

The Relations Between Individuals, Institutions and Environment:

Food Waste Management in Augustenborg Eco-city, Malmö, Sweden.



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Abstract:

Augustenborg Eco-City in Malmö, Sweden is seen as a place where institutions and individuals are working together towards sustainable urbanization. With a focus on its food waste management action process, the aims of this study is to take a human ecological perspective on understanding environmental behaviour towards caring for the planet, and to contribute to the knowledge of creating a sustainable society by assessing the current measures and actions that are already in place. Main focus is on how institutions go about influencing individuals to participate in resource recovery practices and recycling.

Foreword

I come from South Africa, a country that consists of both first world and third world living environments. In socioeconomic terms, it is a newly industrialized country (NIC) with a rapid economic growth as more industrial and manufacturing companies are being established. More people are moving from rural areas to urban areas. The transition from a low-tech, small-scale, inefficient agricultural-based economy to one relying heavily on large-scale, heavily mechanized, and highly efficient goods and/or services manufacturing is apparent. Industrialization has led to increases in the demand for consumption of raw material, as well as other inputs to large-scale production and infrastructure development. This means that more natural resources are used and the demand for labour has increased. This may be seen as positive for the country's economy, but there are, however, negative effects on the environment, as waste production has increased and landfilling is still implemented all over the country with no pre-processing or minimization efforts, although the country, today, has the financial capability to introduce better waste management strategies. After living in Sweden for more than a year and a half, enabled me to become familiar and learn about the Swedish waste management system, specifically with regards to recycling action processes and education initiatives, which I think can inspire better waste management systems to be implemented in South Africa. I believe that in Sweden, I became part of the waste management system process as I learnt how I can play a role in resource recovery initiatives such as separating and recycling my household waste. In addition, through environmental education, I learnt more about the benefits of recycling and its effect on my habitat – my current human ecosystem.

Due to my growing interest in waste management practices, and in individual related behaviours and environmental decisions, I realised that when I go back to live in South Africa, it would be futile to sort my household waste as the refuse remover will place all my separated waste into one truck and then dump it altogether; in a mix, in a landfill. Alas, my desire to act pro environmentally will be constrained, unless I can go back home and try to make a change in the current waste management system. This was one of my motives towards creating such a topic. Another was trying to answer for myself questions related to whether sustainable development can drive growth, by looking at my local environment and comparing it to my previous one. I became familiar with the topic of sustainability interconnected with culture and power during my master studies in human ecology (Culture,

Power and Sustainability) as well as after watching the World Economic Forum: Davos Annual Meeting 2011 session which addressed the topic of sustainability driving growth....

I, with all my heart, would like to thank God, my parents: Rajendrapersadh and Reena Ragubeer, my siblings: Keshandra, Somashni, Vedana, Desigan, Subhadra and Shamima, my Swedish family: Calle and Ruth Jörnland, the rest of my family and friends who have given me love, encouragement and support.

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1. Introduction

There is an English saying: ‘How do you eat an elephant? You eat it one bite at a time.’ Similarly, to cause positive change and to protect the environment, humans need to plan and execute strategies, one step at a time at a swift pace. Seeing it in a human ecological perspective, I argue that waste management can be seen as a component of the ‘big’ plan for protecting the human ecosystem and for sustainability. The actions related to waste management can be implemented in human ecosystems using an, ‘Adaptive development’ strategy which emphasizes the need to change with the environment for the better and to learn from doing so. “Adaptive development for a sustainable society is caring about others - caring about community, caring about future generations and caring about the non-human inhabitants of the Earth” (Marten, 2013). What happens if this is already the case? What happens if waste management and environmental education initiatives are already taken towards sustainability? This seems to be the case for Augustenborg Eco-city, as our findings will show. Hence the key challenge of this study is to become familiar with the institutional induced waste management action processes, their relations to inhabitants (individuals) and their culture of caring for the environment, in order to make it adaptable for other cities too.

1.1 Rationale and Aims

As argued by environmental scientist, Emilio Moran (2012:126), “[i]ndividuals, organisations, and human societies have significant effects on the natural environment, largely as a product of their decisions. Decisions, both small and large, can have cumulative effects and can alter the conditions of localities, communities, nations and the planet.” However it should be realised that actions of individuals are not always free as they are “constrained by a whole constellation of social, economic, institutional and technological systems within which they find themselves” (Lutzenhiser et al., cited in Moran, 2010:126). In this study, I will explore the human dimensions of a waste management system. In this case, it is the study of the relations between individuals and institutions (man-made structures of social order that govern the behaviour of individuals) of Augustenborg Eco-city and their connection towards food waste prevention and changing existing food waste to energy.

For this thesis, I wanted to take a human ecological perspective as human ecology has the main interest which is human beings. In addition, it connects different disciplines such as anthropology, biology and economics. Normally, if this perspective is used, there is the

approach of interest in those features that are unique attributes – such as values, morals, rational thought – and the science of ecology – such as life cycles (Bates, 2005:33). So for this thesis, it emphasizes the problem-solving significance with a theoretical orientation ranging in all aspects of life, for instance from sociology to psychology to political (Ibid.:27).

In the human ecological context, the flow of energy is vital in the way of life of humans and thereby their particular behaviour towards waste is one of many characteristics of their relation to their place in the ecosystem, as waste is a problem and yet at the same time it can be a source of energy, an alternative to the use of fossil fuel. Humans have come to use science and technology to create places such as cities - where high populations are present and who thereby create an ever increasing inflow and outflow of energy, materials, etc. These cities also produce large quantities of waste to the extent that it greatly affects other ecosystems; therefore waste management is vital (Bates,2005:36-37). One needs to consider that each city's environment is unique and different from other cities. We, humans, tend to treat all environments as fixed landscapes and we tend to fail to consider the nature of variation in all environments which are complex, unique and which constantly fluctuate (Ibid.:39). Therefore, when reading this paper, one must keep an open mind that the views and actions of the people in Augustenborg Eco-city, with regards to waste, may differ to a certain extent to people in another city.

With a focus on Augustenborg Eco-city, the aims of this study is to take a human ecological perspective on understanding environmental behaviour towards caring for the planet, and to contribute to the knowledge of creating a sustainable society by assessing the current measures and actions that are already in place for food waste. This place has already begun to invest in environmental and climate issues in order to contribute to sustainable urbanization (Malmö Stad, 2013a), therefore I see it as an ideal case to use.

For this thesis, the research approach to be used is Grounded theory as I attempt to derive a general theory of the connections between individuals, institutions and environment - pertaining to food waste management. I attempted to do so with field evidence in the form of photographs and views of participants from the institutions (cf.Creswell, 2003:14).

I have chosen ‘Social Constructivism’ as the knowledge claim position, as I wanted to learn more about food waste management, how it is organised and how it impacts human society and the environment (Ibid.: 9).

1.2 Research Question

The main question for this study is:

How is the individual behaviour and environmental decisions of the inhabitants of Augustenborg Eco-city being influenced by institutions, when it comes to food waste management?

In order to answer this main question, three sub-related questions have been developed:

- 1) What are the current integrated waste management action processes implemented in Augustenborg Eco-city for food waste?
- 2) How are the people educated about these action processes?
- 3) Why is it beneficial to adopt pro-environmental behaviours such as recycling?

Answering these questions will enable a better understanding of actions which can then be used to improve current waste management practices as well as encourage and empower people, with knowledge, to take action towards caring for the environment.

1.3 Delimitation, Limitation and Significance

For this study, I will have to set boundaries or certain restrictions around what I will address in this thesis. These boundaries will be to delimit the scope of inquiry, limit the practices used, and target the proposed study for different audiences. Delimitations for this study will be that it will confine itself to doing a photo documentation of one waste house in the area, thereafter interviewing specific people from the institutions who generally are responsible for the social contact and communication with the inhabitants of the area. This will allow narrow focus on the waste management processes implemented as well as allow more time to explore, in-depth, the specific group’s individual behaviour and environmental decisions. I do not intend to review all types of waste management action processes currently implemented in Augustenborg city, for instance waste incineration. I would like to focus on a resource recovery practice as it is deeply rooted in sustainability policies such as the ‘ISO14001 Accreditation’ that companies use as they are encouraged to improve their efficiencies by

eliminating waste through resource recovery practices. This study will focus only on food waste, thereby excluding other organic and solid waste such as cans, paper, electronics, hazardous waste and clinical waste. A limitation will be the focus on a single city's specific area and 'type' of people as it decreases the generalizability of findings. In addition, this project will not be generalizable to all areas in Sweden. Another limitation is that the findings and analysis will be based on the perspectives of those who will be interviewed and my sole interpretation of the data from the methods used. The significance of this study will be that it will add to the human ecological and social perspective of scholarly research in the field of waste management and environmental research.

2. Material and Methods

My choice of methods, was due to my intent to allow the information to emerge from the participants and, photos gathered. In this case, the study is intended to capture 'live' happenings with photos, understand what the views of specific people chosen are. Therefore, primary information comes from photos I have taken, and the participants I have interviewed. A qualitative approach to data collection, analysis, and reporting has been taken. This approach is orientated towards analysing cases in their local contexts (cf. Flick, 2009:21). In addition, it has allowed me to explore a wide array of dimensions to the subject being studied and the significance of the meanings that are generated (Mason, 2002:1). As well as it has allowed me to be both flexible and sensitive to the social context in which data is produced (Ibid.:3).

2.1 Photo-documentation

Photo-documentation, a visual sociology or anthropology approach, that allows detailed recordings of facts as well as provides a general presentation of the lifestyle and conditions like in this case, it is waste management. In addition, data in the form of photos can be used for reanalysis as it catches facts, actions and processes that are implemented (cf. Flick; 2009:241).

I have taken all the photographs which are key visual elements in this thesis. They are not used to simply illustrate some aspect of my study, what Marcus Banks (cited in Rose, 2012:298) call a "largely redundant visual representation of something already described in the text." Rather, I have taken a carefully planned series of photographs in order to document

the visual phenomenon of ‘institutional, individual and environmental relations with regards to source separating food waste in Augustenborg Eco-city.’ When it comes to urban related research projects, as in this case, photographs are seen as valuable as they can suggest, “layout, colour, texture, form, volume, size and pattern” about the space being discussed. In addition, photographs are visual media that gives an enhanced sensory ‘richness’. This method does not, emerge from any specific theoretical position and so it can be used to answer a wide variety of research questions and is appropriate to use for this study (Rose, 2012:298). In addition, due to the growing interest in the use of urban spaces and the sensory experiencing of urban spaces such as waste storage places, I think this method creates valuable and detailed source of information. John Collier (cited in Rose, 2012:298) claimed that “photographs are precise records of material reality and that their value lay in the way this precision provided data for analysis.”

The reason why I had chosen to focus on this specific part of the waste system is because the entire system is complex and due to word and time constraints I could not cover the whole system. One needs to read the section about how the integrated waste management system works in Malmö in order to understand the complexity of the system (see section 4.2.: 27), therefore I have chosen this method to access only certain information related to the point where inhabitants enter the ‘waste house’ to sort and dispose their household solid waste (specifically food waste).

Pertaining to problems faced during application of this method, the first problem I encountered was in determining to what extent I had influenced and shaped the end result in the form of photos - from my choice of camera to moments when the photos had been taken to the framing of the photos i.e. what had I focused on and what had I left out - as they can provide insight about the current waste management process. For the record, I did not manipulate or retouch the photos that I had taken and used for this section, as I felt that if I did so it would have led to details being left out which may have been relevant to the questions. I was fortunate that when it came to censorship by official agencies and photographed persons, I was not restricted to use them for my study as consent had been given by the tour guide and the people in the photos, to take photos.

Regarding the ethics pertaining to the use this method, I had designed and undertaken this method to ensure quality and transparency; no harm came to participants that had been

photographed; those who had been photographed had been aware of why I had been taking photos and they had given consent to use the pictures. To be noted that all pictures used for photo-documentation were taken by me.

2.2 Interviews

Interviews had been chosen as the second technique to be applied to study the phenomenon as it is an exploratory method (Mishler,1986:26-27). I have made two semi-structured interviews and one email interview. This enabled data to be gathered directly from the participants. According to Tim May, “interviews yield rich insights into people’s biographies, experiences, opinions, values, aspirations, attitudes and feelings” (May,2001:120). This method allowed for flexibility and the discovery of meaning, rather than standardization (Ibid.:125).

The following steps to interviewing have been taken and planned before hand in order to avoid any problems: 1) Thematizing and interview project; 2) Designing; 3) Interviewing; 4) Transcribing; 5) Analysing; 6) Verifying and 7) Reporting. An ethical protocol had been prepared for each stage of the research stages using the interview technique in order to protect the privacy of the participants, for example, “ethical issues of design involved obtaining the subjects’ informed consent to participate in the study and securing confidentiality for the one who does not want to be known by name (Kvale & Brinkmann, 2009:63).

Questions simple in both structure and topic were used as they left space of interpretation for both the interviewer and respondent. Open ended questions were used to gather information pertaining to attitudes, values and motives (Mishler, 1986:45). Analysis and interpretation are been based on the theory of discourse and meaning, and the meanings of the questions and answers will be contextually grounded, in this case it would pertain to resource recovery practices and education initiatives in the Malmö area (Ibid.: ix).

The interviews were conducted during the months of April and May 2013 due to participant’s availability. Regarding the interview via email, questions were sent to the respondent, who then filled the answers on the same document and sent it back to me. This was due to the respondent not having time to meet face-to-face for an interview. All the above processes that

were made for the face-to-face interviews were applied to the email interview, except, the questionnaire had changed to being more structured in its format compared to the previous interviews.

The face-to-face interviews took approximately thirty minutes to one hour as each interview depended on the availability of the participant to spend being interviewed. Both of these were conducted in a quiet environment with no disturbances. I was the only interviewer present at the interview, therefore I asked questions and audio recorded the interview to later be transcribed for analysis. All interviews had been done in English and an interview guide has been created and used (See Appendix B). The face-to-face interviews started with formalities to get to know one another and thereafter stating why I wanted to interview them. For the email interview, I had called the participant, beforehand, and introduced myself and why I wanted to do an interview. Ethical consideration was provided for all interviews as the participants were asked for consent.

Pertaining to data collection and logistics, only a recorder had been used for the face-to-face interviews and the internet has been used to send and receive emails from the participant.

The people interviewed reflect a small percentage of the institutional officials that work with the social dimensions of waste management. For this case, I have chosen to these participants as they specifically work with the Augustenborg Eco-city project and the people who live and come visit the area. The interviews had been done to gain a better understanding of: official's view on how people are educated about the waste management actions processes specifically food waste. In addition, to know why they think that it is beneficial to adopt pro-environmental behaviours. Participants had been selected according to their job responsibility in order to avoid biasness.

A problem that I faced with the email interview was the time spent waiting for the respondent to reply. It caused a feeling of uncertainty, as I was not sure if I would receive the information on time. Also, with all three interviews, there was the limitation of language. The participants all spoke English as a second language and I could not interview them in Swedish as I did not know the language and so I believe this impacted the quality of the data as people may have not used the words with the same meaning words as in their native tongue.

I have tried my best to take a neutral point of view when I had examined the data. To analyse the data, I have applied theory, mentioned in the theoretical section, and I have used discourse analysis. I began my analysis by first reading each transcript and then comparing them to see what the common themes are. After sifting out the main themes, I began with a discussion of the findings.

3. Framework of study

3.1 Theoretical/analytic framework

I have used eight theories with an inductive process to analyse and make sense of the data found from doing a photo-documentation and interviews. I found them to be the most appropriate choices to be used to explore the topic of this thesis.

3.1.1 Rubbish Theory

Rubbish Theory was created by social scientist, Michel Thompson, to understand value and to understand the process by which it is formed and destroyed. He believes that humans are selective – we include items of value and exclude the ones with no value. These items therefore have three states which are: ‘transient’ where value is decreasing, ‘durable’ which is when objects have permanent and increasing value, and ‘rubbish’ which is when an object is at its lowest value is changed to become ‘durable’ (Thompson, 1979:12). He believed that values changed – from worthless to valuable, and vice versa - because those who, had control over time and knowledge, had the power to assign items in the above states, therefore values do not gradually occur (Thompson, 1979:12). According to Thompson, the changes in values are an indication of different cultural and social changes in our ecosystems, which can be related to technology changes and other bigger forces (Thompson, 1979:24).

3.1.2 Theory of Craftsmanship

In his book, ‘The Sociological Imagination’, sociologist C. Wright Mills speaks about the developing positions people can have that are no longer merely technical but a combination of ideas to explain how society works. His work pays attention to the development of the individuals and their role in societies which are affected by structural and sociocultural systems. These systems he says affect the behaviour individuals, however changing individuals behaviour is not the solution to progress, but actually changing structures in

society (Mills, 1959). He goes on to say that sociological imagination becomes a routine which a person is trained to do – “since one can be trained only in what is already known, training sometimes incapacitates one from leaning new ways” (Mills, 2004: 59). In his works he speaks on what makes a good ‘craftsman’ (worker). He incorporates features such to labour, models for working, morals, values, and economic behaviour, etc. that can be applied to other ‘working situations’. Academic, Rick Tilman, has looked at Mills view as has compared it to a number of current day issues. One such issue is the workplace. With focus on the workplace, has divided Mill’s theory of craftsmanship into the following propositions which are suitable to be used for analysis of the data gathered for this research.

- Structural changes should be made in the workplace in order for work to become gratifying and not just a primary source of income. People should feel that their workplace is also a place of leisure, thus there would be no need for the tendency to feel for an opportunity of escapism.
- Omit the feeling of alienation in workers when it comes to the end product. Action, to make them feel that they have added value to the product via the process, needs to be done.
- There needs to be a focuses on job satisfaction. To achieve this, work needs to incorporate the continuous process of learning, where people gain new knowledge and master new skills.
- Authoritive management styles need to cease to exist by allowing employees to participate in decisions pertaining to work and to be acknowledged and recognised for this.
- To create awareness for workers that they are contributing to the ‘bigger picture’ and to lead them to having, “an integrated view of their work, by which is meant understanding its social and moral significance” (Mills, 2004:54-66, & Tilman, 2004:68).

3.1.3 Three models of human behaviour and decision making

Wilk and Cliggett (2007:42-43) have found three different models which can be combined to provide alternative explanations of human behaviour and decision making, which they call, the self-interested, the moral, and the social.

The self-interested approach sees individual behaviour as self-interested and rational who appears to be doing selfless work for others, but in fact is doing things with ‘internal utility’ for selfish gains, for example, recycling for a good feeling.

The social model approach shows that people want to have a send of belonging, thereby; one incorporates the group’s view as their own. This leads to the creation of norms in society. According to Wilk and Cliggett (2007:43) “[p]eople may think they are making their own

decisions and following their own desires, but this is no more than an illusion of self-will allowed by society.”

The moral model looks at how people go about explaining their behaviour. Some explanations are based on what people think about the world, others base their behaviour on morals, belief systems and values. “Their behaviour and choices are guided by a desire to do what is right” (Ibid.:43).

3.1.4 Early models of pro-environmental behaviour

These models indicate the linear progression from environmental knowledge to environmental awareness to pro-environmental behaviour. They had been termed ‘deficit’ models of public understanding as it assumes that educating people about environmental issues would automatically lead to pro-environmental behaviour. These models are still used as the basis for communication campaigns and strategies by governmental and non-governmental organizations, who assume that, “more knowledge will lead to more enlightened behaviour” (Kollmuss & Agyeman, 2002: 241). Yet, it has been found from research, that it is very difficult to change behaviours due to their existing habits. This may be due to the inconsistency between attitude and behaviour (Ibid.:242). Renowned researcher about attitudes, D.W. Rajecki (1982), had defined causes for this which is:

- Direct experiences such as face-to-face communication has stronger influence than indirect experiences such as learning in school;
- Normative influences such as social norms, culture, traditions and family customs, influence and shape attitudes;
- Attitudes of people change over time pertaining to a specific subject. This may be caused by a number of reasons.

3.1.5 Theory of Reasoned Action

This theory is generally used in psychology and points out that people are rational when it comes to making systematic use of information available to them. In addition, they are not controlled by unconscious motives. Furthermore, attitudes are seen not to determine behaviour but influence them. Social pressures are seen to influence behaviour (Kollmuss & Agyeman, 2002: 243).

3.1.6 Model of Responsible Environmental Behaviour

This model indicates factors such as economic constraints, social pressures and opportunities to choose different actions, which influence pro-environmental behaviour. Furthermore, it indicates that knowledge pertaining to issues and action strategies related to environmental problems needs to be known in order for pro-action to take place. Other variables, this theory brings forth is the individuals perception on whether they can bring positive change; attitudes of people and individual sense of responsibility contribute to pro-environmental behaviour (Kollmuss & Agyeman, 2002:243).

3.1.7 Model of ecological behaviour

This model consists of sociological and psychological factors to explain pro-environmental behaviour or the lack of it (Kollmuss and Agyeman, 2002:243). They are:

- Values and environmental attitudes,
- The possibility to act ecology with regards to economic and municipal infrastructure,
- Incentives either external utility such as money or internal utility such as quality of life,
- Positive feedback to reinforce pro-environmental behaviour, and
- Knowledge in terms of modifying attitudes and value.

3.1.8 Innovation Theory

Innovation theory considers that innovations are always a result of new combinations of existing elements. “Innovation processes are usually interactive and depend on combinations of different types of knowledge, capabilities, skills, and resources” (Johnson et al, 2011:1008). Innovation is seen as a creation of new knowledge, a combination of different types of existing knowledge that promotes economic growth and development. However tensions should be noted, which emerge from the public when new technical knowledge effects and caused change their lives (Ibid.:1008).

Regarding innovation, an ‘urban order’ has been developed as a framework for city life which, “includes physical infrastructures but also a moral and social order backed by an institutional framework composed of routines, norms, rules and regulations” (Johnson et al.,2011:1011), as in the case of Augustenborg which we will discuss later in this paper.

3.2 Key concepts developed and applied in thesis

The key concepts that have been developed and applied in this thesis are resource, waste, education, pro-environmental behaviour. Below is more information about these concepts.

3.2.1 Resource

“A resource is anything that we can obtain from the environment to meet our needs and wants” (Miller & Spoolman, 2012:11). Important is the fact that resources only exist as such when they have become classified as resources, as something useful. In this paper, organic waste is seen as a resource as it is seen as a product to be used for renewable energy in the form of biogas. The process of creating renewable energy is like a mimic of the natural process of chemical cycling/ nutrient cycling. In Malmö, humans have found that their organic waste can be used to create energy and which can be used as a substitute resource to many non-renewable resources such as coal and oil (Miller & Spoolman, 2012:11).

3.2.2 Waste

In a modern city such as Malmö, waste is the material that goes unused and that pollutes the environment. In a natural ecosystem, one can say that there is no such thing as waste, as the waste of one organism become nutrients for another, with the process of natural recycling (Miller & Spoolman; 2012:544). With the same intention of changing waste into ‘nutrients’, intensive integrated waste management initiatives have been taken in Augustenborg Eco-city. “In thermo-dynamic terms, a city is a heterotroph ecosystem that exists due to consumption of exergy and exports energy through processes of dissipation” (Thomas Malm, 2013).

Waste can be classified in many categories. For this thesis, I focus on the category of solid waste. This is a major category of waste that represents any unwanted material we produce that is not liquid nor gas. This category of waste can be divided into two types which are called, industrial solid waste – which is produced by mines, farms and industries - and municipal solid waste – which is produced by homes and workplaces which are not factories. Municipal solid waste goes by other names as well such as rubbish, garbage or trash. It consists of paper, cardboard, cans, bottles, food (the focus of this paper), etc. (Miller & Spoolman, 2012: 543- 544).

When it comes to dealing with the problem of food waste, there is no single solution. Most analysts call for using an integrated waste management system which consists of, “a variety of coordinated strategies for both waste disposal and waste reduction” (Miller & Spoolman, 2012:547). In Augustenborg, an integrated waste management system is used which consists of both waste management and waste reduction. For this thesis, the focus is waste management so to better understand the term, it needs to be discussed. Waste management is a method used to deal with solid wastes. It consists of processes that are implemented to control waste in ways that reduce their environmental harm without trying to reduce the amount of waste which is produced. Furthermore, “[t]o manage waste has meant reorganization of our relations with rubbish and self...in the instilling of a collective sense of individual responsibility of sorting our rubbish” (Frow, 2006:31).

3.2.3 Education

Education plays a significant role in changing public views about waste and changing their social behaviour towards it. Bates(2005:33) states that “our social behaviour has certainly come to be based primarily on learning, and our ability to learn can produce behavioural changes much more rapidly than natural selection can via specific genetic codes. Our behavioural repertoire has been passed down to us through our culture rather than through our genes.”

3.3 Literature review

The purpose of this section is to indicate what has already been said about the connections between the institutions, individuals and the environment pertaining to waste management. Wilson & Schienberg (2010:1055) state that “[w]e know everyone has a stake and an opinion on waste, and we ignore the users and the existing small service providers at our peril...The best-functioning solid waste systems involve all stakeholders in planning, implementing and monitoring changes to the system” (Ibid.:1055). When it comes to food waste management, sorting of food waste can be messy and time consuming. However, it has been found that it has positive long-term societal and environmental consequence such as a conservation of resources and a reduction in general waste management (Nordlund & Garvill, 2002: 741). This section is presented according to the following themes: institutions, individuals, communication, food waste management and, education and sustainability.

3.3.1 Institutions

Sweden's Ministry of Sustainable Development instated Government Bill 2004/05:150 pertaining to 15 environmental quality objectives aimed at realizing the government's overall environmental policy goal which is, "to hand on to the next generation a society in which the major problems facing Sweden have been solved" (Ministry of Sustainable Development, 2004). This bill looks at issues such as a good living environment and long term ecosystem productivity which considers the issue of waste management. It states that the generation of waste should not increase and, "the maximum use will be made of its resource potential while minimizing health and environmental effects and associated risks" (Ibid.:47). With focus on food waste, the bill states that resources will be recovered from food from households by means of biological treatment. This relates to waste that is separated at the source (Ministry of Sustainable Development, 2004).

The bill states that, Swedish local government authorities (in this case, the municipality of Malmö) have a central role to play in achieving the objectives. The municipality is in charge of implementing these goals, in addition to their own local objectives, in accordance to the Swedish Environmental Code and the Planning and Building Act (Ibid.: 12).

Regarding legislation, the bill states that, "The Environmental Code should be regarded as an effective policy instrument for achieving the environmental quality objectives and in promoting sustainable development (Ibid.: 87). The Swedish Environmental Code is a major piece of legislation that entails fundamental environmental rules which are used to ensure human health and the environment are protected and material management such as reuse and recycling are encouraged with the view to establish and maintain natural cycles (Ministry of the Environment, 2000:9). Regarding cycles, the Swedish Governmental Bill 2002/03:117 contains objectives, strategies and measures to bring about a society, "characterised by non-toxic, resource-saving environmental life cycles" (Ministry of the Environment, 2002: 2). The Swedish Governmental Bill 2002/03:117 (2002:2) states that "our production and consumption result in abundant waste", therefore waste management needs to be efficient. The environmental impacts of consumption and production pertaining to waste have been addressed, internationally as well, for example, by the United Nations since the 'Earth Summit', in Rio de Janeiro (OECD, 2008:5).

For the Swedish Government, “waste management is an essential part of the infrastructure that must function smoothly in society”, therefore new policies have been created and various related parties have committed to better waste management systems where are accessible (Ministry of the Environment, 2003:2). In the bill it is mentioned that reducing waste is an indicator of progress towards an ecologically sound waste disposal system (Ministry of the Environment, 2003:2). A strategy used to reduce waste is, ‘the life cycle strategy’ that “includes changed consumption patterns, more effective production methods and a system of waste management geared at recycling” (Ibid.:2). When it comes to waste disposal, Government Bill 2002/03:117 (2002:7) affirms that the waste hierarchy to be used (see section 4.2.: 27).

Government Bill 2004/05:150 states that education can help solve environmental problems and the environmental quality objectives should be a bigger part in the formal education system. (Ministry of Sustainable Development: 2004) When it comes to the development of environmental education in Sweden, Sören Breiting & Per Wickenberg (2010:12), state that its well established welfare state with top-down traditions has been greatly impacted its development.

Overall, the Swedish Government has taken extensive measures to create an efficient waste management system geared at recycling all that is wasted. In the Government Bill 2002/2003:117 (2002:14), it is stated that, “[a] smoothly functioning system for disposing of waste is an essential element in the infrastructure of society.” Environmental legislation has substantial impact on the runnings of Swedish society. When it comes to waste management, one can see that it is firmly placed on both the public and political agender. In addition to this, incentives have been introduced to motivate people to engage pro-environmental behaviour. (Johnson et al., 2011:1015)

3.3.2 The Individual

One can say that an individual has many roles. In the eye of the government, individuals have the roles as citizens. The concept of citizenship can be defined exclusively by the exercise of civic virtue and the promotion of a common good (Berglund & Matti, 2006: 556). A citizen’s action can be shaped by his or her identity and institutional practices, as well as influenced by his or her relationship with the state (Webner & Yuval-Davis, 1999). In addition, it seems

that political rights of people (specifically in the gendered context) have an impact on individual choices and collective experience (Hobson & Lister; 2001:12).

A study investigated the dual roles – citizen and consumer - individuals face in the contemporary environmental context in Sweden. It highlights the connection between policy and value systems that guide individuals' decision making process in practice. An individual's decision-making process can be thought of as being influenced by various interconnected factors and their ethics plays a role in this, especially with issues related to environmental concern and behaviour, however their ethics can be influenced by institutions. (Berglund & Matti, 2006:551). Another factor related to behaviour is culture, which includes a number of social, political economic and moral value systems that initiate choices and create social identities and impact on environmental behaviour, for instance the success of policies that are aimed at encouraging people to recycle will be measured using people's perception about time and money spent on recycling.

On the other hand, strong morals and altruism to waste sorting indicates a person's strong civic duty and may prove that policies pertaining to economic incentives may be ineffective, but at the same time policies that rely only on voluntary efforts from the people may not work where people may perceive waste management as a time-consuming process. Knowing the motives behind individual's environmental behaviour is important when creating environmental policies that rely on the public for cooperation for the long term (Ibid.: 551). Also motivations of the consumer pertaining to values such as altruism, needs to be taken into account during policy-making. (Berglund & Matti, 2006:566), for example, “[t]he success of a source sorting system is dependent on the people who use it” (Gruvberger et al., 2003: 38).

Berglund and Matti (2006:550) state that industrial activity is not the only cause of environmental problems, another is the choices people make in their daily personal routines. Therefore, they write about focusing on behavioural patterns at the level of individuals, which is believed to be the key to environmental sustainability. They also state that since human behaviour matters for the environment, policy-makers need to consider this when they design policies aimed at improving environmental quality and conserving natural resources, as well as other interconnected factors such as economics and management (Ibid.:551). For behaviours with a perceived positive environmental impact such as recycling and resource recovery, Berglund & Matti use the term pro-environmental behaviours (PEB) (Ibid.:552). It

is assumed that external rewards motivate people to act PEB. In addition intrinsic motives also play a role in initiating this behaviour. Their research has revealed that attitudinal factors such as values, environmental attitudes and awareness, and personal norms influence PEB.

Researchers, Nordlund and Garvill (2002:754), believe that the attitudinal and contextual factors, personal capabilities, and habits are important attributes to pro-environmental behaviour. According to another study, eco-cycles for nutrients such as food waste management, needs to take into account user behaviour and attitude, in addition to technical systems” (Gruvberger et al., 2003: 39).

Consumption also plays a significant role in waste management as responsible consumption reduces waste, therefore pro-environmental behaviour gives a better understanding of what influences people to consume and take care for the environment. Another study shows that generation of waste has a direct relationship with the consumption of resources. Today, our society is consumer driven in nature where high consumption is the way of getting recognition and being treated as an identity in the community (Zaman & Lehmann, 2011:179).

3.3.3 Food Waste management

It is stated that the sorting of solid organic waste is the most difficult to do when it comes to waste from households (Gruvberger et al., 2003: 36). This could be due to the system implemented. Some of the systems used at the source sorting stage are food waste disposers and the mobile vacuum system. “In the food waste disposer system, the organic fraction is ground directly in the households.... Residual waste is collected in plastic bags in the mobile vacuum system and incinerated. Households having only the mobile vacuum system will collect the solid organic waste in specially designed paper bags and the residual waste in plastic bags” (Ibid.: 37). The organic waste that is collected by these two systems is part of the city’s drive for sustainability (La Cour Jansen et al., 2005:163).

Regarding convenience of these processes, In Ando’s and Gosselin’s study (2005, 426-438), it has been found that the time it takes to recycle has a significant impact on recycling rates in multifamily dwellings. They had found from a quantitative research in Urbana, Illinois that there is a strong connection between, “recycling rates and the perceived presence of adequate

interior space for processing recyclables, and distance to recycling bins affects container-recycling intensity”(Ibid.:426) Their results show that housing type differences (multifamily dwellings such as apartment complex and single family dwellings) in this specific area does impact recycling behaviour as people want adequate space for sorting and storing recyclables. With regards to this, policy makers have taken initiative to try and influence some of the factors that make up perceptions of adequate space which may be related to attitudes towards recycling. They also believe that education and promotion drives might motivate people to change their view of their current space where recycling can happen, and in addition more space should be made for sorting and storing recyclable waste for those living in multifamily dwellings.

3.3.4 Education and Sustainability

Educational programs are needed to raise awareness about waste management and to see waste as a valuable resource (Zaman & Lehmann, 2011:186). In Sweden, the formal education system along with other education systems plays a major role in environmental education. In addition, so does local and traditional knowledge (Ministry of Sustainable Development, 2004). Knowledge seems to be a recurring topic when waste management and sustainability is discussed. Johnson et al. (2011:1008) believe that the sustainable city development depends on the creation, diffusion and utilization of knowledge. With time, new information and experiences leads to revision of current processes which is good for the economy. The authors point out that innovation is a combination of different types of knowledge that promotes economic and society development. Therefore, to obtain a well-functioning waste system, information about its benefits and processes need to be given to inhabitants – individuals. This will to a certain extent make them realise that their actions impact the environment. (Gruvberger et al, 2003: 38)

Due to the concern for global warming and more accurate assessment of greenhouse gas (GHG) emissions, carbon in solid waste has received increased attention. When it comes to climate change mitigation, The Intergovernmental Panel on Climate Change (IPCC) illustrates in their assessment reporting that waste management may play an important role (Astrup, 2011:453).

Astrup(2011:453) states that focus is given to recovering energy from landfill gas as carbon emissions from landfills originate from biological degradable waste and therefore mainly biogenic in nature. He mentions that carbon emissions from thermal treatments technologies such as waste incineration is not biogenic as mixed municipal solid waste contains both plastic and biogenic material, therefore the CO₂ emissions are both fossil and biogenic. This is not good for the environment. Astrup mentions in his paper that, “differences in solid waste collection and recycling schemes may significantly change the share of biogenic and fossil carbon in waste subject to incineration” (Astrup, 2011:453). He goes on to say that carbon which is found in waste in the form of both fossil and biogenic sources should be seen as resource which needs to be managed carefully, “in other words, carbon in waste should not be a problem. But the way carbon is managed may be” (Ibid.:454).

Overall, there are no single strategies that can solve today’s waste problems. A holistic approach to material flow within cities are required to design sustainable zero waste city” (Zaman & Lehmann, 2011: 179). Currently, eco-cities are seen as the step forward to sustainability. “Eco-city enhances the well-being of its citizens and of society through integrated urban planning and management that fully harness the benefits of ecological systems and renewable energies- aiming for zero-emissions and zero-waste (Ibid.: 853). Therefore, the concept of zero waste is a subset of the concept of eco-city. The concept of the “zero waste city” includes a 100% recycling rate and recovery of all resources from waste materials generated in the city)” (Ibid.:178).

4. Results

4.1 Background information about Augustenborg Eco-city

Augustenborg Eco-city is a residential area found in Sweden’s third largest city, Malmö, which is located in the southern province of Scania (Skåne). In 2012, it was found to have a population of about 307,758 people and which is rapidly growing compared to other cities in Sweden. Latest statistics show that the population growth of 4,923 has occurred over the past year and of which 2,163 people have migrated from another country (Statistics Sweden, 2013). According to Municipal documents (Trade and Industry Agency, 2011:4), 40 percent of the inhabitants have a foreign background representing 174 countries and about 150 languages (Trade and Industry Agency, 2011:5). The growing cultural and ethnic diversity of

this city impacts viewpoints, behaviours and education pertaining to pro environmental behaviours and recycling and resource recovery practices.

In 1998, a project with the aim of urban sustainability was launched. It is called Augustenborg Eco-city and it is supported by the local government's investment programme, as well as financed by funders within Malmö city, the housing company called MKB and also the Local Investment Programme (LIP) which provides funds for several projects in the area. Today, it can be seen as old district which has transformed to an 'eco-place' with an ecological approach to living from its green spaces to its storm water management to its own production of renewable energy to waste management. This project is seen as an appropriate example to be used for this thesis as one of the key aims of this project is, "to enable residents to take a leading role in the ideas, design and implementation of the project"(Malmö Stad, 2013d), as well as 70 percent of the food waste in the area goes to biogas production. A system for waste separation has been introduced for apartments and for the area's school (Naturvårdsverket, 2008). This fact is significant as it indicates the results of the work done by people involved in the food waste management process.

In the Augustenborg Eco-city and overall Malmö, governmental institutions are constantly looking for ways for environmental improvement. The local municipality is responsible for the waste management system. Other institutions, such as VA SYD, MKB , Avfall Sverige, etc., work together with the local municipality on environmental projects such as the one discussed in this thesis.

4.2 The current integrated municipal solid waste management system of Malmö.

A holist point of view needs to be taken for the is section as food waste is part of municipal solid waste, and Augustenborg Eco-city is a district found in Malmö, thus all information presented below applies to my study. It should be noted that this system had been created by governing institutions – the power authority when it comes to decision making pertaining to process initiation with accordance to policies and regulations. This indicates already the impact institutions have on individuals and the environment, and the top down approach which is apparent.

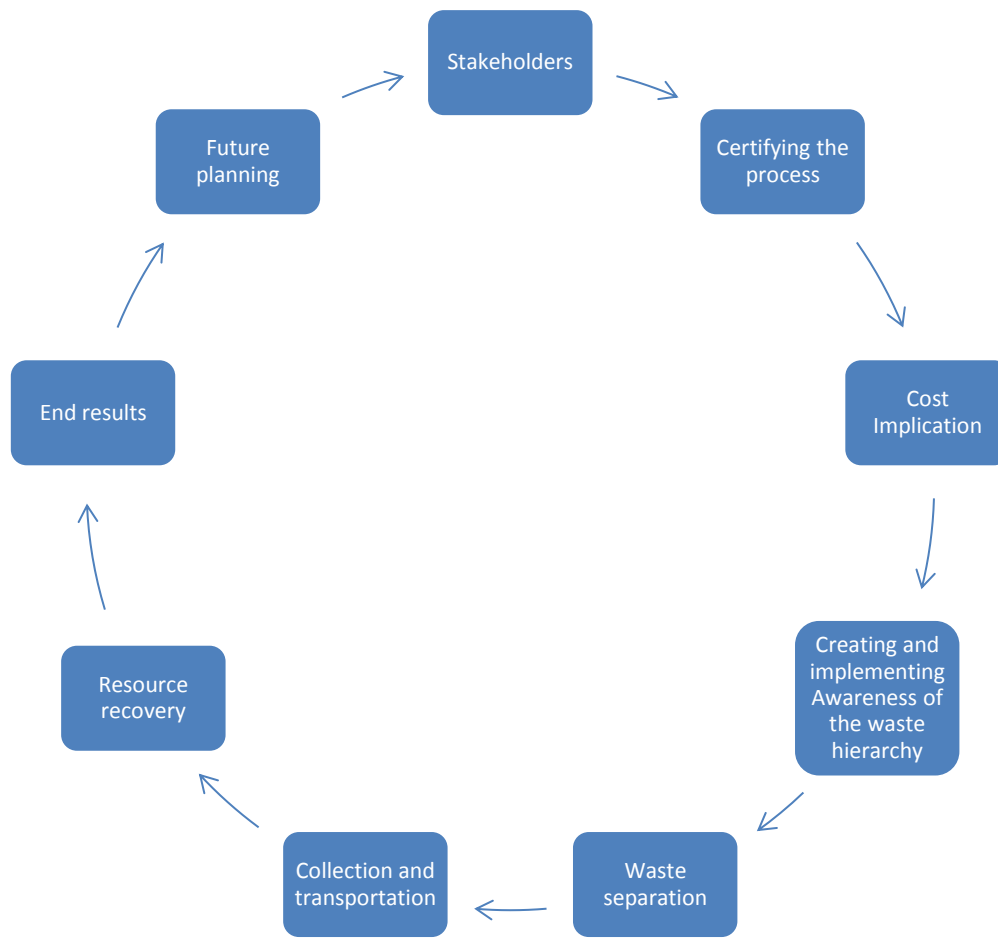


Figure 1. Current Waste Management System Cycle: Municipal Solid Waste.

As one can see, there are many stages in the current waste management cycle - each important in its own right (Fig.1). Below is a brief discussion about each section, as each one deals with different issues yet at the same time they are all interconnected (as one will gather from the information below).

Beginning with the subject of stakeholders, they are many who plan how this system will work from conception to execution to end results. Today, it can be said that in Malmö, collaboration between the public, corporates and governing entities has the greatest potential to achieve social and environmental benefits (Avfall Sverige, 2012a:4). The primary stakeholders are:

The people of Malmö,

The City of Malmö – the local municipality,

VA SYD – a municipal joint authority handles the solid waste of inhabitants;

SYSAV – a company owned by a group of municipalities that receives, recycles and treats waste from households and businesses, and

Avfall Sverige – who is the Swedish waste management and recycling association that represents about 99.9 per cent of the Swedish population when it comes to dealings on a local and political level with politicians, other decision makers, authorities and the media (Avfall Sverige, 2012). They also believe that that waste should be managed in such a way that environmental and social benefits are achieved. This means that all parties involved should take full responsibility when waste is concern (Ibid.:4).

To reiterate what has been said about the current waste system, it can be classified as an ‘integrated waste management system’ as it consists of a variety of coordinated strategies to eliminate currently produced organic waste as well as to reduce and prevent waste occurrence. Malmö’s municipality plays a central role in this system. They receive delegated orders from the Swedish parliament who uses the European Union’s framework to design the processes and procedures of this system. In 2012, the government had issued two goals that they would like to achieve. They are effective resource management when it comes to food waste, and effective methods to create and dispose of waste. In Malmö and Sweden at large, the following are methods that are used to handle waste: recycling, biological treatment, energy recovery and landfills.

Recycling is seen as a method that reduces environmental impact, as well as it saves energy and natural resources. Pertaining to biological treatments, waste is treated by anaerobic digesting to create compost which is used for gardens and improve land and biogas which is used to fuel vehicles (Avfall Sverige, 2012:4). When it comes to energy recovery, it is seen as an appropriate method to extract energy from waste, which can be used for both heating and electricity. Waste that cannot be recycled is usually used for energy recovery, however there is also the option to landfill which is to store waste for long periods of time. In Sweden, it is forbidden to deposit organic waste to landfills (Ibid.:5).

In Sweden overall, household solid waste is required to be sorted out and delivered to the available collection points. People living in residential areas need to follow municipal waste management rules which vary from one municipality to the other. In Malmö, the management of waste should be in accordance with the waste hierarchy which starts with:

Waste prevention and then leads on to other managing processes which are: Preparation for reuse (minimization), reuse, recycling, other recovery, e.g. energy recovery and, disposal.

(See Fig. 2).

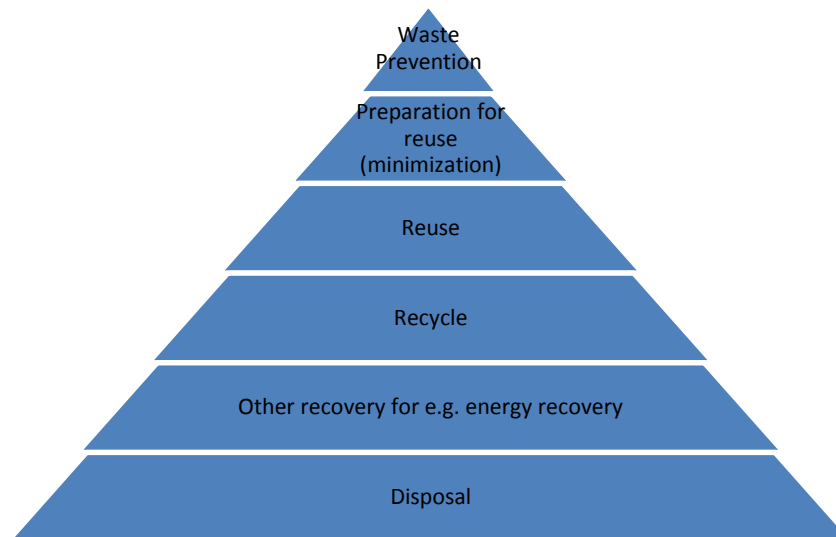


Figure 2. Waste Minimization Hierarchy.

Deviations from the hierarchy take place either for environmental or economic reasons (Avfall Sverige; 2012a: 4), but it should be noted that waste prevention is given priority in the Swedish waste legislation as it is believed that the environment benefits greater if a product is not produced rather than if it is either produced or used or recycled. When it comes to waste minimization, Malmö municipality is an important agent in implementing initiatives to minimize waste and to break the connection between growth and waste. Moving to the next step in the waste hierarchy, the Swedish national waste plan is to increase the reuse of household waste. In addition to promote that materials and products can be reused.

At the moment there are no tools to monitor progress of waste management, therefore a project to develop indicators for resource efficient waste management and tools to monitor progress towards the vision of 'Zero waste'(Ibid.:6).

Pertaining to disposal Malmö municipality has chosen to organise the disposal of waste with three options: sole municipal management; joint municipality's owned companies' partnership; and joint local authorities' partnership (Ibid.:4).

According to Weine Wqvist, who is the Managing Director of Avfall Sverige(2012a:3), current collection, recycling and treatment methods can be improved and refined. He believes that our – human's - vision should be, "Det finns inget avfall" which in English translates to, "There is no waste". He states that when it comes to organic waste, collection of

it has increased and almost 60 percent of the Sweden's municipalities have introduced collection of source separated food waste and more plan to do so (Ibid.:3).

Certifying the waste management process is important due to ethical integrity , good business governance as well as caring for the earth. For instance, a biogas plant needs to be certified in accordance to specified quality requirements (Avfall Sverige, 2012a:22). Cost implications of waste are mainly coordinated by the municipality as they charge a waste fee in order to cover costs for their service. The fee is set by the City Council (Ibid.: 30).

Public concerns are important to consider when creating environmental policies. Cross cultural differences need to be considered due to many different cultures found in a specific area. People will differ over the seriousness of waste management and actions towards processes such as recycling. This may or does cause delay in dealing with current waste problems. Different opinions are based on different environmental worldviews which are sets of assumptions and values reflecting on how we think. Environmental ethics which are our beliefs of what is right and what is wrong plays an important role pertaining to our actions in the waste management system and our actions to the environment, overall. It should be noted that people with different views can take the same data and arrive at different conclusions because they start with different morals, assumptions, ethical and religious beliefs (Miller & Spoolman; 2012: 24) (This will be discussed later in this thesis as it relates significantly to the second and third sub-questions; see section 4.3. and 4.4.).

The cooperation of individuals is the key factor. People are the main agents whose actions have a ripple effect in all the processes involved. Overall, in Malmö, 96 percent of household waste is collected. That which cannot be recycled or reused is used to create biogas (mainly organic waste) or burned in the waste-to-energy facility. Augustenborg is a famous site that has created cycles that mimic nature when it comes to creating nutrients, for instance, residents dispose their food waste in special bags that are put in special bins (Malmö Stad, 2013e). (This point will be discussed further in the next section)

Collection and transport of waste is an important process in waste management as without designated and efficient transport systems, refuse becomes a pollutant and has a detrimental effect on humans and the environment. In Malmö, there are many different systems for the collection and for the transportation of waste. Waste is collected from households for

different purposes – energy recovery, recycling, etc. and it is generally collected on a weekly basis. The waste is found in separate bins, each designated for different types of wastes (Avfall Sverige, 2012a: 8). People in the area are educated about waste sorting (See section 4.3. for further discussion).

Regarding vehicles, there are increasing numbers that run on biogas which is created from household food waste. The conventional rear loading refuse vehicle is still used but with evolving technology, multi-compartment vehicles are increasing in order to avoid using different trucks for different waste materials. When it comes to the manual management of waste which is physical labour to move waste from point A to point B, it is being replaced with technology, automated systems, vacuum systems and underground containers (Avfall Sverige, 2012a: 8).

Resource recovery occurs after collection of disposed waste. The aim of this process is to maximise benefits of the waste and so it consists of recycling and energy generation processes such as biological recovery. The human way of recycling is to collect waste materials and then process them into new products (Miller and Spoolman; 2012:11). Scientists estimate that we could mimic nature's way of recycling and thereby reuse and recycle up to 90 percent of the resources, humans use. (Ibid.:11) However it is best to use less, then reuse and lastly recycle. In other words, work according to the waste hierarchy (see. Figure 2.). In Malmö, waste separation and recycling becoming an integral part of modern urban lifestyle behaviours. Local companies and business have become responsible to assist and facilitate this pro-environmental behaviour. For example, the municipal housing company, MKB, has constructed weather-proof complexes (*miljöhus*; 'environment house', that is an 'eco-house') in order to support waste separation in most of the apartment complexes managed by them. "Each miljöhus has separate containers visibly labelled, often with visible images, to recycle glass, newspaper and paper, cardboard, metal, plastic and batteries, as well as the accommodate the remaining waste" (Malmö Stad, 2013e).

Avfall Sverige believes that recycling plays a big role in a sustainable society as it reduces the use of natural resources and it saves energy. It is therefore important that the waste be seen as a resource and treated in a proper manner. In order to create awareness about recycling, Avfall Sverige implemented a national campaign in 2010-2011 in corporation with all municipalities (Avfall Sverige, 2012a:18).

So far, biological processing/ recycling have increased in Malmo, with more household waste being treated through biological recycling. Food waste is treated more by anaerobic digestion instead of composting. Malmo city is in continuous process to decrease home composting of food waste through food collection. With the increase of biological recycling, the energy recovery in whole of Sweden increased by 5.3 percent to 2,235,720 tonnes, 235.8 kg / person. 51.4 per cent of household waste went to energy recovery (Avfall Sverige, 2012:10). The aim of this man-made cycle is for humans to generate a minimum amount of waste. The waste that is used becomes a new product depending on the process used. For instance, anaerobic digestion bio-fertilizer is a fertilizer made from waste and it has a high nutrient content and can be used in agriculture. It is found to have replaced mineral recycled resources such as phosphorous which is a finite resource. In Malmo, the digestion of biological waste results mainly in creation of biogas that is used to fuel vehicles as well as for heating and electricity (Avfall Sverige; 2012a: 21).

4.3 Photo-documentation

In this section I will first describe what had guided me to take photos by using the process format mentioned in Rose (2012:303). I will begin with the shooting script, thereafter I provide, field notes from my first hand observation in order to provide information about the context the photos has been taken in, and commentary on how each photo relates to the what guided me to take them. I have added codes to the photos in the form of captions - which might help in answering the research question - and lastly, I will discuss the photos. (See Appendix A for field notes)

4.3.1 The Shooting Script

‘Shooting Script’ is what Charles Suchar - who successfully used photo-documentation for his work on gentrification - calls the careful conceptualization for the link between the research topic and the photographs taken (Rose, 2012:303). Therefore my Shooting Script was the main research question and sub-questions of this paper as they had guided me to take the photos that I have. (See section 1.2.:10). With these questions in mind, I wanted to do a photo-documentation of a waste house which is a representation of other houses in the area. It is a common space that plays an integral role in the waste management processes as it is the place where food waste is separated from the rest of the solid waste and then disposed, where

people learn to ‘correctly’ dispose their waste from signage and contact with fellow inhabitants, where governing authorities and institutions have power to shape habits and influence people to adopt pro-environmental behaviour. Thus, the focus of this section is on what influences individual decisions and environmental behaviour of the inhabitant of the area.

4.3.2 Photographs

All photos have been taken on the 19th of April 2013, after 3pm at Augustenborg Eco-city.



Figure 3. Waste House.

In the district, there are about 15 recycling houses such as the one on the left in Figure 3. for about 1,800 people who live in the area. With these houses, Malmö municipality, VA SYD and MKB aim for 90 percent of the areas waste to be collected, recycled, re-used etc. The municipality has stated that at the moment they recycle about 70 percent of the waste. These recycling houses were based on some of the resident’s design ideas. The residents have also

been involved in the initial recycling pilot programme; in addition they have visited other Swedish cities to learn about their recycling programmes. (Malmö Stad, 2013c).

The houses can be seen as a representation of a sustainability city because, “[a] sustainable city requires appropriate infrastructure and policy to provide a physical structure that works — to facilitate the flow of traffic, whilst investing in renewable energy, and proper services to manage solid and liquid waste” (Malmö Stad, 2013b). This place is as Baudrillard would say is, “carefully groomed, managed, policed and tailored to the needs of humans” (Baudrillard, 1998:12). It seems that this modern nature is in a form of simulation with many signs and symbolic exchanges for sustainability involving governance, capitalism, society, etc. It is a fact that government, its partnered institutions and other involved institutions, such as the church and other religious ‘houses’ influence the inhabitants to certain extents therefore they become agents of social regulation and power over ethical and spiritual practices of humans that influence activities in waste management.



Figure 4. Choice of Access

The questions pertaining to education and pro-environmental behaviour led me to taking this photograph (Figure 4.) as I see that there is no age, gender and race restriction when it comes to waste management. No preference is given to who should participate in the process and all humans should incorporate pro-environmental behaviours in order to care for earth. Our relation to waste has changed over time. We have come to adapt new procedures, actions and have come to see how caring for the earth is linked to, “linked to the micro-practices in the home, to instructions on how we should be around our rubbish: much more attentive, much more dutiful, and much more careful than the culture of disposability” (Hawkins, 2006: 32). I think learning and communication are the keys promotion of pro-environmental behaviour, to adapting these new procedures and action. When it comes to learning and communication Malmö municipality along with its enterprises such as VA SYD and partners such as MKB, work together by creating programmes that engage the people of Augustenborg Eco-city to sort their waste, to recycle, to overall have pro-environmental behaviour. For example, current programmes that are linked to waste management are: Malmö’s Fair-trade city programme which is related to ethical consumption; Malmö’s ‘Learning for Sustainable Development’ programme which is linked to the United Nations overarching goals in regards to the Decade for Education for Sustainable Development (2005- 2014); the ‘Green Media’ programme which is to inform residents and the public about Malmö’s efforts and policies to create a sustainable city (Malmö Stad: 2013b). Specifically, with the case of waste management in Augustenborg Eco-city, they try to come up with technical and infrastructural solutions that offer avenues to alleviate urban environmental stresses. Malmö Municipality believes that, “sustainability can only be achieved if citizens choose to utilize public infrastructure (such as the waste houses), and participate in patterns of sustainable behaviour” (Malmö Stad: 2013b).



Figure 5. Available Infrastructure and Provisions

The recycling houses in Augustenborg Eco-city have containers (bins) for all sorts of solid waste from food waste to paper, cardboard, glass, metal, plastic, electric appliances, etc. The bins are of different colours in order to make them easier to distinguish for the public and those who come to collect the waste. The municipality, VA SYD and MKB take responsibility for the upkeep and maintenance of the waste house. Bins are presumed to be emptied and sanitized on a regular basis. This involves human labour which is paid for unlike the labour involved to prepare the waste before it is put in the bins, for example rinsing milk cartons, removing stickers from glass bottles, caring the waste to the bins. Sociologist and economist, Thorsten Veblen's idea of 'unearned income' shows that production is a social process where the material used is the integral part of the labour process, and a consequence of other factors such as knowledge, language, etc. (Veblen, 2005:63-84). The obedience and acceptance to the new processes of food management can be said to depend on a monitoring and disciplining relation to one's self as the conscience of a person, his or her habits related to waste management become connected to the ways they portray themselves (Hawkins, 2006:33). Regarding waste as a capital good and other capital goods involved, Veblen states, "It might be that each concrete article of 'capital goods' was the product of someone's labour, and, as such, its productivity, when put to use, was the indirect, ulterior, deferred

productiveness of the maker's labour" (Veblen cited in Tilman, 2004:64). For the record, here, the 'capital goods' is the house, the bins, etc. I also see food waste as material that would be used to create new products; thereby it becomes a capital good by the notion that it would generate capital. And so, it seems to some that, "putting out garbage [waste] has become complicated. No longer the lugging of the bin to the curb a couple of times a week, now it's a complex assemblage of actions: collecting all the papers and cardboard (clean only)...these practices indicate the impacts of domestic waste education and the ways this become enfolded with a new conscience about rubbish. And this conscience is a significant element of our attachment to changed waste habits" (Frow, 2003:31).



Figure 6. Behaviour influenced by Colour Coded Bins and Signage.

Figure 6. indicates designated bins to place already separated food waste in. Notice that the bins are brown in colour and shaped differently to the other bins (There is a reason for this and it will be explained later in this section). Above the bins is also sign's indicating what type of waste that can be put in the bin as well as what happens to the waste after one disposes of it? This type of layout and working is fairly recent and does not occur in other parts of Malmö city, as Augustenborg Eco-city is a pilot area for separating food waste to make biogas. This pilot programme started in 2008 and analysis of the waste flows is done consistently to see if it is beneficial to implement. (Malmö Stad, 2013c) This programme implementation again reflects the power and authority of governing and partner institutions

have on people to change their habits for the better. C. Wright Mills believed that if knowledge is properly used, it could bring about change for a good society (Mills, 1959). This seems to be the case in this situation.



Figure 7. Posters Used as a Medium of Communication.

Figure 7. shows a poster that was found above one of the brown bins used for food waste disposal. It has been created by VA SYD, one of the governing institutions, to indicate what sort of food must be collect and how it must be packaged to be put in the bin. The language used is only Swedish and that might cause a challenge for the new people who have moved to the area and who do not speak Swedish as yet. On the other hand, I see some of the food that looks still edible, like the cookies; therefore this poster might promote wasting of food or inconspicuous consumption to those who are well-off. I say this as one might fell less guilty if they do not eat all their food and throw it away as they would feel that it is ‘not wastage’ but a product still useful. Veblen, spoke about inconspicuous consumption which was seen as wasteful (Veblen, The Theory of the Leisure Class: 49-70).



Figure 8. From Rubbish to Value.

Figure 8. Can be seen as an indicator of waste value, and the collective wealth produced from it. Thorstein Veblen's view of collective wealth is when a community collectively carries forward technological knowledge that benefits all as a collective.. He further discusses that if several groups of people have to work together towards a common goal, in this case it would be sorting waste efficiently for resource recovery and renewable energy, and then peace must prevail among them such as getting along with one's neighbour. Veblen believed that questions of language, communication and cooperation are important to in his theory of the social production of community wealth. He believes that improvement is based on individual decisions and actions, however these actions and decisions are made by those who are exposed to group life, thereby influence from the community in general plays a role on an individual (Veblen, *The Theory of the Leisure Class*, 28-49).



Figure 9. Governance and Control.

A waste management system which comprises of collection, transportation and disposal, is very important in all human ecosystems. In the case, of Augustenborg Eco-city, the municipality of Malmö with its Enterprise – VA SYD and other partners such as MKB (Figure 9.), offer a workable system which is, “ structured by legislated and normative moralities, by disciplinary codes that order conduct in the interests of wider objectives: from reduction of landfill to global ecological survival” (Frow,2003:31). Frow believes that when it comes to protecting the environment, we now tend to make it a sense of duty to do so and to be responsible for caring for the earth. Frow (2003:31) further says that waste management discourse is, “a technology of governing, a way of guiding conduct,” which I think is the case here in Augustenborg District as we can see the links between waste policy created by government and implemented by the municipality, and the individual who has come to experience a sense of duty and responsibility for protecting the purity and otherness of the environment. “The emergence of a waste management discourse shows how moral problematization has functioned to justify a range of interdictions and self-disciplines that have changed how we disposed things. This is a technology of governing, a way of guiding conduct whereby we can see the links between the broader political rationalities of waste policy and the small actions of an individual in

their everyday on-goings (Frow, 2003:31). Thus, in this case Malmö city municipality is responsible manage and minimize waste through implementing state programs and transforming the structural dynamics of the waste services they render. Hawkins (2006:32) emphasises that waste management and minimization success is due to state programs and the structural changes made in local waste services, as well as participation from the people as their waste management practices that they do willingly in their daily life. She states that, “what is so significant about new rubbish is that, when questioned, many people claim that they are doing it for nature and not the state. They are participating because they believe in some abstracted sense of social and environmental good. They experience recycling and composting as autonomous gestures, as expressions of their “environmentally concerned identity” (Hawkins, 2006:32). This seems to be the case in Augustenborg Eco-city. This brings me to the discussion of power as it is very much embedded in all happenings pertaining to waste management in this area, in Malmo and Sweden at large. C. Wright Mills and Hans Gerth defined power as, “the probability that men will act as another wishes” (Gerth cited in Hawkins, 2006:32).



Figure 10. Habits.

I had taken Figure 10. with the thought of seeing the act of food waste disposal, (according to municipal instructions), as a pro-environmental behaviour - as a habit. A habit that is linked to another – Consumption, which, Jean Baudrillard saw as, “an active form of relationship (not only to objects, but also to society and to the world), a mode of systematic activity and global response which founds our entire cultural system” (Baudrillard, 1998: Foreword). He goes on to say that wasteful consumption allows people to feel that they exist and are ‘truly alive’; thereby wasteful consumption is a functional and not dysfunctional act. (Baudrillard, 1998: 5) In this case, one may buy too much food and dispose the excess. Hawkins (2006: 30) states that, “[d]isposability frames waste habits in terms of straight forward elimination, a necessary part of progress and consumption” She believes that it is harder to sell disposability in this day and age as we have seen too much of it and thus it has made trouble for, “the habit of thoughtless elimination” (Hawkins, 2006:30). But on the other hand, disposal has become a process of careful management of waste that has become implicated, “in a morality less concerned with maintaining the purity of the subject and more concerned with protecting the purity of the environment and establishing the virtue of the careful waste manager’ (Hawkins, 2006:30).



Figure 11. More Than Just a Bin.

Gone are the days where just, “[t]he belief that systems for waste removal will efficiently protect us from knowing where shit ends up will keep that without value concealed” (Hawkins,2003:40). Figure 11. indicates that the initial purpose of sanitation and to efficiently remove waste has incorporated a technological twist in Augustenborg Eco-city. Once it was thought that there was “technology that would purify urban space that would allow populations physical and moral escape from the unacceptable...” (Hawkins, 2003: 40). Now this thought has changed as the waste is no longer seen as ‘the unacceptable’ but instead as a resource. Using Thompsons Rubbish theory, we can see that there is a change in the comprehension of the valuing waste and the food waste value has become durable, as in this case it is used to produce biogas, thereby is value has increased as it is needed. This change has occurred due to the knowledge gathered over time, the knowledge used for creation of biogas.

As for technology, in this case, it can be seen as purifying urban space. The bins in this photo indicate that technology is used for purification. These bins look ordinary, yet their design and features such as handles, wheels and black tags, are used to measure the waste inside it, which then indicates if the food waste management system is working efficiently until the point of collection, and people are adopting pro-environmental behaviours, and educational campaigns are effective to change behaviour.

With an overall view of this section; earlier in my rationale section, I quoted Emilio Moran, who spoke of all humans having an effect on the environment and their decisions, both small and large have cumulative effects on the planet (Moran, 2010:126). The case I have used in this photo-documentation can be seen as an example of the decisions people make that have an effect on the environment. I previously quoted Moran when he said that social, economic, institutional and technological systems constrain the actions of individuals (Moran, 2010:126). Here we see that people may choose to believe that they are not constrained and in fact free to make decisions to act pro-environmentally and separate their food waste, and other waste too.

To provide explanations for the pro-environmental behaviour occurring in Augustenborg Eco-city when it comes to food waste, I use Wilk's and Cliggett's (2007:43) 'three models of human behaviour and decision making'. Beginning with the first model – The Self-interested, an economist may say that an individual who is diligent in separating his/her food waste as per requirement by the municipality is doing so because he/she uses his/her internal utility – altruism - and gets a good feeling thinking that the act is reducing wastage of resources and pollution. The second model – The Social model can be used as it indicates that the individuals who separate their waste, are motivated by those who they interact with it in the same area – be it their neighbours, friends, public officials, etc. It may be that seeing others do it, they want to do the same as thus become part of a collective with the same habits, which they may think is guided by their own decisions and desires. The third model – The Moral model stems from what people think and believe. So in this case, people who separate their food waste might do so based on their morals and values that have come about by their specific cultural way of life.

From my commentary on how each photo relates to the themes of my project. I have found that in Augustenborg Eco-city, institutions have a strong impact on individual behaviour and

environmental decision. This is due to the infrastructure provided for waste management to the inhabitants by the institutions. It is a constant reminder about the waste process and the value of waste – from the bins itself, to the signs on the wall to the contact with others who come to dispose their waste in the waste house. The food waste management practices in this area has brought attention to issues of valuing of waste, labour used to separate and dispose waste, consumption patterns and the notions of freedom of the individual to make decisions, and to what extent institutions influence the individual's behaviour and decisions.

In Augustenborg Eco-city, the municipality, Malmö Stad, ensures that there is compliance with the environmental quality standards and planning of projects amongst all parties involved (Ministry of the Environment, 2000). VA SYD works in accordance to municipal and government policy, such as the Government Bill 2002/03:117, to improve the environment life cycle. Thus, one can say that in this context of food waste separation, the institutions greatly influence individual behaviour and environmental decisions of the people in Augustenborg Eco-city.

4.4 Interviews

The below are my findings. I have set them according to information about the participants, generic themes that have emerged from the interview and then a last section that discusses the whole interview process.

The participants are labelled:

Respondent 1: VA SYD

Respondent 2: Augustenborg Urban Gardens

Respondent 3: MKB

When asked for reasons given for career choice:

Respondent 1: "... I have always been always interested though into human behaviour and teaching and learning"

Respondent 2: "I had always been in there. I started off in a youth environmental and nature organization...I saw the need for making cities friendlier for people who work with, to be closer to nature."

Respondent 3: “My concern about the environment has been present in my life since I was a child. In high school I had a very inspiring teacher in biology and environment which opened my eyes for the possibility to work in this field.”

They described their jobs as follows:

Respondent 1: “I am a development engineer. My job is to think about new systems for collecting waste...develop the systems in the city, to make it better, to make it easier for them, to make them better at recycling, aware of these systems.”

Respondent 2: “... My job is to spread the information about what we have done in Augustenborg to the outside world...”

Respondent 3: “Project manager at MKB fastighets AB, working primarily with Ekostaden Augustenborg.”

Applying Mills’ theory of craftsmanship to this section, we can assume from the data provided by the officials that their workplace is not just a source of income but a place of gratification as they either always had a concern for human behaviour or the environment. They do not seem to have feelings of alienation as workers, instead they come across as adding value to the process of food waste management, in addition to this, they seem to be aware of the significant impact of their jobs as well as knowing that they are contributing to the ‘bigger picture’ of sustainability (Mills, 2004).

In Augustenborg Eco-city, the food waste management system consists of the resources recovery practices which focuses on delaying the rate of consumption and extracting of food waste (source separated) to be then recycled via biological processing which results in the creation of Biogas (e.g. Methane) which is used either to fuel local transportation vehicles, or to generate electricity or heat. Respondents were asked about which factors they feel motivate one to implement resource practices, they respectively answered: it is the link between technology and humans, knowledge and the belief that collection of waste for the production of biogas is more beneficial compared to combustion and other alternatives.

Resource recovery practices signify the formation of value. With the use of rubbish theory, we note that indeed food waste initially starts at a zero value, at the stage when an individual has it. Once it is disposed correctly, its value begins to increase thereby the waste can be seen as having a durable state. Using this theory to describe the inhabitants who have created this

waste and who participate in resource recovery practices, they can be seen as the assigners of value as they have control of the time to dispose the waste, space to manufacture and store it and the knowledge to dispose of it correctly as per the rules given by the relevant institutions (Frow, 2003:34).

During the first interview, the term education was asked to be clarified. Respondent 1 stated, "...this is what we think about when we produce information [for the public]... But now we try to replace the word and use 'Communication', instead. We really want to 'communicate' and want them [inhabitants] to give us feedback..." "I think environmental education started to be part of the society,...I think you can see it everywhere and in everyday activity...I think that education usually leads to awareness...But we also learn that awareness does not only come from our education. There is a lot of awareness that come from newspapers....we are not the only people talking about waste management. There are a lot of people talking about it as well...education that we have raises awareness about waste management."

The act of wanting feedback from inhabitants can be understood with the use of the theory of craftsmanship that it indicates that the institution wants to omit the feelings of alienation felt by inhabitants (Mills, 2004). Two way communications is explained by the social model approach as showing that the institution gives the inhabitants a sense of belonging to the process of waste management and that they are in charge of controlling their own decisions to separate their waste (Wilk & Cliggett, 2007:42).

From the respondents answer I had come to the conclusion that when it comes to food waste management in Augustenborg Eco-city, the word 'education' does not only mean academic formal attendance but also informal knowledge via different mediums of communication. With the model of ecological behaviour, I would say that education, in this case, is used to modify attitudes pertaining to food waste management (Kollmuss & Agyeman, 2002:243).

It has been found that different divisions within institutions used to be responsible for different topics related to waste management with reference to the waste hierarchy or the three Rs – reduce, reuse and then recycle. Only until recently has all departments integrated their views, and thus incorporate all aspects of the waste hierarchy when they educated people about food waste management. As Respondent 1 state: "Yes. This is something we started to work with very late....the reducing part is not really our topic, it is with the

environmental department....so this has been a very strange discussion...Should we work with it or who should work with it?...but lately there has been discussion with both the EU and the Swedish government that this is what we must work with....we don't have the resources, but this is what we talk about as well.

In general, different mediums of communication are used to teach about different methods of recycling. For example, Respondent 1 states that Augustenborg Eco-city is a place, "where you have everything in bins, where we can open it and have a look in it and see what is in it, you can remind people to recycle by taking them down to see it and they can see that there is different bins, so it is not that difficult to understand the waste sorting, however in the Western Harbour there is only one entry in the wall so, you can't really see the different fractions....so you have to have much confusion with that and so provision is given to help them understand why you do this, what happens to the waste, why you shouldn't mix the waste, etc. So the system in the western harbour doesn't have many permissions itself so information is given via leaflets, brochures, etc."

When it comes to institutions educating people in Augustenborg Eco-city about the action processes, the following steps have been taken according to Respondent 1: "...We wanted to teach them how easy it is to separate your food waste. To make sure that they have the paper bags and so they could start...then we thought that we can get them to recycle even more if we taught them about biogas. So number 1. Was to tell them 'how' and number 2. Was to tell them 'why' it is important to make biogas..."

Not all teaching campaigns have been successful in Augustenborg as people did not understand the benefit scenarios given as well as the terms used, for example, like 'a car can travel one more lap around the world' campaign. Respondent 1: "...we said that in Augustenborg all the food waste can make a car travel around the world a certain amount of times... it turned out that no one understood it. We did some research after this, and we found out that no one could understand the connection of this car going around the world,...they didn't understand the point of biogas...we have to understand that we have to be very, very simple...'so now the latest campaign is food waste is good for the environment'". Respondent 1: believes that when it comes to education about waste management, one must go "Back to basics because people tend to not know about the terms...we learned that waste

and recycling is not on their everyday topic...so we have to remind ourselves that this is not the topic people daily consider”.

When it comes to creating awareness of the food waste system in Augustenborg it has been found from the respondents answers that communication and cooperation between the inhabitants and the institutions are vital to seek out what will be the best ways to dispose food waste. The visual attraction and accessibility of the waste houses is not enough. It has been found from respondents research that the kitchen of an inhabitant is not practical for recycling as the participant might feel it inconvenient to recycle while cooking, i.e. separating food waste from other municipal waste, storage of the food waste.

From the interview data, I found that the important tools used for promoting food waste management, for educating people about it are use of written language, pictures and face-to-face communication.

Respondent 1: “the policy we have when it comes to disseminating information is to use Swedish language as far as possible...to use very simple language and also to use pictures, so it must be able for most people to understand. Because somewhere we want people to understand and learn the Swedish language...we have discussed disseminating information in other languages and so we have developed brochures in 4 other languages....”

Respondent 2: “[Pictures] are better than written information, but it is still not as good as spoken information...” Respondent gives an example of how people did not use the little bag holder for their organic waste bag, until MKB sent personnel around the area to help install the holder in the inhabitants apartments and tell them about the benefits of resource recovery practices. “Even though there are signs with pictures and everything, people still wanted to ask a real person”. According to respondent 2: “They had a 70 percent increase in the organic waste that people brought in because of this campaign. And I don’t think that the main component was the shelf. I think the main component was the motivation and the fact that it was a two way communication.

With ‘innovation theory’, this section about education and awareness can be explained as a combination of knowledge, skills and resources. In addition, it had been noted that the public had tensions with the technical knowledge as they did not set up the waste bag holder as they did not know about the technical processes of the waste management system....The waste management system in itself is an innovation with different combinations of existing and new

elements that are controlled by the institutions as in this case. We see it in the above stated actions of the institutions (Johnson et al, 2011:1008).

With the model of responsible environmental behaviour, one can say that the inhabitants act because of knowledge about the issues and strategies related to the problems of pollution, greenhouse gas emissions, etc. (Killmus & Agyeman, 2002:243).

On the issue of habits and pro-environmental behaviour, Respondent 1 stated that there are different people who think differently, therefore some would act pro-environmentally even if it costs them money, and others don't want to change their habits so they do not act pro-environmentally, therefore focus needs to be given to changing habits of inhabitants, "they are the ones that need the help to change their habits and once they know it is good for the environment, they have be aware that it is easy to do...."

Using moral model of human behaviour and social making, I understand this response as indicating the morals of the inhabitant leads to their behaviour and what they think of the world (Wilk & Cliggett,2005: 43).

When respondents were asked which factors can demotivate people's willingness to recycle, responses where:

- People presume that it is futile to separate waste and to recycle as all the waste is mixed again by the responsible institutions
- Stress
- Lack of time
- They have too much information and so they feel overwhelmed.

Two of the three respondents believe that incentives are needed to get people to recycle.

When it comes to their personal view of weather Swedish government' is good at promoting pro-environmental behaviour, there had been mixed responses of both Yes and no. Those who answered no said that bigger 'steps' should be taken by the government toward a sustainable lifestyle.

All agreed that Malmö municipality is good at promoting pro-environmental behaviour; however there is room for improvement.

According to two respondents, action has been taken to listen to the view of inhabitants in the area:

Respondent 1: “We try to listen to what they say. We have social platforms such as Twitter and Facebook. And we have a call centre who listens to people... when they transformed Augustenborg into this eco city, they incorporated the inhabitants into the planning. Called it a common partnership.”

Respondent 3: “The people of Malmö are our costumers so we have an open dialogue with them at all times. But we also do surveys and have meetings to find out what is on their agenda”.

All participants were asked the question: “What is your personal definition for sustainability? Because Malmo city always addresses itself as a sustainable city.”

Respondent 1: “...the typical way of seeing sustainability is to do with ecological, economic and social development and I think it is very important because I think that we think a lot about ecological development with sustainability...I think that it is more and more aware of the social aspects...”

Respondent 2: “...for sustainability, we need people. So the social aspect, for me, has become much bigger and the technological details...”

Respondent 3: “A city where we take advantage of the efficient resources that a dense and vibrant city makes possible, waste management transports, living areas and so on. But also where green areas and biodiversity is present and where people can live a healthy and good life, a life that enables the coming generations to live and provide from the city and landscape around it.”

Overall, from all the data gathered in this section, I have found that the social dimensions to the system are of great importance. It compliments those technical dimensions with focus on the human impact on the system. As mentioned earlier, data had been gathered from institutional officials, as the institutions initiate and control the food waste management system according to social welfare policies. With Mills (1959 & 2004) view on institutions, I explore the role of the institutions. I see that though in control, institutions have established a two way communication that empowers the inhabitants of Augustenborg to ask questions about the system, to understand the processes better and to feel that they have added value to the process that benefits the public as large. The management style of the process seems to be less authoritative enabling freedom of views to be made about the processes and this helps

with improving it. In addition, I see that the awareness the institution has created about the benefits of the resource recovery practices done in the area has led to inhabitants acting more pro-environmentally, which is proved by the increase of the amount of waste disposed in the designated bins. From the above data about the educational campaigns, with the use of language and visuals and face-to-face interaction, it indicates that the institutions involved still use 'early linear models of pro-environmental behaviour' in order to influence behaviour. However, they forget to acknowledge that it is not so easy to change people's behaviours as their habits need to change and this is hard do for the individuals, themselves. Furthermore, institutions need to pay more attention to the normative influences such as social norms, cultures and traditions as these shapes and influence attitudes of people (Kollmuss & Agyeman, 2002:242). From statistics about Malmö city, it has been found that the population is growing and becoming more diverse, therefore, the institutions need to take this into account and adapt their education campaigns accordingly in order to allow more people to adopt pro-environmental behaviours.

To explain the data about motivation and demotivation, I see that institutions need to use the model of ecological behaviour to understand the reasons behind inhabitant's actions. People act the way they do so, may be due to their values and attitudes which are influences by numerous sociological and psychological factors, in addition, inhabitant are indeed influenced by incentives be monetary value or intrinsic such as happiness to care for the earth. Mores, positive feedback to the inhabitants may help to motivate inhabitants to continue recycling (Kollmuss & Agyeman, 2002:243).

Lastly, pertaining to their views relating to sustainability, with the use of 'innovation theory', I identify that they see a sustainable city that consists of physical and social infrastructures that is guided by the 'urban order', a framework for city life (Johnson et al, 2011:1011).

5 Conclusions

Themes of culture, power, and sustainability have been covered in the discussions relating to waste, consumption, value, identity and behaviour, with reference to an institutional induced food waste management system in Augustenborg Eco-city, a district of Malmö, Sweden. In the thesis, I had focused on becoming familiar with the currently implemented waste

management action process of the area, and the institutional initiatives that are taken to influence individual behaviour and environmental decisions of the inhabitants.

The topics discussed in this thesis validate that social dimensions to a waste management system is significant. People's views both at an individual and at an institutional level need to be taken in to account in order to know what are the limitations of the current system and what changes can be made towards improvement. In this thesis, it is found that habits are not easily changed, but can be influenced with the provision of knowledge, access to infrastructure, contact with others who act pro-environmentally, and belief that there is freedom of choice to make decisions related to caring for the environment (Individuals want to feel that they have the power to control their own actions).

Findings to the questions of the thesis show that institutions are the kingpins of the current integrated waste management action processes in Augustenborg Eco-city. They layout the rules and control the processes by means of continuous process development, changes, innovation, and communication with individuals. Individuals are significant role players in the system, because of their actions to reduce food waste first, and then to sort and recycle the present waste. It is found that their actions are strongly linked to consumption patterns, knowledge about the waste management system and what are the benefits to sort food waste. It seems that institutions who work with the Augustenborg Eco-city project have paid attention to the views of the individuals and are currently using them to improve the management of food waste.

Specifically, the current food waste management system in Augustenborg Eco-city, can be seen as a partnership between the people and the institutions involved. The purpose of this partnership is to care for the environment by creating minimal impact from waste, to delay the rate of consumption of natural resources, and to become a model for sustainable living due to good urban order and food management. This thesis has shown that, with the knowledge and tools that we, humans, currently have, we can make a positive difference and conserve. Good waste management processes can be seen as methods of conservation and reducing natural resource use. I would say that this could be valid in the case of Augustenborg Eco-city, as it is found in a developed country and yet at the same time, it seems that they practice good food waste management processes which are to reduce the ecological footprint. It is ironic that people – whether consciously or unconsciously –

consume large amounts but initiate pro-environmental behaviour to manage and reduce food waste. I think that this points out the vicious fact that different views complicate the relationship between individuals, institutions and environment. Though the food waste management process in Augustenborg Eco-city is a pro-environmental behaviour in itself and a successful one too, the aim for the individuals involved in this project, should now be to successfully manage current waste while putting extra effort to reduce consumption – back to basics – to zero waste management.

This study contributes to the awareness of food waste being another source of energy and that individual behaviour and environmental decisions (of both institutional officials and inhabitants) play vital roles when it comes to the waste management process. Due to limited time when it came to writing this thesis, I had decided to focus on a specific ecosystem in specific area in a specific country that is known to already implement sustainable initiatives such as resource recovery practices and educational programmes. Therefore I hope that my findings will be used as a representative study for future researchers who are interested in finding better ways to take care of the earth by using a human ecological perspective on current practices and processes pertaining to waste management. I think that this thesis provides a knowledge base on an efficient food waste management system that can aid in raising awareness on both good and bad waste management practices. Although the case for this study is Augustenborg Eco-city, this paper presents a perspective that has relevance worldwide, for instance, it would be of interest to governments and businesses (around the world) who are encouraged to pay attention to waste and to eliminate their waste through resource recovery practices (as in accordance to the ISO14001 Accreditation). Thus this paper can be seen as a minute piece bitten from the ‘elephant’.

Further investigation needs to be done on the of power dynamics between the individual and governing institutions. This would entail a more in-depth look at viewpoints from both the institutions and the inhabitants of the area. In addition, investigation need to be done pertaining to viewpoints of inhabitants with regards to the time and ‘free’ labour they provide when it comes to separating waste.

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7 Appendix A. Field Notes.

This section gives an overview of my first hand observation.

On 19th of April 2013, I had joined an excursion of the Augustenborg Eco-city.

My motives to go on this excursion were:

- 1) Have a walk though experience of being in the habitat I am studying.
- 2) See the talked about solutions pertaining to waste management in the area.
- 3) Experience the tour as a learner. (As the tour is seen as an educational initiative to create pro-environmental behaviour)
- 4) Learn more about sustainable urban planning specifically to waste management.

The excursion consisted of:

- Brief history about Augustenborg, its residents.
- Tour of the residential areas
- Tour of the 'solid waste management houses'

The main points mentioned by the tour guide with relation to municipal solid waste are:

- Development of the area was based on external funders.
- People living in the area choose to live there because of the pro-environment activities.
- Major campaigns had been run to create awareness about solid waste management before, and currently in the process of waste management action.

Tour guide stated that she believes that management efficiency starts with the individual as once they are educated about the benefits of sorting waste as per requirements of the municipality; they are more prone to act pro environmentally.

A tour was given of a building that had been built by MKB for waste storage.

I saw the bins and brown bags associated with the solid waste management.

In addition the bins that has black tags that can be used to measure weight of the food waste that has been disposed per week/certain period.

Also I had seen the poster explaining why it is important to dispose food waste correctly....

The tour guide mentioned that the municipality willing volunteered to give free excursions to residents who wanted to know further about the recycling and what happens after the waste is put in the brown bins.

8 Appendix B. Interview Guide.

Questions:

1. What is your Name?
2. What are you working with?
3. How come you have chosen this kind of work?
4. What has motivated you to pursue a career in the area of environment and sustainability?
5. What is your personal definition of a sustainable city?
6. What is your personal view on waste management?
7. What is your understanding of resource recovery practices? (Specifically with regards to municipal organic waste)
8. What is your view on environmental education?
9. Do you think that Malmo Municipality has adequate educational initiatives and awareness campaigns pertaining to waste management and resource recovery?
10. What sort of methods is used to keep locals active in pro environmental behaviour, such as food waste separation? (How do you get people to recycle?)
11. Do you feel that you engage in resource recovery practices? If so, why?
12. Has there e.g. been a particular event that you believe has influenced you in what you are working with today?
13. Which factors do you feel motivates/helps you to implement resource recovery practices? E.g. socio-technological systems in the community?
14. Which factors can demotivate people's willingness to recycle?
15. Do you believe that the Swedish government is good at promoting sustainable behaviour?
16. Do you believe that Malmo Municipality is good at promoting sustainable behaviour?
17. Do you believe that there are sufficient opportunities encouraging the citizens to implement resource recovery practices specifically about organic waste?
18. Do you believe that if you do not care about the environment it will personally affect you? Describe how?
19. Do you think that resource recovery practices make a difference to the world?
20. Do you think it is beneficial for people to adopt pro-environmental behaviours such as recycling and resource recovery?
21. Do you think that economic incentives influences pro environmental behaviour?

22. How does your institution acknowledge the views of the people of Malmo?
23. What initiatives do you take to encourage already existing pro-environmental behaviour?