy is a component of resilience; redundancy relates to the ability of the system to learn to live with change and uncertainty and to nurture diversity for reorganization and renewal. The lack of redundancy in human resources demonstrated in the above-mentioned situation with the carpenter and in the reliance on one permanent

municipal waste system worker, shows an area where resilience is less evident.

In infrastructure for example, the Mayor of Castillos pointed out the lack of sufficient trucks when he spoke of the pistons falling apart on the trucks by the 4th of January. One truck breaks, the waste does not get picked up from the containers for two or three days, and the community is left with a significant waste issue, regardless of the efforts and mechanisms of other system components. Nevertheless, there has been significant improvement (as highlighted in the data and expressed in the waste system developments – Section 6.1) over the last two decades and it is important to recognize and celebrate these improvements as they are evidence of the ability of the system to learn to live with change and uncertainty and to nurture diversity in actors (EMG, tourists, permanent residents, local and regional government officials, waste sector workers) and responses for adaptation to their shifting waste system and economic dependence on tourism. As the Director of Hygiene stated:

...the important thing is to have the perspective of how it began. The difficulty was tremendous, we had no vehicles, we had nothing. Today I can say I am quite happy, because improvements have been achieved [...] but when you see it, like you, from outside, there are difficulties...as in Valizas. There are places that are better in the department [of Rocha...] and Valizas has had improvements but we cannot say that the waste management of Valizas is acceptable. We must recognize this...

The increases in attention on the waste system, apparent economic gains from waste separation, and influence from regional and national waste system levels have supported many changes at the local level as well as the local level supporting the agendas and policies of the regional and national waste system actors. Those local level changes include the pilot actions implemented through this research.

The experience of developing and implementing pilot initiatives with the various stakeholders shed light on waste system components; linkages; and past, present, possible and desired states. It showed that the waste system in Barra de Valizas has: 1) the capability to self-organize; and 2) the capacity to build ecological, social and economic capital for learning and adaptation - both key factors of resilience (Folke, 2006). Far less resilience was demonstrated in the ability to absorb the shock of their shifting waste system dynamics (increased waste production during the peak

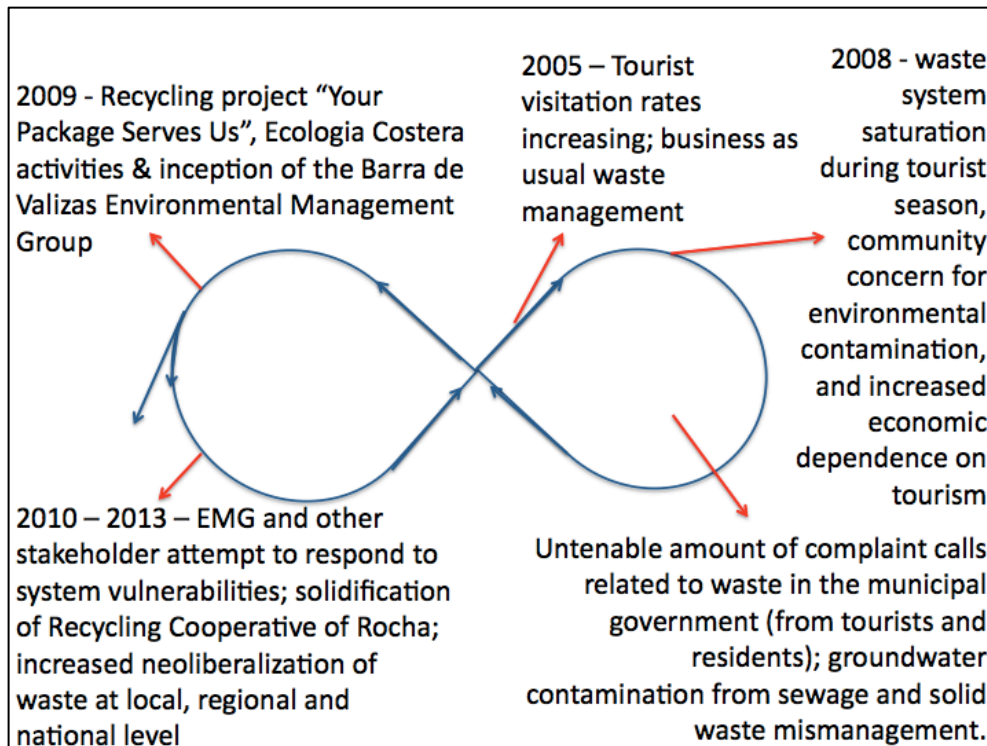
tourist season) and maintain the same essential structures, processes, and feedbacks. However, as the community self-organizes and builds social and economic capital in response to their shifting waste system, they are building their capacity to deal with increased waste and address system vulnerabilities (such as infrastructural and human resources deficits). Data acquired throughout the process was used to develop a successful project proposal, led by the EMG, for a waste recycling and education center in Barra de Valizas. The process demonstrated that further inclusion of non-permanent residents and tourists, informal recyclers at the Castillos dump, policy-makers and enforcers at the departmental and national levels, and packaging and packaged product vendors will foster a more resilient waste system in Barra de Valizas.

It was difficult to individually evaluate the three actions that were implemented because of their simultaneous implementation and because of an expressed cultural norm of moving forward without evaluation. Priority need for base-line data about waste behaviour and actions to improve the waste system was demonstrated through interviews and meetings. Evaluation of activities was discussed. Given the limited time and resources available for evaluation, the EMG, the Director of Hygiene and I decided to evaluate activities based on quantity of plastic bottles diverted from the landfill (determined in collaboration with the Rocha Recycling Cooperative), tourist perceptions as expressed during focus groups, infrastructural details based on general observation, an interview with the Municipal Waste worker, and meetings with the EMG and the Mayor of Castillos. The three-pronged strategy, of improved collection capacity, waste reduction through recycling, and concientizacion, achieved a significant and noted reduction in waste related problems during the 2012-2013 tourist season. Based on reduced waste related complaint calls and their general impression of the experience, the Municipality of Castillos wrote a letter to the EMG congratulating them for their successful efforts in improving the waste system in Barra de Valizas. The municipal waste worker and tourist focus group attendees all noted the 2012-2013 season to be the “cleanest” since heightened tourist visitation began in 2005. Most importantly, awareness

(about how the waste system in Barra de Valizas works and the importance of waste recycling and waste reduction) and engagement in the waste system were supported and flourished.

There are evident cycles of action and reaction, growth and expansion, and shifting and reorganization in the Barra de Valizas waste system. The adaptive cycle heuristic and Butler’s tourism area cycle heuristic helped understand these cycles. The adaptive cycle promoted an understanding of system processes and system interactions and of the relationship between different levels and/or scales (including temporal scales). Butler’s heuristic for tourism area cycles describes processes of exploration, involvement, development, consolidation, stagnation and then rejuvenation or decline (Butler, 1980; see Section 2.3). His heuristic holds similarities to the adaptive cycle heuristic. The phase-defining characteristics of Butler’s heuristic complemented the adaptive cycle with expansion on the tourism perspective.

Figure 14: Overview of Barra de Valizas waste system cycles (2005-2013)



As seen in Figure 14, the Barra de Valizas waste system is in the midst of a new cycle. Interviews and focus groups further explained the historical development of the waste system (see Chapter 3 for the historical development as expressed in documents) and thus elucidated key moments in the adaptation of the waste system to increased tourism activity and associated waste production. The system began to reach a critical tipping point with increased tourist visitation rates and packaging consumption after 2005. In 2008, waste system saturation, community concern for environmental contamination from increased waste dumping, and increased economic dependence on tourism (which depends on a clean environment to maintain tourist visitation numbers) appear to have been catalysts for the Barra de Valizas waste system to begin a release out of a “business-as-usual” moment that conserved the tourist development and associated waste issues without significant waste system responses. The system then began to reorganize for adaptation with the recycling project *Your Package Serves Us* (see Chapter 3) and the inception of the Barra de Valizas Environmental Management Group. This reorganization set the stage for a more resilient and adaptable waste system state.

6.2 Building resilience in the waste system

Data and document analysis highlighted aspects of social-ecological systems that build resilience (see for e.g. Anderies, Walker & Kinzig, 2006; Olsson et al., 2006; Berkes & Seixas, 2005). These were trust, desire for change, confidence in the feasibility of presented actions, political willingness for change, leadership, space for creativity from within the community, and inter-institutional communication and bonds. Here I will focus on Olsson et al. (2006) findings that leadership, knowledge and networks are critical system components during system change because I find these three to encompass these diverse aspects. Though there is an evident lack of leadership from non-permanent residents and tourists, leadership was evident in a number of places in the Barra de Valizas waste system and will be discussed further below. Knowledge of the waste system was being brought together and shared; both in relation to this research and in relation to the sharing of experiences between government officials, municipal workers, the EMG and community members.

Through working together and sharing experiences, networks were solidifying and building capacity for responding to change. Here I will elaborate more on leadership and networks.

The EMG took a leadership role in waste system changes in Barra de Valizas. The group saw a window of opportunity to address some of the issues being experienced in the waste system; community buy-in was high, economic and ecological stakes were high, research support was being offered through this study, and the government was encouraging citizen control of the situation. Their “abilit[ies] to span scales of governance, orchestrate networks, integrate and communicate understanding, and reconcile different problem domains” (Olsson et al., 2006, pg. 1) are important leadership functions. However, “social-ecological systems that depend on one or a few individuals to provide leadership functions can be highly vulnerable” (Olsson et al., 2006, pg. 16). It was evident, based on participant responses and pilot project experiences, that waste system initiatives stood still when leaders in the EMG were unable to attend to issues and activities. There is caution to this dependence given that funds were unaccounted for and commitment to work party and meeting schedules was haphazard. Nevertheless, commitment to waste system volunteerism in general was high and this was fundamental given that the government was working in response to community voices and actions.

The Director of Hygiene and the Mayor of Castillos, with their necessity and/or ability to share responsibility and support community activities from their political positions, are also key leaders in this waste system. “Cross-scale relationships should, in the long term, be mutually sustaining, not exploitative from above or parasitic from below” (Anderies, Walker & Kinzig, 2006, pg. 4). This mutually sustaining arrangement was observed in the Barra de Valizas waste system. Multiple levels of government and diverse voices were included in waste system governance and communication between government and the EMG was fluid, with relationships having developed since the inception of the EMG in 2011. However, there is still much room for improvement for waste governance in Barra de Valizas. While the parties are mutually sustaining efforts, they are all working within a

situation of limited resources dedicated to this system; for example the Director of Hygiene is responsible for green spaces, graveyards and waste management for the entire Department of Rocha, and the EMG works entirely on a volunteer basis. The sharing of responsibility and general alignment of efforts and priorities make it possible for any improvements to occur in the Barra de Valizas waste system. There are dedicated actors within this system doing the best they can given their limited resources. Increased redundancy is difficult with limited resources, but would reduce the vulnerability of the waste system.

Fluid communication between community and government actors can streamline project activities. It is also important that roles and responsibilities, developed and implemented with trust, are a part of that fluid communication. For example, the EMG attained support for the development of pilot initiatives through direct letters to and meetings with the Director of Hygiene and the Mayor of Castillos. However, inconsistent and frequent transferring of leadership and associated responsibility created confusion and frustration. For example, container placement complaints were voiced to varying “leaders” and received varying responses. Complaints received by the Mayor of Castillos resulted in containers being moved by municipal staff to a different location. This created tension from community members who felt that the community had already decided where the containers were to be placed. Complaints received by the EMG resulted in further community consultation to determine appropriate placement, and in one case resulted in a location change. Importantly, members of the EMG had to face their neighbours daily whereas the Mayor of Castillos did not face daily scrutiny from Barra de Valizas community members. PAR contributed to a trusting relationship between the EMG and permanent residents and this trust, along with fluid communication, supported that the permanent residents felt confident in voicing their concerns. Further, these concerns were addressed without raising further conflict. More communication between the EMG and the Mayor of Castillos regarding roles and decision-making would likely have facilitated more clarity and less tension relating to waste container placement (more reflections on the use of PAR can be found in section

6.3). As in Participatory Action Research, roles and responsibilities must be charted out, mutually agreed upon, and recognized so as to improve knowledge mobilization, increase compliance with regulations and norms, diversify problem solving approaches, reduce transaction costs and increase social assets (e.g., Ostrom, 1990; Wiber et al., 2004; Gutberlet, 2008).

Anderies, Walker & Kinzig (2006) suggest that “the consequences of structural properties of systems are context-dependent” (pg. 4). The Barra de Valizas context gives formal networks and organizational roles a back seat position in a system driven by creativity, self-organization and willingness to act. This is combined with formal networks at the national and regional level. The Director of Hygiene, the Mayor of Castillos, local municipal workers, the EMG, the Rocha Recycling Cooperative, and the Ministry of Tourism and Sport were coming together to support waste system improvements in Barra de Valizas. At the community level, Gingko Biloba the clown/ waste activist tourist (see section 5.4), members of the EMG, the municipal waste worker, the community radio broadcasters who communicated waste activities and information, and the permanent resident who collects and sells metals support each other in a self-organized network of individuals who are willing to act in creative ways to respond to waste system changes. Both of these network levels were triggered to action by periods of waste system saturation (see section 5.2) from December to March. These networks demonstrated trust, desire for change (including political willingness for change), leadership, space for creativity from within the community, and inter-institutional communication and bonds; according to resilience scholars, these are aspects of social-ecological systems that build resilience (see for e.g. Anderies, Walker & Kinzig, 2006; Olsson et al., 2006; Berkes & Seixas, 2005).

Networks of individuals and institutions that support the Barra de Valizas waste system are quieted during the peak tourist season. This dormancy occurs, in part, because individuals are too busy with economic activity to attend to their networks. As voiced by a member of the EMG, “We had a lot of meeting with the supermarkets and businesses in town before the last tourist season to see how we could reduce

plastic bag usage, but things got out of our hands because we ran out of time. Once the season comes close, everyone gets so busy with getting things ready that they don't have time for anything else" (EMG member, Personal Communication, January 29th, 2013). Furthermore, those business operators who are in the community solely for the operation of a peak tourist season enterprise have weak ties and/or sense of responsibility to the community. As such, the social capital, which sustains an actively engaged waste system throughout the majority of the year, is deteriorated in the peak tourist season when community cohesion is perhaps most needed. Fostering leadership from non-permanent residents and tourists could alleviate this burden and further research in this area is needed.

Berkes and Seixas (2005) highlight that "learning to live with change and uncertainty [...] nurturing diversity for reorganization and renewal [...] combining different kinds of knowledge [...] and creating opportunity for self-organization" (pg. 5) are processes of resilience building. Leaders and the networks that support them (and that they support) face significant resource and organizational challenges as they come to understand and address waste system problems. As discussed in this section, these processes and the aspects that support them are evident in the Barra de Valizas waste system.

6.3 Reflections on the methodological approach

The PAR framework built comprehension of the Barra de Valizas waste system and the inclusion of aspects of resilience theory supported understanding of this rapidly changing situation. PAR is time-consuming and requires significant dedication to the topic and the community. I would not recommend undertaking PAR without ample support from other PAR researchers and/or the community. I would recommend participating and assisting in a number of PAR research project prior to undertaking an independent project. The methodology is learned through doing as much as the methodology is approached in this manner in research projects.

I found Hochachka's 2009 written account of her research in El Salvador to be helpful in understanding the nature of my own research. She implemented an

Integral Theory perspective to her Participatory Action Research. She expresses that “partial solutions simply cannot address very complex challenges” (pg. 401) and it is the integration of the interior and exterior dimensions of the individual and collective that community development initiatives serve to increase resilience in the face of ecological and/or social crises. My participation in the lived experience of the Barra de Valizas waste system enabled a more meaningful integration of the interior and exterior dimensions of individuals and the collective into my conscientization process related to the Barra de Valizas waste system and the methodological aspects of academic research. Freire (1970) identifies hope, love and critical thinking as fundamental elements for thematic dialogue and, as such, for the process of conscientization. I found this to be true.

Freire (1970) also writes, “[f]ounding itself upon love, humility, and faith, dialogue becomes a horizontal relationship of which mutual trust between the dialoguers is the logical consequence” (pg. 79-80). This foundation is also built with time. It took years of interacting with the community and a few months of personal contribution specifically to the waste system until stakeholders demonstrated a trusting relationship with the research project. With time comes the necessity for patience. As one tourist focus group participant stated, “...one wants the things to improve, and it doesn’t seem that hard to improve things, but you need to have the patience to achieve change” (January 29th, 2013). As described by Tandon (2008), PAR can result in increased understanding of the situation, immediate action and change based on increased knowledge, and increased capacity amongst partners to inquire and change. The desired purpose and result of the PAR process are established during the laying the foundations stage of the research (see section 4.3.3) and revisited throughout the research process (Ochocka & Jenzin, 2016). More cycles of data gathering and action (which would require more years) would contribute further to understanding and improving the Barra de Valizas waste system, including building more resilience.

The research process consistently demonstrated to me that there is no single path to meaningful community engagement in research. Though Arnstein’s ladder is an

excellent reminder of power dimensions in research, we are not climbing to the top of a type of best practices ladder, moving towards collaboration as key for citizen power. In some cases, attempted collaboration where time and human resources are scarce could actually whittle away at social capital. Similarly, tokenism could be useful for the actor to gain social capital and/or share voice without time commitment or social pressure. As stated by the Mayor of Castillos (June 22nd, 2012),

...Those who are not accustomed to voice their opinion maybe think differently, but they don't voice their opinion because they're not accustomed to, or they're embarrassed or they don't express themselves well. This happens in Valizas... [surveys] get to the people who don't usually voice their opinion, who don't like to be in the spotlight. Group meetings are for those who hit first...

Indeed, a number of the participants in the permanent resident structured interviews, who had no other contact with the research project, conveyed to me that they felt empowered by seeing their contribution to the research incorporated in the development of the research project (in terms of areas of focus and action activities).

Tremblay (2013) writes, “there first needs to be an understanding of what and where power already exists, what empowerment means to those involved, and how can their voices be heard and represented” (pg. 149). I had often considered empowerment to relate intrinsically to “active” participation. While working on my research proposal and developing the participatory aspects of this research, I imagined a room full of engaged stakeholders, ideas flowing onto community maps and flipcharts, heated discussion of what needed to change in the waste system and a communal willingness to get the work done. My research demonstrated that many people were empowered through simply being considerately heard, in an interview to interviewee situation, and that simply sharing ones voice can be a meaningful form of participation. Consultation would be hearing but not necessarily considering. Partnering implies more of a mutual consideration for the issue at hand.

As highlighted by Hall (1982), there is no universal recipe to PAR research; he describes PAR as a research approach that attempts to “serve more faithfully the interests of those with and for whom we work” (pg. 15). With this in mind, I found the best approach to be the one that was responsive enough to foster a trusting relationship and that served my requirements as a researcher and the community’s desires for learning, sharing and change. This approach is in line with much of the Latin American PAR, which demystifies research, shifts the role of researcher as expert, invokes respect and support for local knowledge, and contributes to community and social movements (Gutberlet, Tremblay & Moraes, 2014). This research supported the Barra de Valizas waste system actors in their response to increased peak tourism and associated waste production, thus supporting a small and localized movement.

Every interaction required a contextually appropriate decision about the nature of participation. For example, rather than insisting on the simultaneous engagement of all stakeholder groups (to achieve a glorious collaboration), I responded to a sense of community group engagement saturation by acting as a node between the various stakeholders. In this sense, I found O’Brien’s (2001) identification of the diverse roles of the PAR researcher (planner, leader, catalyzer, facilitator, teacher, designer, listener, observer, synthesizer and reporter) to be true. I felt this to be a meaningful contribution to human resources and social cohesion for co-developed research, engagement and action. With the popularization of collaborative governance and research comes, it seems, the inevitable hollowing of its meaning. There is a possibility to do harm with PAR even with the best intentions (Hall, 2005). Supporting researchers to develop their capacity in this area is increasingly important as the field burgeons. This is an important area for future research.

7. Concluding Remarks and Final considerations

In this conclusion I will go over the research objectives and questions and overview how these were responded to through this research. The objectives of this study were to identify, through the voices and perspectives of community members, key waste system components and processes in Barra de Valizas to better understand the observed and desired states, including pathways and roadblocks to achieving those state(s); and to provide reflection on the PAR based approach. To respond to the first objective, I will speak to specific research questions which were the following: 1) What are the current waste disposal and management practices in Barra de Valizas? 2) How does the peak tourist season change waste disposal and management practices in Barra de Valizas? 3) What is happening within the different components and processes of the waste system to address these changes? and 4) What are the key challenges and opportunities? I will then reflect on the PAR approach in this research.

7.1 Current waste disposal and management practices

The following six key influences on the Barra de Valizas waste system are apparent. One, the shift from burying, burning, reusing and composting as primary management methods to waste collection (with associated taxation and landfilling) in 1996 (Servetto, R., Personal Communication, June 22, 2012). Two, the extension of responsibility to packaging producers and packaged product producers through the *Law of Non-returnable Packaging* in 2004. This law led to the establishment of a 'per kilo of packaging waste sent to the landfill' fee for packaging and packaged product producers through decree 250/007 in 2007. Three, the nationwide implementation of a social inclusion program for informal recyclers entitled *Uruguay Classifies* through Ministry of Social Development in 2006 (Comuna de Rocha, 2010). Four, the pilot implementation, during the 2009-2010 tourist season, of the *Uruguay Classifies* program in Barra de Valizas (project title: "Your package serves us"). Five, the formalization of the Rocha Recycling Cooperative through support from the Uruguayan Chamber of Industry (CIU), the Ministry of Social Development, and the Department of Rocha in 2010 (CIU, Personal Communication,

October 2012). Six, the formation of the Barra de Valizas Environmental Management Group (EMG) which focuses its efforts on waste management activities (2011).

Waste collection and associated tax collection began in Barra de Valizas in 1996 (Servetto, R. Personal Communication, June 22, 2012). Until 1996, all solid waste was buried, burned, reused, or composted in the backyards, open plots and ditches of Barra de Valizas (Servetto, R. Personal Communication, June 22, 2012). According to results from the permanent resident structured interviews, container disposal, personal reuse of materials, and burning are currently the primary personal waste habits.

A significant amount of compostable and recyclable waste is being sent to the landfill via waste containers. 60% of permanent resident interview participants send their hard plastics to the landfill and 52% send their plastic bottles to the landfill. Hard plastics and plastic bottles were found to make up a third of household waste during the off-season and nearly half of the household waste during the peak tourist season. Also, a significant amount and diversity of waste is being reused within the household or given away for reuse or recycling. Finally, there is a significant use of certain waste materials as fuel for cooking or heating.

7.2 Peak tourist season impacts on the waste system

An increased volume of waste is being produced and waste containers are deemed to be insufficient and inadequate during the tourist season in Barra de Valizas. Interview and focus group responses all identified maintaining cleanliness during the tourist season as a key driver for waste system initiatives in Barra de Valizas. Tourism thus acts as a catalyst for chaos and repair.

71% of permanent resident interview participants replied that they are unsatisfied with the Barra de Valizas waste system during the tourist season. Permanent resident interview participants produced an average of four times more waste during the tourist season, primarily from increased consumption of packaged goods and home businesses. More bottled sodas, alcoholic beverages and water were consumed during the peak tourist season. Furthermore, restaurant beverage

distributers have, in the last five years, changed their packaging from reusable glass bottles to plastic bottles. Respondents highlighted waste produced by businesses as a key contributor to waste system saturation. Despite the legal obligation for businesses to contain their waste until the collection truck passes (Servetto, R. Personal Communication, June 22, 2012), waste containers are heaped with business waste, particularly restaurant waste such as food scraps and food containers.

7.3 Addressing waste system changes

As seen in section 7.1, the waste system has been adapting to shifts in economic activity (from fishing to tourism), consumption and waste production. Many research participants highlighted awareness-building, increased and improved waste containment, waste diversion and solidarity as underlying necessities for reducing the saturation of physical infrastructure during the tourist season. Further research is required to understand the role and perspective of tourists in contributing to waste system saturation and improvements.

For effective waste management change to occur, policy and technology change efforts must be linked with behavioural change campaigns, and these campaigns must go beyond preaching to the converted (Bulkeley & Askins, 2009). There was rarely an interaction, be it interview or passing conversation, related to waste that did not highlight the importance of awareness building. Within rapid shifts of waste production, permanent residents in Barra de Valizas demonstrate a perspective that awareness building has contributed and will contribute to reduced waste production and better waste disposal habits. 92% of permanent resident interview participants found *concientizacion* to be the most important factor for bettering waste management practices in Barra de Valizas.

Given that funds were not sufficient for augmenting waste trucks and associated personnel, waste containment between waste pick-up was considered imperative. Waste containers were deemed to be insufficient and inadequate. 17% of permanent resident interview respondents had to walk more than 6 blocks from

their residence to access a waste container. 77% found that there were too few containers for the amount of waste produced during the tourist season. The need for more waste containers was highlighted by interviews with the Director of Hygiene, the local Mayor, and local municipal waste workers; meetings with the EMG; and personal observations of overflowing containers.

The Director of Hygiene, the EMG, and focus group participants deemed plastic recycling a priority for improving the waste management situation in Barra de Valizas. Waste diversion is not a panacea to waste related issues. Nevertheless, waste diversion supports the sustainability process by removing materials from the landfill and creating waste awareness (Fehr, 2010). All permanent resident interview participants stated that recycling is important for the local environment (except one who was unsure due to lack of exposure to recycling). 94% were willing to take the time and energy to participate in a recycling program, if there were one in the town.

7.4 Challenges and opportunities

There are evident challenges such as increased waste production, insufficient waste containment, lack of awareness, and lack of diverse streams for waste diversion. In addition to these elements, networks of individuals and institutions that support the Barra de Valizas waste system are quieted during the peak tourist season. This dormancy occurs, in part, because individuals are too busy with economic activity to attend to their networks. Furthermore, those business operators who are in the community solely for the operation of a peak tourist season enterprise have weak ties and/or sense of responsibility to the community. As such, the social capital, which sustains an actively engaged waste system throughout the majority of the year, is deteriorated in the peak tourist season when community cohesion is perhaps most needed. Fostering leadership from non-permanent residents and tourists could alleviate this burden and further research in this area is needed.

The experience of developing and implementing pilot initiatives with the various stakeholders shed light on waste system components; linkages; and past, present,

possible and desired states. It showed that the waste system in Barra de Valizas has: 1) the capability to self-organize; and 2) the capacity to build ecological, social and economic capital for learning and adaptation - both key factors of resilience (Folke, 2006). Far less resilience was demonstrated in the ability to absorb the shock of their shifting waste system dynamics (increased waste production during the peak tourist season) and maintain the same essential structures, processes, and feedbacks. However, as the community self-organizes and builds social and economic capital in response to their shifting waste system, they are building their capacity to deal with increased waste and address system vulnerabilities (such as infrastructural and human resources deficits).

Olsson et al. (2006) identify leadership, knowledge and networks as critical system components during system change. Although there is an evident lack of leadership from non-permanent residents and tourists, leadership was evident in the Environmental Management Group, the Mayor of Castillos, the Director of Hygiene, and the tourist and clown (*Gingko Biloba*). Knowledge of the waste system was being brought together and shared; both in relation to this research and in relation to the sharing of experiences between government officials, municipal workers, the EMG and community members. Through working together and sharing experiences, networks were solidifying and building capacity for responding to change.

Multiple levels of government and diverse voices were included in waste system governance. Further, communication between government and the EMG was fluid, with relationships having developed since the inception of the EMG in 2011. However, there is still much room for improvement for waste governance in Barra de Valizas. While the parties are mutually sustaining efforts, they are all working within a situation of limited resources dedicated to this system. However, there is valuable opportunity in the space for creativity demonstrated in the Barra de Valizas waste system through such individuals and actions as *Gingko Biloba* and his beach cleans.

7.5 The PAR experience

The use of a Participatory Action Research framework, coupled with aspects of resilience theory, contributed to addressing the objectives and research questions related to this research. Aspects of resilience were particularly useful for understanding the ability of the system to adapt to change; to self-organize; and to build ecological, social and economic capital for learning and adaptation. The research foci were identified by the community, the research took place through an iterative process of action and reflection, and results were used to contribute to change related to the problem of waste system saturation during the peak tourist season. Without this participatory and active process, I would not have learned of certain components and processes of the Barra de Valizas waste system such as the ease of communications and power dynamics between the Mayor of Castillos and the Environmental Management Group, and the waste practices of more reserved members of the community. The diverse roles of the PAR researcher, such as planner, catalyzer, facilitator, listener, and synthesizer, were evident. The many challenges in navigating these diverse roles and still fitting within the parameters of academic research were also evident. As PAR approaches expand, it is important that they are coupled with appropriate training (including experiential learning) to maintain the integrity of these efforts. Further research and action will surely ensue in this realm. I am grateful for this opportunity to learn through doing via this Master's thesis project.

7.6 Final statement

This case study identified aspects and processes of the Barra de Valizas waste system, particularly its response to increasing tourism rates. The waste system, as viewed in this study, is a complex interaction of components and processes (such as consumption and disposal behaviour, physical infrastructure, solidarity, and economic development). This case study did not address all of these facets and further research is needed to understand the role of power, for example. The permanent resident interviews illustrated household practices related to waste disposal of various materials and indicated opportunities for reducing burned and

land-filled waste through recycling and awareness building. Research participants emphasized the need to educate tourists and residents about waste system functioning and disposal alternatives and to devise strategies for waste diversion during the tourist season. Involvement in and basic evaluation of waste container construction and pilot initiatives confirmed that these pathways were effective for the waste system and that the Barra de Valizas waste system has high capacity for absorbing, adapting to and shaping change. However, changes at other levels of the waste system, such as control of burning in the municipal dump, are also important for supporting a more sustainable waste system. Further research is therefore needed in the policy implementation realm.

Appendices


Timeline of research activities

Table 10: Timeline of formal interactions with key stakeholders and participation in research activities from 29/05/12 to 17/04/13

Date(s)	Hours	With whom	Type of Activity
29/05/12 - 15/04/13	36.5	EMG	Meetings
07/06/12 - 13/02/13	27.5	EMG	Active
27/06/12 - 24/07/12	43	Permanent Residents (PR)	Structured interviews
29/15/12 - 02/07/12	2	Municipal waste workers	Meetings
22/06/12	1.5	Mayor	Interview
02/07/12	1	PR	Interview
17/07/12	2	Ex-EMG member	Interview
30/07/12	1.25	Director of Hygiene	Interview
30/07/12	3	EMG, PR, Waste sector worker	Community mapping
11/08/12	4	EMG, PR (8), Waste sector worker	Focus group
13/08/12	1.5	Neighbourhood Committee	Meeting
27/08/12	2	UdelaR	Meeting
22/09/12	3	EMG, PR (10), Waste sector worker	Focus group
02/11/12	0.5	Director of Hygiene	Meeting
02/11/12	0.5	Ministry of Tourism	Meeting
13/11/12	0.5	Ministry of Tourism	Meeting
14/11/12	5	RRC & EMG	Meeting & interview
14/11/12	1	Chamber of Industry	Meeting
19/11/12	8	UdelaR	Conference
22/01/13	2	Tourist	Interview
29/01/13	4	EMG, Gingko; Tourists (6)	Focus Group
13/02/13	4	EMG; Gingko; Tourists (6)	Focus Group
17/04/13	1	Municipal waste worker	Interview

Sample Questions

Sample Questions 1: Structured Interview with Permanent Residents

 <p>GEOGRAPHY UNIVERSITY OF VICTORIA</p>	<p>Hora/Fecha:</p> <p>Ubicación:</p> <p>Consentimiento dado: <input type="checkbox"/> Si <input type="checkbox"/> No</p> <p>Encuesta administrada por:</p>					
<p>Gracias por tomarse el tiempo para contestar las siguientes preguntas. Esta encuesta es parte de un proyecto de investigación sobre el sistema de gestión de residuos en Barra de Valizas, Rocha, Uruguay. El proyecto recibió la aprobación ética de la Universidad de Victoria (Número de Protocolo 12-158). Para mayor información contactar a Rhianna Nagel en: rhianna@uvic.ca o al 4475-4040. Además, es posible verificar la aprobación ética del estudio, o plantear cualquier preocupación que pueda tener, comunicándose con la Oficina de Ética de Investigación Humana de la Universidad de Victoria (250-472-4545 o ethics@uvic.ca).</p>						
<p>La encuesta dura aproximadamente 15 minutos para completar. Su participación es completamente voluntaria. No hay consecuencias si decide no completar la encuesta. Por favor, avisenos si alguna de las preguntas no es clara, o si desea obtener más información acerca del proyecto de investigación.</p>						
<p>Al completar el cuestionario, su consentimiento libre e informado es IMPLÍCITO.</p>						
<p>Todas las encuestas se mantendrán confidenciales. Si usted desea retirar a medio camino de la encuesta, los datos se considerará incompleta y tu formulario será destruido y no se utilizara.</p>						
<p>Marque aquí si usted entiende sus derechos en esta encuesta: [] Gracias.</p>						
<p>1. ¿Cuántas personas viven en este hogar y cuáles son sus relaciones con usted?</p>						
<u>Relación</u>	Compañero/a	Hijos	Familia extendida	Amigos	Inquilinos	Otro (por favor, elabora)
<u>Cuántas</u>						
<p>2. ¿Cuánto tiempo llevas viviendo...</p>						
	Días	Semanas	Meses	Años	Todo la vida	
<u>a. en esta casa?</u>						
<u>b. en Valizas?</u>						
<p>3. Por favor, describa como participa tu hogar en el sistema de gestión de residuos.</p>						
<u>¿a que frecuencia pones la basura fuera para la recolección?</u>	Cada semana	Cada 3 días	Cada otro día	Cada día	2 veces por día	
<u>¿que distancia tienes que</u>	En	Media	1	1 cuadra	2	

caminar a un punto de recogida comunal?	frente de casa		cuadra		cuadra		y media		cuadras			
¿cuántas bolsas (tipo del supermercado) de basura tiras por semana?	1	2	3	4	5	6	7	8	9	10		
¿tiras basura orgánica en la basura?	Nunca		Casi nunca		A veces		Casi siempre		Siempre			
¿otras observaciones?												
4. ¿Está satisfecho con el servicio de recolección de residuos que recibe (fuera de la temporada alta de turismo)? Por favor, haga un círculo en el nivel de satisfacción que sienta.												
Insatisfecho		Algo satisfecho		Satisfecho		Muy satisfecho		Sumamente satisfecho				
5. ¿Que problemas encuentras en el sistema de manejo de residuos fuera de la temporada alta? Circule el/los correspondientes.												
a. la frecuencia de recolección					f. el habito de los trabajadores que recolectan la basura							
b. el cuidado del recipiente de basura					g. el habito de los lugareños							
c. la ubicación de los puntos de recolección					h. el habito de las turistas							
d. la limpieza alrededor de los recipientes					i. otra razón (por favor, elabore)							
e. el diseño de los recipientes												
6. ¿Alquilas tu casa durante la temporada alta de turismo? a. si b. no												
Si es sí,	¿por cuánto tiempo?				¿a quién?				¿en qué fecha?			
	día	semana	quincena	mes	familia	turista	amigos	otro	diciembre	enero	febrero	marzo
7. ¿Vivís en el pueblo durante la temporada alta de turismo? a. si b. no												
8. Comparado con la basura que producís fuera de la temporada alta (ver pregunta #3), ¿cuanta basura produce tu hogar en la temporada alta de turismo?												
¼	½	¾	Igual	1 y ¼	1 y ½	1 y ¾	Doble	Triple	Cuadruple			
Por favor, elabora sobre porque.												
9. ¿Está satisfecho con el servicio de recolección de residuos que se recibe durante la temporada alta de turismo? Por favor, haga un círculo en el nivel de satisfacción que sienta.												
Insatisfecho		Algo satisfecho		Satisfecho		Muy satisfecho		Sumamente satisfecho				
10. ¿Que problemas encuentras en el sistema de manejo de residuos durante la temporada alta de turismo? Circule el/los correspondientes.												

a. la frecuencia de recolección	f. el hábito de los trabajadores que recolectan la basura
b. el cuidado del recipiente de basura	g. el hábito de los lugareños
c. la ubicación de los puntos de recolección	h. el hábito de las turistas
d. la limpieza alrededor de los recipientes	i. otra razón (por favor, elabore)
e. el diseño de los recipientes	

11. ¿Usted recupera algunos materiales para el reciclaje? Circule el/los materiales que le corresponden.

a. papel	f. escombros de material	k. materia de poda	p. cuero
b. cartón	g. cobre	l. madera	q. residuos de alimentos
c. plásticos duros	h. aluminio	m. huesos	r. otro (elabora)
d. bolsas de nylon	i. botellas de plástico	n. textiles	
e. metales ferrosos	j. botellas de vidrio	o. caucho	

12. Para cada uno de estos materiales que se recuperan para su reciclaje, por favor describas si se utiliza el material reciclable en su propia casa, si se lo da a alguien en la comunidad, si se lo vende a alguien en la comunidad, o si lo lleva a un centro de reciclaje para vender, elabore al respecto.

<u>Uso propio</u>		<u>Regalan</u>		<u>Venden en la comunidad</u>		<u>Venden a un centro</u>	
Material	¿Como?	Material	¿A quien?/ ¿Para que?	Material	¿A quien?/ ¿Para que?	Material	¿A quien?

13. ¿Cree usted que el reciclaje y/o el compostaje son importantes para el medio ambiente del pueblo?

Reciclaje	a. si b. no	¿Porque?
Compostaje	a. si b. no	¿Porque?

14. ¿Si había un sistema de reciclaje y/o compostaje en el pueblo, tomaría las medidas necesarias de tiempo, esfuerzo y organización para hacerlo?

Reciclaje	a. si b. no	¿Porque?
Compostaje	a. si b. no	¿Porque?

15. ¿Qué podemos hacer para mejorar la situación con los residuos sólidos?

16. ¿Cuáles son los temas relacionados a la basura que precisan más concientización?

Sample Questions 2: Focus Groups with Tourists

Purpose: To understand tourist perceptions and behaviour associated with consumption and waste in Barra de Valizas

Outline:

- Consent and project information
- Icebreaker
- Cleaning the beach with Gingko Biloba
- Reflections on waste collected
- Present overview of waste management trajectory in Barra de Valizas
- Provide calendar for each participant
 - Use calendar as conversation stimulator
- Present community map of waste system and do mapping activity with group
- Waste disposal at home and while in Barra de Valizas exercise
- Further questions/comments????
- Thanks!

Key themes to be covered:

- Have you been on vacation in Barra de Valizas before? How long do you usually stay? Will you come again? Do you rent a house, camp, stay in a borrowed house, or stay in your own house?
- What motivated you to come to this focus group?
- What are your key motivations for coming on vacation to Barra de Valizas?
- Do you feel a sense of responsibility for the local environment while on vacation in Barra de Valizas? Why? Why not? How do you demonstrate this sense of responsibility?
- Do you separate your waste at home? Why/ Why not? Do you separate your waste while on vacation in Barra de Valizas? Why/why not?
- Do you consume more while on vacation in Barra de Valizas? Do you produce more waste while on vacation in Barra de Valizas?
- What is working and what is not working in waste management in Barra de Valizas?
- How do you think waste management in Barra de Valizas could be improved?

Sample Questions 3: Semi-structured Interview Guide

Purpose: To understand key stakeholders' perceptions of and role in the waste system of Barra de Valizas

Consent and Overview of Project

Key themes to be covered:

- Please describe your role in the Barra de Valizas waste system.

- How you have been involved?
- How do you view the current state of the waste system?
 - What are other key components of the waste system?
- What successes have you encountered?
- What difficulties?
- What types of changes would you like to see in the waste system?
 - How do you see these changes coming to fruition?

Sample Questions 4: Community Mapping

Purpose: To generate a spatial understanding of the Barra de Valizas waste system. To further waste system understanding with the map as a medium. To bring stakeholders together.

Consent and project overview

Key themes to be covered:

- Infrastructural challenges and strengths
- Community cohesion and community participation in waste system
- Pollution focal points
- Opportunities for improvement

Sample Questions 5: Focus Groups

Purpose: To further waste system understanding with the map as a medium. To bring stakeholders together.

Consent and project overview

Outline:

- Consent and project information
- Icebreaker
- Make waste containers
- Art/writing: communicating with others about community vision of waste system
- Present community map of waste system and contribute/discuss
- Further questions/comments????
- Thanks!

Key themes to be covered:

- Waste management past and present trajectory in Barra de Valizas
- Infrastructural challenges and strengths
- Community cohesion and community participation in waste system
- Opportunities for and roadblocks to improvement
 - Pathways to improvement

Data Management

Data Management 1. Example of Contact Summary (adapted from Miles & Huberman, 1994)

Contact Summary

Type of Contact	Who/what group	Date	Location
Mtg.			
Phone			

1. What were the main issues/themes/codes that struck you in this contact?

2. Summarize the response to each question

Question	Response Summary	Key Themes
1.		
2.		
3.		
4.		
5.		

3. What new (or remaining) target questions do you have in considering the next contact?

4. Random comments?

References

- Amsden, J., & VanWynsberghe, R. (2005). Community Mapping as a Research Tool with Youth. *Action Research*, 3(4): 357. doi: 10.1177/1476750305058487
- Anderies, J.M., Walker, B.H., & Kinzig, A.P. (2006). Fifteen weddings and a funeral: case studies and resilience-based management. *Ecology and Society*, 11(1): 21. Retrieved from URL: <http://www.ecologyandsociety.org/vol11/iss1/art21/>
- Arnstein, S.R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, 35(4): 216-224. Retrieved February 26, 2012 from <http://lithgow-schmidt.dk/sherry-arnstein/ladder-of-citizen-participation.pdf>
- Banks, S., Armstrong, A., Carter, K., Graham, H., Hayward, P., Henry, A., Holland, T., Holmes, C., Lee, A., McNulty, A., Moore, N., Nayling, N., Stokoe, A., & Strachan, A. (2013) Everyday ethics in community-based participatory research. *Contemporary Social Science: Journal of the Academy of Social Sciences*, 8:(3), 263-277. doi: 10.1080/21582041.2013.769618
- Barr, S., Shaw, G., Coles, T., & Prillwitz, J. (2010). "A holiday is a holiday": practising sustainability, home and away. *Journal of Transport Geography*, 18(3): 474-481. doi: 10.1016/j.jtrangeo.2009.08.007
- Baxter, P., & Jack, S. (2008). Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(4): 544-559. Retrieved from <http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf>
- Baxter, J., & Eyles, J. (1997). Evaluating qualitative research in social geography: establishing 'rigour' in interview analysis. *Transactions Institute of British Geographers*, 22(4): 505-525. doi: 10.1111/j.0020-2754.1997.00505.x
- Bergold, J., & Thomas, S. (2012). Participatory Research Methods: A Methodological Approach in Motion. *Forum: Qualitative Social Research*, 12(1): Article 30. Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/1801/3334>
- Berkes, F., & Seixas, C.S. (2005). Building resilience in lagoon social-ecological systems. *Ecosystems*, 8(8): 967-974. Retrieved from <http://link.springer.com/article/10.1007%2Fs10021-005-0140-4>
- Britton, S. (1991). Tourism, capital, and place: Towards a critical geography of tourism. *Environment and Planning D: Society and Space*, 9(4), 451-478. DOI: 10.1068/d090451

- Bulkeley, H., & Askins K. (2009). Waste interfaces: biodegradable waste, municipal policy and everyday practice. *The Geography Journal*, 175(4): 251-260. DOI: 10.1111/j.1475-4959.2008.00310.x
- Butler, R.W. (1980). The Concept of a Tourist Area and Cycle of Evolution: Implications for Management of Resources. *The Canadian Geographer*, 24(1): 5-12. doi: 10.1111/j.1541-0064.1980.tb00970.x
- Butler, R.W. (2001). Seasonality in Tourism: Issues and Implications. In: *Seasonality in Tourism*, (Chapter 2). T. Baum and S. Lundtorp. (2001). London: Elsevier Science.
- Butler, R.W. (2011). Tourism Area Life Cycle. *Contemporary Tourism Reviews*. Oxford: Goodfellow Publishers Limited.
- Centro Interdisciplinario de Estudios sobre el Desarrollo Uruguay [CIEDUR]. (2011). *Hacia una gestión integrada de los residuos con inclusión social: Recomendaciones para la acción*. Retrieved from www.ciedur.org.uy/download.php?archivo=archivo_novedad
- Christaller, W. (1964). Some considerations of tourism location in Europe: The peripheral regions-under-developed countries-recreation areas. *Papers of the Regional Science Association*, 12/1964, 12(1): 95 – 105.
- Chukwunonye, E., Fazakerley, J.A., & Roberts, C.L. (2013). Emerging trends in informal sector recycling in developing and transition countries. *Waste Management*, 33(11): 2509-2519.
- Clay, S., Gibson, D., & Ward, J. (2007). Sustainability Victoria: Influencing resource use, towards zero waste and sustainable production and consumption. *Journal of Cleaner Production*, 15(8-9): 782-786. doi: 10.1016/j.jclepro.2006.06.021
- Comuna de Rocha. (2009). *Proyecto de recolección selectiva: Tu envase nos sirve*. Retrieved from http://www.rocha.gub.uy/index.php?option=com_content&view=article&id=579:proyecto-de-recoleccion-selectiva-qtu-envase-nos-sirve&catid=106:proyecto-tu-envase-nos-sirve&Itemid=252
- Comuna de Rocha. (2010). *Datos de la recolección de residuos en la costa del departamento*. Retrieved from http://www.rocha.gub.uy/index.php?option=com_content&view=article&catid=68:limpieza&id=429:datos-de-la-recoleccion-de-residuos-en-la-costa-del-departamento&Itemid=122
- Curto, N., Dabezies, M., Donadio, A., Falkenstein, A., Gutiérrez, M., I. Irrazábal, & Roche, I. (2011). Hacia el turismo sustentable en Valizas. In Conde, D. (Ed.), *Manejo Costero Integrado en Uruguay: ochos ensayos interdisciplinarios*, (pp.

- 249-278). Montevideo, Uruguay: Centro Interdisciplinario para el Manejo Costero Integrado del Cono Sur. Retrieved from <http://www.unesco.org.uy/ci/fileadmin/ciencias%20naturales/MCI-ICAM/ManejoCosteroIntegradoUruguay.pdf>
- Dahlen, L., Aberg, H., Lagerkvist, A., & Berg, P.E.O. (2009). Inconsistent pathways of household waste. *Waste Management*, 29(6): 1798-1806. doi: 10.1016/j.wasman.2008.12.004
- Denscombe, M. (2007). *The Good Research Guide for small-scale social research projects* (3rd ed.). New York: Open University Press.
- Ecologia Costera. (2011). Retrieved from <http://ecocostera.blogspot.ca/>
- Environment Canada. (2013). *Technical Document on Municipal Solid Waste Organics Processing*. Retrieved from <https://www.ec.gc.ca/gdd-mw/default.asp?lang=En&n=3E8CF6C7-1>.
- Estudio Pittamiglio. (2011). *Tomo I Línea de Base. Información de Base para el diseño de un plan estratégico de residuos sólidos. CSI Ingenieros, Uruguay Integra - OPP*. Retrieved from <http://retosalsur.org/wp-content/uploads/2013/08/Información-de-base-para-el-diseño-de-un-Plan-estratégico-de-Residuos-Sólidos.pdf>
- Fehr, M. (2010). *The Threshold Target Approach to Waste Management in Emerging Economies: Pragmatic, Realistic, Appropriate*. InTech. Retrieved from: <http://www.intechopen.com/articles/show/title/the-threshold-target-approach-to-waste-management-in-emerging-economies-pragmatic-realistic-appropri>
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S., & Walker, B. (2002). Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations. *Ambio*, 31(3): 437-440. Retrieved from http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=Retrieve&list_uids=12374053&dopt=abstractplus
- Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16(3): 253-267. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0959378006000379>
- Forkes, J. (2007). Nitrogen balance for the urban food metabolism of Toronto, Canada. *Resources Conservation and Recycling*, 52(1): 74-94. doi: 10.1016/j.resconrec.2007.02.003
- Freire, P. (1970). *pedagogy of the oppressed*. Seabury Press, New York.

- Gibson, C. (2013). Tourism. In N.C. Johnson, R.H. Schein, & J. Winders (Eds.). *The Wiley-Blackwell Companion to Cultural Geography* (Chapter 38). Malden: Wiley-Blackwell.
- Goodchild, M.F. (2008). Theoretical Geography (1962): William Bunge. In P. Hubbard, R. Kitchin, & G. Valentine (Eds.), *Key Texts in Human Geography* (pp. 9-16). Oxford: SAGE Publications Ltd.
- Google. (2012). Barra de Valizas, Uruguay. Retrieved from <http://maps.google.ca/>
- Gunderson, L. & Holling, C.S. (Eds.), (2002). *Panarchy: understanding transformations in human and natural systems*. 450p. Washington, D.C.: Island Press.
- Gutberlet, J. (2008). Organized and informal recycling: social movements contributing to sustainability. *Transactions of the Wessex Institute*. WIT Press Ashurst Lodge, Ashurst, Southampton, UK.
- Gutberlet, J. (2014). More inclusive and cleaner cities with waste management co-production: Insights from participatory epistemologies and methods. *Habitat International*, 46: 234-243. doi: <http://dx.doi.org/10.1016/j.habitatint.2014.10.004>
- Gutberlet, J., Tremblay, C., Moraes, C. (2014). The Community-based Research Tradition in Latin America. In: R. Munck, L. McIlarth, B. Hall, & R. Tandon (Eds.), *Higher Education and Community-based Research: Creating a Global Vision* (pgs. 167-180). Palgrave Macmillan
- Hall, B. (1982). Breaking the Monopoly of Knowledge: Research Methods, Participation and Development. In B. Hall, A. Gillette and R. Tandon (Eds.). *Creating Knowledge: A Monopoly? Participatory Research in Development* (pg. 13-25), New Delhi: PRIA.
- Hall, B. (2001). I wish This Were a Poem of Practices of Participatory Research. In P. Reason & H. Bradbury (Eds.). *Handbook of action research: participative inquiry and practice* (pp.171-178), London: SAGE Publications.
- Hall, B. (2005). In From the Cold? Reflections on Participatory Research From 1970-2005. *Convergence Toronto*, 38: 5-24. Retrieved from https://participation.files.wordpress.com/2008/06/history_participatory_research.pdf
- Harvey, D. (1996). *Justice, Nature & the Geography of Difference*. Malden, Massachusetts: Blackwell Publishers Ltd.
- Hay, I. (2005). *Qualitative Research Methods in Human Geography* (2nd Edition). Australia: Oxford University Press.

- Hickey, M. & Lawson, V. (2005). Beyond Science? Human Geography, Interpretation and Critique. In N. Castree, A. Rogers & D. Sherman (Eds), *Questioning Geography: Essays on a Contested Discipline* (pp. 96-114). Oxford: Blackwell.
- Haynes, P. (2009). *Before Going Any Further With Social Capital: Eight Key Criticisms to Address*. Working Paper No 2009/02. Ingenio Working Paper Series.
- Hochachka, G. (2009). *Integral Ecology Uniting Multiple Perspectives on the Natural World. Integrating Interiority in Sustainable Community Development: A Case Study with San Juan del Gozo Community, El Salvador*. Integral Books. Boston and London.
- Holling, C. S. (1973). Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics*, 4: 1-23. Retrieved from <http://www.iiasa.ac.at/Admin/PUB/Documents/RP-73-003.pdf>
- Instituto Nacional de Estadística [INE]. (2011). Retrieved from <http://www.ine.gub.uy/web/guest/censos-2011>
- Kousis, M. (1998). Ecological Marginalization in Rural Areas: Actors, Impacts, Responses. *Sociologia Ruralis*, 38(1): 86-108. doi: <http://dx.doi.org/10.1111/1467-9523.00065>
- Krausz, R. (2012). Zero waste. In C. Zimring, & W. Rathje (Eds.), *Encyclopedia of consumption and waste: The social science of garbage*. (pp. 1016-1017). Thousand Oaks, CA: SAGE Publications, Inc. doi: <http://dx.doi.org.ezproxy.library.uvic.ca/10.4135/9781452218526.n388>
- Leach, M. (ed.). (2008). *Re-framing Resilience: a Symposium Report*, STEPS Working Paper 13, Brighton: STEPS Centre. Retrieved from <http://steps-centre.org/wp-content/uploads/Resilience.pdf>
- Legislative Power of the Oriental Republic of Uruguay. (1999). Declarase de interes nacional para el Desarrollo turistico la Zona Costera del Balneario Aguas Dulces, 4ta. Seccion judicial del Departmental de Rocha. Retrieved from <http://www.parlamento.gub.uy/leyes/AccesoTextoLey.asp?Ley=17160&Anchor=>
- Liverman, D., & Vilas, S. (2006). Neoliberalism and the Environment in Latin America. *Annual Review of Environmental and Resources*, 31(1): 327-363. doi: 10.1146/annurev.energy.29.102403.140729
- Lukas, S. (2012). Overconsumption. In: Zimring & W.L. Rathje (eds.) *Encyclopedia of Consumption and Waste: C.A. The Social Science of Garbage* (pg. 641-645). doi: <http://dx.doi.org.ezproxy.library.uvic.ca/10.4135/9781452218526.n246>
- Martin, M., Williams, I.D., Clark, M. (2006). Social, cultural and structural influences on household waste recycling: A case study. *Resources, Conservation and Recycling*, 48(4): 357-395

- Mazzanti, M., & Zoboli, R. (2008). Waste generation, waste disposal and policy effectiveness: Evidence on decoupling from the European Union. *Resources, Conservation and Recycling*, 52(10): 1221-1234. doi: 10.1016/j.resconrec.2008.07.003
- Mbaiwa, J.E. (2003). The socio-economic and environmental impacts of tourism development on the Okavango Delta, northwestern Botswana. *Journal of Arid Environments*, 54(2): 447-467. doi: 10.1006/jare.2002.1101
- Miles, M.B., & Huberman, A.M. (1994). *Qualitative Data Analysis* (2nd edition). Thousand Oaks, CA: Sage Publications.
- Ministerio de Desarrollo Social [MIDES]. (n.d.). *Programa Uruguay Clasifica - Ministerio de Desarrollo Social, MIDES - FOCEM*. Retrieved from <http://www.mides.gub.uy/innovaportal/v/10700/3/innova.front/programa-uruguay-clasifica---ministerio-de-desarrollo-social-mides---focem>
- Ministerio de Turismo y Deporte del Uruguay (MinTurD). (n.d.). *Ministerio*. Retrieved from http://www.mintur.gub.uy/index.php?option=com_content&view=article&id=1&Itemid=2
- Ministerio de Turismo y Deporte del Uruguay [MinTurD]. (2009a). *Plan de Marketing Estratégico y Operativo del Turismo de Uruguay*. Retrieved from http://apps.mintur.gub.uy/Plantur/components/Web_Diagnóstico_integradol.pdf
- Ministerio de Turismo y Deporte del Uruguay (MinTurD). (2009b). *Plan Nacional de Turismo Sostenible - Un gran paso adelante*. Retrieved from http://apps.mintur.gub.uy/Plantur/index.php?option=com_content&view=article&id=6:el-plan-nacional-de-turismo-sostenible-un-gran-paso-adelante&catid=15:plan&Itemid=31.
- Ministerio de Turismo y Deporte del Uruguay (MinTurD). (2011). *Anuario 2010: Estadísticas de turismo*. Retrieved from <http://www.turismo.gub.uy/institucional/estadisticas>
- Morford, S. (2004). Moving along the community-researcher continuum towards participatory research in British Columbia. *BC Journal of Ecosystems and Management*, 4(1): 1-6. Retrieved Feb 20th from http://www.forrex.org/jem/ISS21/vol4_no1_art6.pdf
- Mowforth, M., Charlton, C., & Munt, I. (2008). *Tourism and responsibility: Perspectives from Latin America and the Caribbean*. London: Routledge.
- Navarro, V. (2002). A Critique of Social Capital. *International Journal of Health Services*, 32(3): 423 - 432. DOI: 10.2190/6U6R-LTVN-FHU6-KCNU.

- O'Brien, R. (2001). Um exame da abordagem metodológica da pesquisa ação [An Overview of the Methodological Approach of Action Research]. In Roberto Richardson (Ed.), *Teoria e Prática da Pesquisa Ação [Theory and Practice of Action Research]*. João Pessoa, Brazil: Universidade Federal da Paraíba. (English version) Retrieved from: <http://www.web.ca/~robrien/papers/arfinal.html>
- Ochocka, J., & Jenzin, R. (2016). *Community-Based Research Training Tools and Resources: Capacity Building in the Field*. Retrieved from <http://communityresearchcanada.ca/res/download.php?id=5668>
- Olsson, P., Gunderson, L.H., Carpenter, S.R., Ryan, P., Lebel, L., Folke, C., and Holling, C.S. (2006). Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society*, 11(1): 18. Retrieved from <http://www.ecologyandsociety.org/vol11/iss1/art18/>
- Ostrom, E. (1990). *Governing the Commons: The evolution of institutions for Collective Action*. London: Cambridge University Press.
- Palmer, K., & Walls, M. (1999). Extended Product Responsibility: An Economic Assessment of Alternative Policies, Discussion Paper 99-12. Washington: Resources for the Future. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.490.2575&rep=rep1&type=pdf>
- Patterson, T., Niccolucci, V., & Bastianoni, S. (2006). Beyond "more is better": Ecological footprint accounting for tourism and consumption in Val de Merse, Italy. *Ecological Economics*, 62(3-4): 747-756. doi: 10.1016/j.ecolecon.2006.09.016
- Patterson, T., Niccolucci, V., & Marchettini, N. (2008). Adaptive environmental management of tourism in the Province of Siena, Italy using the ecological footprint. *Journal of Environmental Management*, 86(2): 407-418. doi: 10.1016/j.jenvman.2006.04.017
- Pelling, M., & Manuel-Navarrete, D. (2011). From resilience to transformation: the adaptive cycle in two Mexican urban centers. *Ecology and Society*, 16(2): 11. Retrieved from URL: <http://www.ecologyandsociety.org/vol16/iss2/art11/>
- Penpece, D., & Celik, O. (2011). The Effect of Communication Medium and Container Location on Paper Recycling: A Case Study. *International Review of Management and Marketing*, 1(1), 8-13.
- Perrons, D., & Skyers, S. (2003). Empowerment through participation? Conceptual Explorations and a Case Study. *International Journal of Urban and Regional Research*, 27(2): 265-285.

- Punzo, L., & Liberoff, B. (2009). *Diagnóstico Participativo y Estrategia Competitiva del Cluster de Turismo de Rocha*. Montevideo: PACPYMES. Retrieved from http://www.bionegocios.com.uy/c/document_library/get_file?p_l_id=6618&olderId=9610&name=DLFE-2201.pdf
- Rathje, W.L. (1984). The Garbage Decade. *American Behavioral Scientist*, 28(1): 9–39.
- Riel, M. (2010). *Understanding Action Research, Center For Collaborative Action Research*. Pepperdine University. Retrieved from <http://cadres.pepperdine.edu/ccar/define.html>
- Rocha Tourism Corporation. (n.d.). *Circuito 2 – Laguna de Castillos*. Retrieved from http://rochauy.com/?page_id=23
- Roy, A. (2012). Producer responsibility. In C. Zimring, & W. Rathje (Eds.), *Encyclopedia of consumption and waste: The social science of garbage*. (pp. 708-710). Thousand Oaks, CA: SAGE Publications, Inc. doi: <http://dx.doi.org.ezproxy.library.uvic.ca/10.4135/9781452218526.n268>
- Ruggiero, V. (2011, April 30). Hacia la industrialización de residuos. *El País*. Retrieved from <http://www.elpais.com.uy/110430/pciuda-563377/ciudades/industrializacion-de-los-residuos/>
- Sistema Nacional de Areas Protegidas (SNAP). (2009). *Cabo Polonio*. Retrieved from <http://www.snap.gub.uy/flash/APCP.html>
- Stephens, A. (2012). Feminist Systems Theory: Learning by Praxis. *Systemic Practice and Action Research*, 25(1): 1–14. doi: 10.1007/s11213-011-9212-x
- Storberg, J. (2002). The Evolution of Capital Theory: A Critique of a Theory of Social Capital and Implications for HRD. *Human Resource Development Review*, 1(4): 468-499. doi: 10.1177/1534484302238437
- Strand, K., Cutforth, N., Stoecker, R., Marullo, S., & Donohue, P. (2003). *Community-Based Research and Higher Education: Principles and Practices*. San Francisco: John Wiley & Sons.
- Strand, K., Marullo, S., Cutforth, N., Stoecker, R., & Donohue, P. (2003). Principles of Best Practice for Community-Based Research. *Michigan Journal of Community Service Learning*, 9(3): 5-15.
- Tandon, R. (2008). Participatory Research: Main Concepts and Issues. In R. Tandon (Ed.). *Participatory Research: Revisiting the Roots* (Chapter 3), New Delhi: PRIA.
- Terraza, H. (2009). *Manejo de Residuos Sólidos: Lineamientos para un Servicio Integral, Sustentable e Inclusivo*. Banco Inter-Americano de Desarrollo, Departamento de Infraestructura y Medio Ambiente, Nota Técnica: No. IDB-

- TN-101. Retrieved from <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=2197909>
- Tobias, R., Brügger, Adrian., & Mosler, Hans-Joachim. (2009). Developing Strategies for Waste Reduction by Means of Tailored Interventions in Santiago de Cuba. *Environment and Behavior*, 41(6): 836-865. doi: 10.1177/0013916509338004
- Tremblay, C. (2013). *Empowerment and communication in São Paulo, Brazil: Participatory Video with recycling cooperatives*. PhD Dissertation, University of Victoria, Victoria, BC: UVicSpace.
- United Nations Environment Programme (UNEP). (n.d.). *Negative Socio-Cultural Impacts From Tourism*. Retrieved from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/FactsandFiguresaboutTourism/ImpactsofTourism/Socio-CulturalImpacts/NegativeSocio-CulturalImpactsFromTourism/tabid/78781/Default.aspx>.
- Valentine, G. (2002), At the drawing board: Developing a research design. In: M. Limb & C. Dwyer (Eds.). *Qualitative Methodologies for Geographers: Issues and Debates*. (Chapter 3). London: Arnold.
- Walker, B., Carpenter, S., Anderies, J., Abel, N., Cumming, G.S., Janssen, M., Lebel, L., Norberg, J., Peterson, G.D., & Pritchard, R. (2002). Resilience management in social-ecological systems: a working hypothesis for a participatory approach. *Conservation Ecology* 6(1): 14. Retrieved from <http://www.consecol.org/vol6/iss1/art14/>
- Walker, B., & Salt, D. (2006). *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*. Washington: Island Press.
- Webb, L. (2013). *How to cope when everything around you keeps changing*.
- Weeden, C. (2008). *The values of ethical and responsible tourists*. PhD Thesis. University of Glasgow. Retrieved from <http://theses.gla.ac.uk/187/1/2008weedenphd.pdf>
- Whitson, R. (2011). Negotiating Place and Value: Geographies of Waste and Scavenging in Buenos Aires. *Antipode*, 43(4): 1404-1433. doi: 10.1111/j.1467-8330.2010.00791.x
- Wiber, M., Berkes, F., Charles, A., & Kearney, J. (2004). Participatory research supporting community-based fishery management. *Marine Policy*, 28: 459-468.
- Wilson, D. (2007). Development drivers for waste management. *Waste Management and Research*, 25(3): 198-207. doi: 10.1177/0734242X07079149

- Winne, S., Horrocks, L., Kent, N., Miller, K., Hoy, C., Benzie, M., & Power, R. (2012) *Increasing the climate resilience of waste infrastructure*. Final Report under Defra contract ERG 1102. AEA group, published by Defra. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183933/climate-resilience-full.pdf
- Zia, H., Devadas, V., & Shukla, S. (2008). Assessing informal waste recycling in Kanpur City, India. *Management of Environmental Quality: An International Journal*, 19(5): 597 – 612.
- Zimmerer, K.S. (1994). Human Geography and the “New Ecology”: The Prospect and Promise of Integration. *Annals of the Association of American Geographers*, 84(1): 108-125. doi: 10.1111/j.1467-8306.1994.tb01731.x