DEPARTMENT OF SOCIOLOGY
CENTRE FOR RESEARCH IN ECONOMIC SOCIOLOGY AND INNOVATION
WORKING PAPER SERIES: ISSN 1759-2860

The Largest Environmental Movement: Recycling and Consumption Work in Sweden

CRESI WORKING PAPER NUMBER: 2013-02

Katy Wheeler kmwhee@essex.ac.uk

Department of Sociology
University of Essex

This paper was produced as part of the 'Consumption Work and Societal Divisions of Labour' project, funded by the European Research Council.

University of Essex

Abstract:

By sorting their waste for recycling, Swedes are told that they are part of 'Sweden's largest environmental movement' (Avfall Sverige, 2008). Recycling in Sweden is understood as an environmental action by all parties within society (including consumers, municipalities, and producers) and the country is proud of its identity as a world-leader on environmental issues. The system for recycling in Sweden asks a lot of the consumer who must not only sort their waste into different fractions but transport it to the appropriate bring station. Yet the country achieves high rates of materials (33 per cent) and biological recycling (15 per cent) and they proudly proclaim to recycle 99 per cent of their waste, with their belief that incineration with energy recovery is a form of recycling (Avfall Sverige, 2012). This paper explores how recycling has developed as an everyday ethical practice, considering the role of different institutions in the promotion of recycling and responsible waste management. This paper has been developed as part of an ERC-funded project, 'Consumption Work and Societal Divisions of Labour', whose key aim is to demonstrate the role that consumers play in the labour process, using comparative methods. In the case of recycling, by sorting their waste, consumers play an integral role in the division of labour within waste management in Sweden and their role differs substantially to the role of consumers in England (the other country in which recycling consumption work has been explored, see Wheeler, 2013). This paper illustrates how the consumer is encouraged to perform this work, drawing attention to what the work actually comprises. It also uncovers the organisations that shape this distinctive system of provision and moral economy of recycling.

Keywords/tags:

Consumption Work, Division of labour, Environmental Policy, Moral Economy, Recycling, Sweden.

Citation:

Wheeler, K. (2013) *The Largest Environmental Movement: Recycling and Consumption Work in Sweden*, Centre for Research in Economic Sociology and Innovation (CRESI) Working Paper 2013-02, University of Essex: Colchester.

About CRESI:

Based in the UK's leading Sociology Department, the Centre for Research in Economic Sociology and Innovation (CRESI) is the first UK centre for research in economic sociology. With a clear focus on innovation, our research programmes highlight contemporary and historical processes of socio-economic transformation. You can read about our research and join our conversation.

Table of Contents

1 Introduction 5
2 Policy Context 7
3 Waste, recycling and Collection Statistics 8
4 Division of responsibility for waste management 12
4.1 Central Government 12
4.2 Producers 13
4.3 Municipalities 15
4.4 Consumers 16
4.5 Waste Management Companies 18
4.6 Third Sector 18
4.7 Technology 19
5 Environmental morality and the moral economy of recycling 22
6 Recycling and Consumption Work 26
6.1 Consumer as supplier 27
6.2 Consumer as warehouse 28
6.3 Consumer as distributor 29
6.4 Gender and recycling 32
6.5 Recycling consumption work and the socio-economic formations of labour 33
7 Conclusion 34
8 References ..... 3 Error! Bookmark not defined.
9 Appendix 38

1 INTRODUCTION

By sorting their waste for recycling, Swedes are told that they are part of 'Sweden's largest environmental movement' (Avfall Sverige, 2008). Recycling in Sweden is understood as an environmental action by all parties within society (including consumers, municipalities, and producers) and the country is proud of its identity as a world-leader on environmental issues. The system for recycling in Sweden asks a lot of the consumer who must not only sort their waste into different fractions but transport it to the appropriate bring station. Yet the country achieves high rates of materials (33 per cent) and biological recycling (15 per cent) and they proudly proclaim to recycle 99 per cent of their waste, with their belief that incineration with energy recovery is a form of recycling (Avfall Sverige, 2012). This paper explores how recycling has developed as an everyday ethical practice, considering the role of different institutions in the promotion of recycling and responsible waste management. This paper has been developed as part of an ERC-funded project, 'Consumption Work and Societal Divisions of Labour',[1] whose key aim is to demonstrate the role that consumers play in the labour process, using comparative methods. In the case of recycling, by sorting their waste, consumers play an integral role in the division of labour within waste management in Sweden and their role differs substantially to the role of consumers in England (the other country in which recycling consumption work has been explored, see Wheeler, 2013). This paper illustrates how the consumer is encouraged to perform this work, drawing attention to what the work actually comprises. It also uncovers the organisations that shape this distinctive system of provision and the environmental moral economy of recycling.

The data for this paper has been gathered through interviews with key informants/ waste experts (policy makers, not-for-profit organisations, academics and private waste management companies) in Summer 2011,[2] and ongoing desk research. When discussing the everyday practices of consumers, I draw on two major qualitative studies to enable me to comment on their understandings and routines of recycling behaviour (Ewert, Henriksson et al 2009; Skill, 2008; Skill & Gyberg 2010).[3]

Motivated by a strong tradition of environmental stewardship, Swedish consumers are expected to sort their household waste into as many as 10-15 separate fractions – including burnable waste, biological waste, bulky waste, plastic, metal, glass and paper packaging, newspapers, electrical waste, batteries, medicines, other hazardous waste and bottles and cans – for recycling/resource recovery (SEPA, 2012: 19). As one of the experts interviewed remarked:

> *There is no place where you can put everything in one bin anymore, that time has gone; it will never come back.*

Systems of recycling have been in operation since the 1970s, but it was following the Producer Responsibility Bill in 1992, that recycling really took off. This bill made producers of packaging[4] responsible for its collection and processing, marking a departure from the municipal-controlled household waste management system. 5,800 packaging stations appeared within public spaces across Sweden to which consumers were expected to travel to dispose of/recycle the packages found within their household waste. The packaging stations are managed by the not-for-profit company, Förpacknings- och Tidningsinsamlingen (FTI) – translated Packaging

[1] The research programme on which this paper is based ('Consumption Work and Societal Divisions of Labour' DivLab 249430) was funded by a European Research Council Advanced Investigator Grant for which I am indebted. This project is led by Professor Miriam Glucksmann who should be acknowledged for her significant contribution to the development of ideas presented in this paper.

[2] The author would like to express her gratitude to the representatives from the following organisations who participated in this research, Stockholm Municipality, SORAB, Lund Cleansing Department, Avfall Sverige, Förpacknings- och Tidningsinsamlingen (FTI), Returpack, SITA, Återvinningens Industrierna (Swedish Recycling Industries), Keep Sweden Tidy, Swedish Environmental Protection Agency, Lulea University (SHARP Research Programme), KTH Royal Institute of Technology.

[3] Skill (2008) conducted in-depth interviews with 68 householders about their practices of recycling, transport use and green energy. Ewert, Henriksson et al (2009) conducted interviews and observations about recycling practices in a residential area of Malmö.

[4] This was later extended to include various other fractions of waste, such as electrical waste, batteries, tyres, following EU regulations on Producer Responsibility.

and Newspaper collection. The FTI is a consortium of materials companies which oversees the collection of fees from producers operating in Sweden and ensures that producers comply with the legislation. This paper outlines the key features of the 'producer's system' and how it works in Sweden.

Non-packaging household waste is managed by the municipality. Consumers with bulky waste are expected to drive to recycling centres to drop off this waste. Food waste and general waste is separated by consumers at home and collected from their properties. Sweden started to move away from landfill disposal in the 1970s and towards incineration technology. Incinerators tend to be owned by collectives of municipalities and the burnable waste, or *brännbart avfall*, separated by the household is used to power district heating systems, providing around 50 per cent of the energy for heating systems in residential housing in Sweden (Ericsson, 2009). Food waste collections are a relatively recent introduction, with the production of biogas for public transport being a common usage of this resource. Although Swede's proudly proclaim to recycle that 99 per cent of household waste as energy or material (Avfall Sverige, 2010), this statement would be quite controversial in other parts of the world where incineration is not viewed as a form of recycling. This paper considers why incineration has been accepted by the Swedish population and the future of this technology.

There is one common system for recycling across Sweden – the producer's system – with small regional variations according to municipality. This paper concentrates on systems of waste management in Stockholm and Lund in order to capture some of this variation. Stockholm collects recyclable packaging via the packaging stations provided by the FTI, whereas Lund offers kerbside collection of recyclable fractions alongside the packaging stations. Whilst systems of recycling are relatively uniform across Sweden, with many consumers having to travel to packaging stations to dispose of their waste, the type of housing people occupy can have an influence on how demanding the task of recycling is. Single-dwelling occupants are less likely than those living within apartment buildings to have access to property-close collection systems. Apartment managers sometimes arrange for recycling facilities to be housed in common areas within their complex (for a fee), making it easier for consumers to recycle their waste. This paper explores the variations in the systems of recycling across Sweden.

Waste management in Sweden is organised on a public, not-for-profit basis. Although private waste management companies play an important role in the collection of recyclable and burnable waste, they have little involvement in the sale of recyclable materials or providing facilities for waste treatment. The municipality takes care of the waste in a way that is considered to be the most efficient for the environment and the producers are made responsible for ensuring that recyclable packaging is processed and made into new materials. Municipal waste management companies are governed by strict rules regarding the charges they can levy and the profits they can make. Their raison d'être is not to make a profit but to perform a public service to 'enable each municipal owner to manage solid household waste within its own jurisdiction in an environmentally responsible way' (Corvellec et al, 2012: 513). The public basis of waste management in Sweden and its organisation around environmental principles has influenced the moral economy of recycling, shaping how consumers are compelled to recycle their waste. Although the system asks a lot of the consumer, the experts interviewed agreed that people feel a duty to recycle for the environment. Environmental citizenship has been linked to recycling and this paper includes a summary of existing research with households in Sweden, considering how they understand their engagement in this routine practice.

This paper outlines the division of responsibility for recycling between the key actors/institutions within the Swedish system of provision, highlighting the important role that the consumer plays within the division of labour. The system relies on unpaid 'consumption work' for its successful operation. The consumer performs specific tasks (the sorting, storing and transporting of waste materials) which are integrated and interdepend with work conducted under different socio-economic modes (within the public, not-for profit and private sectors) within specific stages within the process of waste management (from collection, to recovery and reprocessing). This paper should be read in tandem with 'The dirty man of Europe? Rubbish, Recycling and consumption work in England' (Wheeler, 2013) where the organisation of the English waste management system is subjected to the same analysis and

scrutiny. In this way, it will be possible to see how the key stages of recycling consumption work are shaped by the institutional system of provision in which they are conducted.

There are five key sections in this paper; the policy context in which Swedish waste management has developed; the waste, recycling and collection statistics for Sweden; the division of responsibility for waste management between different sectors and organisations; the moral economy of recycling in Sweden; and recycling consumption work.

2 POLICY CONTEXT

In Sweden, environmental protection has been at the forefront of the policy-making process for many years. As the first country to establish an environmental protection agency and pass comprehensive environmental protection legislation (The Environment Protection Act, 1969), it is proud of its status as a world environmental leader. Unlike other countries (including England) where the environmental movement consists of a coalition of autonomous organisations that offer a critical voice on governmental and industrial policies, in Sweden the trajectory of the environmental movement has been one of increasing government incorporation (Jamieson, Eyerman et al, 1990). It has been common for political parties to fight for office on the basis of their environmental credentials and municipalities must consider environmental protection in all aspects of local policy (as stipulated in the Environmental Code, 1999). Swedish national political culture is 'infiltrated by the concerns of environmentalists' so that 'society in general has become an environmental 'movement'' (ibid: 60).

Waste management provision has therefore been shaped by this environmental concern, evidenced by an early desire to move away from dumping waste in landfill sites and investing in alternative technologies for disposal – e.g. incineration plants that burn household waste in an environmentally-controlled manner, creating energy to power district heating systems. Concerns about the environmental impact of incineration technology were brought to the fore in the 1980s and the government ensured that these facilities were closed for a period until the environmental impact was reduced. By the 1990s, a Waste Bill was passed that made it a requirement for all municipalities to develop their own waste plans to manage all types of waste found in their area efficiently and appropriately for the environment. In 1999, the Swedish government developed fifteen environmental quality objectives to guide environmental action at all levels of society and implemented the Environmental code - an integrated piece of legislation to promote sustainable development that replaced the Environmental Protection Act. The environmental objectives impose targets to be met within a generation and progress towards them must be closely monitored by all levels of government. When the environmental objectives were developed, waste management was placed under the objectives for 'reduced climate impact' 'a good built environment' and 'a non-toxic environment', reflecting the potential of waste management to reduce carbon emissions and the impact of hazardous substances on the environment through effective management of infrastructure.

Recycling was placed onto the policy agenda in the 1970s and although the earliest attempts at sorting waste materials were unsuccessful, Sweden is now considered a world-leader in this area (SEPA, 2005). A deposit scheme for returnable aluminium cans was introduced in 1984 because of fears from government that without such a scheme there would be too much littering in nature.[5] The concept of producer responsibility for packaging waste was introduced in 1992 and became law in 1994. The Government Bill (1992/93: 180) aimed to increase recycling by giving producers the 'legal, physical and economic responsibility for collecting and disposing of certain end-of-life products'. The EU were just starting to introduce the idea of producer responsibility so Sweden had acted on this issue before member states were obliged to. The not-for-profit producer organisation, FTI, was established and consumers were obligated to sort and transport their packaging waste to the bring-stations. The establishment of the producers system meant that municipalities were no longer responsible for all household waste and instead had responsibility for general burnable waste and non-packaging recyclable material which is collected at municipal recycling centres. It has been noted that the current

[5] Interview with representative from Returpack, May 2011.

system between producers and municipalities has caused some problems, with litter at packaging stations not being cleared quickly enough by the producers. In 2004, the Swedish Environmental Protection Agency (SEPA) set up a Waste Council, comprised of key stakeholder representatives to produce criteria for what constitutes a suitable collection and plans to continue to monitor this system. The most recent Waste Plan (2012) highlights the continued need for collection of recyclables to be improved.

As a member of the European Union, it would be expected that this institution has an important influence on the development of Swedish waste policy. Whilst it is certainly the case that Swedish policy has had to respond to the policies of the supra-national organisation, it appears that Sweden has led the way on waste policy. One representative from the Stockholm municipality remarked,

> *If there is a new directive from the European Union we have to implement it but most of the implementation so far has been no problem at all because we have been in the frontline for it so more of the European Union Directives has been in accordance with what we have already, so that has been no big issue so far. What will happen in the future, I can't say.*

The Swedish government acted on producer responsibility before the EU and had already made moves to reduce landfill before the Landfill Directive was introduced in 1999. Having said this, Swedish policy did react to the Landfill Directive by introducing a Landfill Tax in 2000 and by banning the disposal of burnable waste in landfills from 2002 and organic waste from 2005. However, as EU policy moves towards promoting the higher end of the waste hierarchy[6] and waste prevention, Swedish policy will have to address their current approach which relies heavily on incineration technology.

Corvellec and Hultman (2012) argue that the key narrative surrounding Sweden's waste policy since the 1970s has been 'less landfilling'. Incineration technology and producer responsibility have fulfilled the expectations of this narrative well. However, the authors believe we are witnessing a shift in the narratives around waste in Sweden with waste prevention and 'wasting less' becoming more important. Indeed, Sweden's new waste plan (2012) continues to highlight the environmental benefits of recycling but places a greater focus on waste prevention, in keeping with the stipulations of the EU Waste Hierarchy. The waste plan opens with a utopian vision of Sweden's future relationship with products and waste that includes buying less, sharing with neighbours, and producers taking responsibility for manufacturing products that can be reused and recycled with no hazardous material within them. This new focus echoes Packard's (1960) critique of over-consumption and reveals how moral messages surrounding waste are constituted within distinct socio-political contexts.

Under the 'wasting less' narrative, waste is both a problem and a resource to be capitalised upon. Indeed, the capacity available for the incineration of waste in Sweden has exceeded the quantities of waste available, leading to lower gate fees being levied by the incineration plants. Incineration has therefore become a relatively cheap option compared with processing through recycling, especially following the removal of the Incineration Tax in 2010 (implemented in 2006). Waste from Norway is regularly imported to fulfil the capacity of incineration plants – a situation which increases the incentive for private waste management companies to challenge the monopoly that municipal companies currently hold for the treatment of household waste. SEPA note that some policy instrument will be required to 'prevent an increase in recycling from being hindered by the overcapacity that is developing within waste incineration (SEPA, 2012: 43).

3 WASTE, RECYCLING AND COLLECTION STATISTICS

Household waste only represents a small percentage of the waste produced in Sweden, with the waste produced by businesses and the mining industry representing the majority of waste

[6] Following the EU Waste Framework Directive (2008/98/EC), member states were encouraged to operate in accordance with the waste hierarchy – with prevention as the best way to handle waste within society followed by re-use and recycling. Energy recovery and landfill disposal sit at the bottom of this hierarchy.

produced (see Table 1). It is interesting to note that although landfill remains an important solution for the treatment non-household waste, this is not the case for the treatment of household waste (see Chart 1). In 2011, it is estimated that 99.1 per cent of the household waste was recycled (including biological treatment) or recovered (through energy from waste incineration), with only 0.9 per cent going to landfill (Avfall Sverige, 2012: 11). Chart 2 shows the historical trends in the treatment of household waste and demonstrates how landfill disposal has fallen as material/biological recycling and incineration with energy recovery have risen.

	Hazardous waste				Non Hazardous waste			
	2004	2006	2008	2010	2004	2006	2008	2010
Waste generated by households	373	489	349	367	4,459	4,643	4,044	3,672
Waste generated by businesses	981	2,288	1,715	2,149	113,482	116,093	80,061	111,432
of which produced by mining industry	4	5	3	4	58,400	61,800	58,699	89,022
Recycled waste, excluding mining waste	292	339	108	245	17,146	25,622	9,050	9,591
of which composted/digested	-	-	0	2	-	-	1,403	1,177
Incinerated waste*	382	312	187	168	10,773	18,598	8,311	6,179
Landfilled waste, excluding mining waste	494	378	384	356	3,937	3,765	3,837	6,518

* In most cases with energy recovery

Table 1: Waste generated and treated in Sweden, 2004-2010 (000's tonnes)

Source: SEPA (2013)

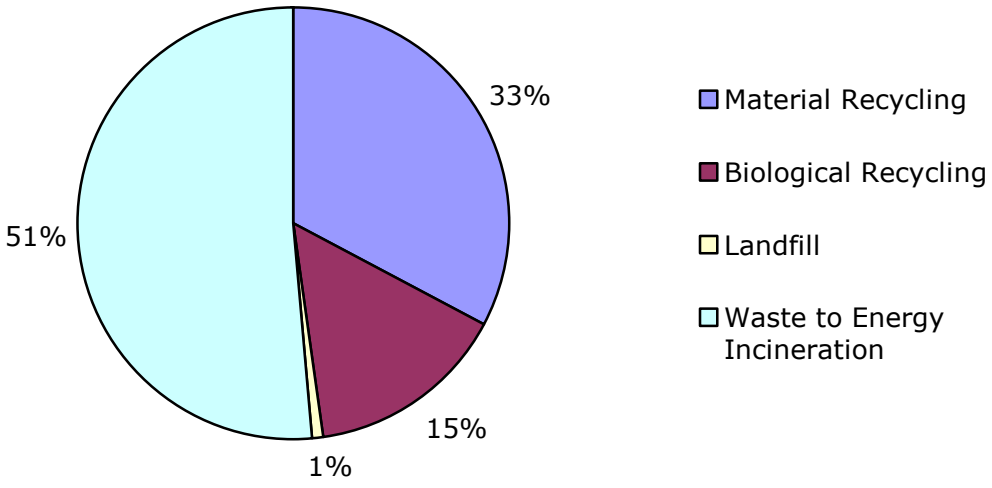

Chart 1: Treatment of Household Waste in Sweden, 2011

Source: Author generated using Avfall Sverige (2012: 11)

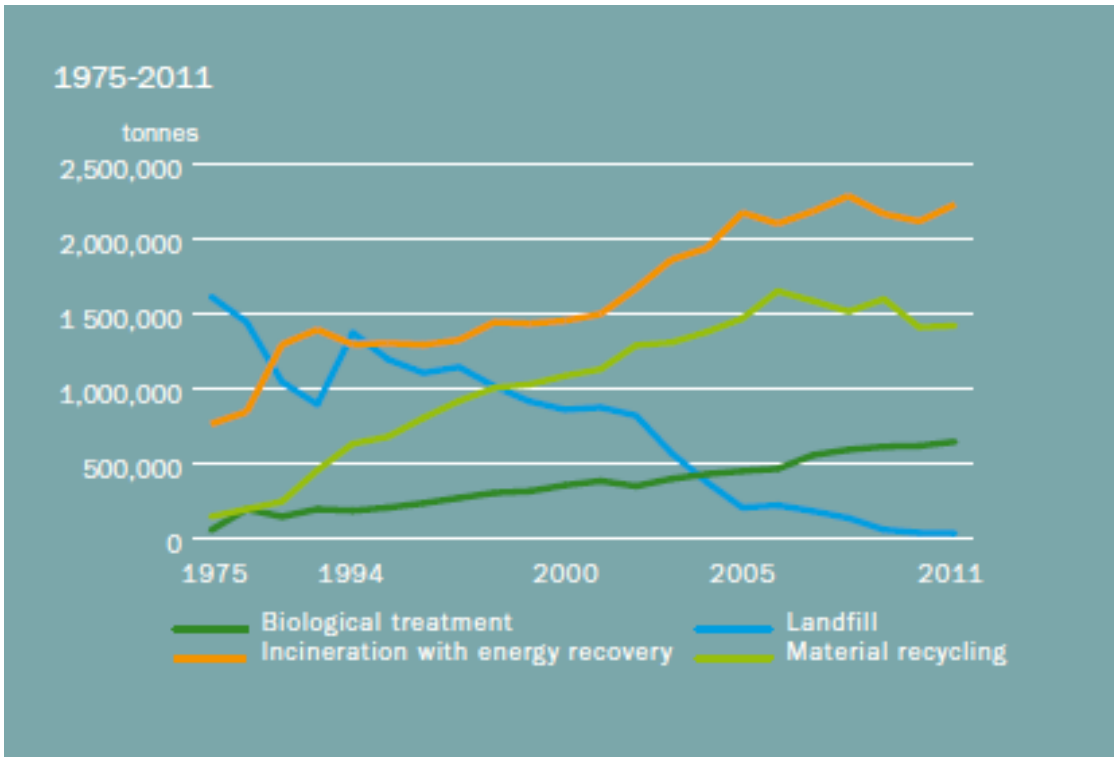

Chart 2: Treatment of Household Waste in Sweden (1975-2011)
Source: Avfall Sverige (2012: 11)

	Material recycling rates 2011 (%)	**EU targets for recovery (%)**[7]
Glass	92.08	60
Cardboard	74.51	60
Metal	68.10	50
Plastic	25.97	22.5
Newspapers	94.50	60

Table 2: Rates of material recycling in Sweden
Source: FTI (2013a)

Materials' recycling is generally very high in Sweden with EU targets for recovery being met across all materials (see Table 2). Despite there being one dominant system for the collection of recyclable packaging (the producer's system, see Image 1), collection rates do vary across the country. Avfall Sverige reveal that alongside the producer's system, an increasing number of municipalities are offering kerbside collection of recyclable packaging. This is something that has increased during the course of this research, from 'several' in 2010 to 30 in 2012 (Avfall Sverige, 2010/2012). Most municipalities offer kerbside collection for those living in apartment buildings[8] but it is up to the building owners to pay for this service to be available, meaning that not all those living in apartment buildings will have this service. In those municipalities that offer kerbside collection for single-dwelling houses, they generally either employ an 'optical sorting' system whereby the consumer sorts materials into their respective fractions in

[7] As laid down in EC Commission Directive (2004/12/EC)

[8] According to Statistics Sweden (2011), 56 per cent of the Swedish population live in apartment buildings and 44 per cent live in houses.

multiple bags or a system that has a compartmentalised bin. This system is in operation in Lund and Image 2 shows how the wheelie bins are separated into four separate containers for different material types, and the collection vehicle that is needed to facilitate this system. An increasing number of people have access to kerbside/property-close collection facilities which can help us to understand the different rates of recycling within Sweden. But this system exists alongside the bring-bank system meaning that there are still a high proportion of people that have to use these public facilities to recycle. Those that have to travel a long distance to recycle are less likely to do so, as one of our experts noted:

> *it's not a good service if it's you know 4 km to walk, they're not going to do it, then you get really low recycling rates.*

But of course one of the difficulties in this vast country is providing a system that all people can easily have access to:

> *There are almost 7000 recycling stations scattered around Sweden, with about 1500 people for each recycling station. But it's a big country, it's a big distance so 1500 doesn't sound so much but in some cases, it could be quite a long distance actually. But if you live in a town, it's not that long distance.* (SHARP Researchers)

The economics of providing kerbside collection in low-density populations suggest that the bring stations are likely to persist at least in the north of Sweden.

> *If you set up those new collection schemes in a highly populated area it doesn't cost you so much, but if you have to have the scheme up in the North of Sweden you have to pay a big part of that in a way and how do you make this fair because you can have a lot of collection schemes picking out the best parts of the market and then the rest is left for somebody else to take care.*

In addition to the different collection systems, some of the variations of recycling rates can also be accounted for by municipalities that adopt weight-based waste disposal fees which tend to increase levels of packaging recycling (Hage & Soderholm, 2008). Households in big cities are less likely to recycle than in smaller cities and the social demographics of households has an impact upon recycling rates, with increases in unemployment levels, private housing share and the presence of immigrants (unless newly arrived) within the municipality positively impacting upon recycling collection rates (ibid.).

Image 1: Packaging Stations in Stockholm

Image 2: Kerbside recycling bin and collection vehicle in Lund[9]

In the two areas where we conducted research, levels of recycling vary from the national average of 80 kilos per person (Avfall Sverige, 2011: 65). In Stockholm, residents recycled around 74 kilos of recyclable material per year, whilst in Lund this figure rises to 118 kilos (ibid: 65 & 67). In Stockholm, one of the reasons put forward for their lower rates of recycling was the problem of finding apartment owners to install a recycling room in their building – just because it is possible to pay for this service within Stockholm, it does not follow that all property owners want to/have the capacity to allocate a room for property-close collection. There are a higher proportion of apartment blocks relative to single-family dwellings in Stockholm and those living in private houses are known to be better at recycling. In Lund, the higher proportion of private houses and the introduction of the kerbside collection for all properties can help us to explain their higher rates of recycling. In addition, it was suggested that their population was highly-educated and therefore did not need to be convinced about the benefits of recycling.

> *People in this town at least, they are mostly academics and that means that it's quite easy to communicate this message to them and they are also very well informed about the discussion in the background, the climate change, the planet's resources and so on. So it's quite easy, of course there is a percent that doesn't recycle at all, but if you compare, it's quite easy here in Lund.*
>
> (Representative from Lund Cleansing Department)

4 DIVISION OF RESPONSIBILITY FOR WASTE MANAGEMENT

This section outlines the division of responsibility for household waste management between the various institutions and actors within Swedish society. It also outlines the key technologies in operation for the treatment of household waste. This section can be read in tandem with its corresponding counterpart (see Wheeler, 2013), where the division of responsibility within the English waste management system is described. The differences between the waste management systems in the two countries are also presented in the table in Appendix 1.

4.1 Central Government

The central government agency responsible for waste management is *Naturvårdsverket* or the Swedish Environmental Protection Agency (SEPA). SEPA have responsibility for developing regulations and guidance around waste management, including the National Waste Plans

[9] Images taken from the leaflet 'The Lund recycling system' published by Lund Cleansing department - Lunds Renhållningsverk.

(2005; 2012) which shape the development of waste management systems at the municipal level. They do not dictate how each municipality should organise their system, rather they establish national goals for recycling – such as achieving a 50 per cent household recycling rate, (SEPA, 2005: 12) – and it is up to the municipalities to then ensure that they meet these goals. SEPA's role is therefore to oversee the organisation of waste management so that it 'is environmentally acceptable, socio-economically efficient, and simple for consumers' (SEPA, 2005: 59). SEPA also monitors achievement of the environmental objectives and coordinates the overall strategy for the objective; 'non-toxic and resource-efficient natural cycles'.

Given some of the tensions in the working relationships between the municipalities and the producers, SEPA established a Waste Council in 2004 to encourage greater cooperation between the two. This council consists of key waste stakeholders. They have produced criteria for what constitutes a suitable collection and continue to monitor this system. Consumer satisfaction with the collection systems has improved since the Council's inception with those that have property-close collection systems registering the highest rates of satisfaction (SEPA, 2012: 20).

4.2 Producers

The Producer responsibility bill came into force in 1994 and producers were given the legal, physical and economic responsibility for collecting and disposing of packaging waste. Hage and Soderholm describe the system quite succinctly.

> *Overall the Swedish producer responsibility is an ordinance with few detailed instructions. It obliges producers to provide suitable systems for collecting packaging waste and inform households about these systems. The Swedish Environmental Protection Agency (SEPA) – that has the authority to outline instructions for the producers – has required that the collection should be nation-wide. Municipalities are responsible for supervising the collection within their own borders. Households have the responsibility to clean and sort the packaging waste and transport it to drop-off recycling stations. Although producers have the economic responsibility for the packaging waste, households do not receive any economic compensation for their effort.* (Hage & Soderholm, 2008: 1722)

Following the producer ordinance, retailers and producers formed four joint material companies,[10] so as to administrate the collection and recycling of packaging. However, as of August 2007, these companies joined forces to become one over-arching organisation, Förpacknings- och Tidningsinsamlingen (FTI) – translated Packaging and Newspaper collection. FTI establish and operate the packaging recycling centres and inform consumers about the system. As of April 2013, the FTI both collects the fees from the producers and oversees the collection of the packaging.[11]

FTI are responsible for the 5800 recycling stations that can be found across Sweden, where householders can take their used packaging and newspapers (see image 1). Owned by five materials companies (Plastkretsen, MetallKretsen, Returkartong, Pressretur and Svensk GlasÅtervinning), the collection system is financed by the packaging charges imposed on producers. It is estimated that this collection and recycling system costs around 1 billion SEK to run every year (FTI, 2013b). Some of these running costs are funded by the collected material value and the rest is funded by the producer fee. However, it is important to note that the materials companies do not make a profit from their operations and no economic dividends are paid to the owners as a condition of the company charter (ibid).

The FTI is supposed to work in close cooperation with the municipalities so as to find suitable locations to install the recycling stations and to inform the household about how and why to use them. However, our research revealed that the relationship between municipalities and

[10] Svensk Kartongåtervinning AB (SKAB) (paper and cardboard packaging), Svenska Metalkretsen AB (SMAB) (metal packaging), RWA Returwell AB (RWAB) (corrugated cardboard packaging). Platskretsen AB (PAB), (Non-PET plastic packaging), In 2006 SKAB and RWAB merged to form the new entity Returkartong AB. This list excludes glass and newpapers, for which companies PressRetur and Svensk GlasÅtervinning were responsible.

[11] Before this, REPA (Reparegistret AB) collected the fees from the producers which was then passed onto the materials companies/FTI.

producers has not always been smooth because the of the division of responsibility between packaging and household waste (discussed below)

In addition to the producer's system for packaging materials, there is also a deposit scheme for metal cans and recyclable PET-bottles for ready-to-drink beverages in Sweden, organised by the not-for-profit company, Returpack. Founded in 1984, the 'pantsystem' was introduced for aluminium cans, and its operations expanded to include PET-bottles in 1994. According to their representative, the pant-system was introduced to discourage littering in nature and Returpack founded the organisation, Hall Sverige Rent (Keep Sweden Tidy) in this aim. Consumers return their drinks bottles and cans to the 'Reverse Vending Machines' (RVMs) placed in stores across Sweden (see image 3). An overview of this system is outlined in Box 1. Returpack receives more than 1.5 billion cans and plastic bottles each year, and around 92% of cans and 85% of PET-bottles are recycled (Returpack, 2013b). In order to achieve their goal of 90% recycling, they invest in a number of promotional and educational activities. Their slogan 'pantamera' is well-known with national television and radio advertising.

The Swedish government extended producer responsibility to include Waste Electrical and Electronic Equipment (WEEE) in 2001 and the material company, El-Kretsen, was established soon after to manage this responsibility. Unlike the packaging materials organisation, El-Kretsen has established a collaborative system, 'El-Retur', with the municipalities so that municipalities assume the responsibility for the collection and receive compensation for this service, while El-Kretsen is responsible for the treatment of WEEE. Most WEEE is collected via the municipal recycling centres.

1. The cycle begins in the store when you buy your drink. At the store you pay a small sum as a deposit.
2. This sum is later recovered when you return the empty containers to the Reverse Vending Machine and the machine identifies the barcode that can be found on every can or plastic bottle.
3. After being returned to the system, the can or bottle will be transported to Returpack. At our factory, we sort and sometimes count the PET bottles and the cans. Then we pack them into bales.
4. The bottles will be taken to the recycling plant.
5. The cans will be sent on to be melted and turned into new cans.
6. At the brewery, the containers are filled with drink and transported to stores, ready for consumption by the next buyer. The cycle is complete.

Box 1: The Returpack recycling process

Source: Returpack (2013a)

Image 3: Reverse Vending Machines

4.3 Municipalities

Sweden's 290 municipalities have the responsibility for collecting all household waste other than those categories of waste that are covered by producer responsibility, e.g. they collect burnable waste and increasingly food waste. They are also responsible for providing collection services for bulky waste, which is usually managed at the municipal recycling centres, *återvinningscentraler*, or via special collection events and requests. Each municipality can decide how to organise their own waste management activities – this is the right of municipal self-determination as laid down in the Swedish constitution (Avfall Sverige, 2012: 5). Treatment facilities and incineration plants are usually owned by collectives of municipalities, enabling them to generate energy for district heating systems. About 30 per cent of municipalities also offer collection services, with the remainder contracting this service out to private companies (ibid).

Municipalities have the responsibility for informing households about the waste management services (including the producer system) available within their province. This means that they are informing residents about a system which they themselves are not responsible for (e.g. the producer's system), which undoubtedly causes some confusion about their role amongst residents within the municipality. For example, a persistent complaint from residents has been the cleanliness of the recycling stations, with problems of litter and full containers (see Image 4). Residents often call the municipality to ask that they deal with this situation but it is the producers that are responsible for cleaning the stations.

Image 4: Full containers and litter at recycling stations in Stockholm

From 1975, municipalities were given responsibility for the management of all household waste. But following the introduction of the producer's system, part of this was taken away from them. Unlike producer responsibility for WEEE, municipalities do not have the responsibility for the collection of packaging materials. Although everyone interviewed agreed with the principle of producer responsibility and wanted this to continue, our research suggested that the municipalities would like to regain the collection responsibility in order to provide consumers with a better service.

> *We don't like that system with collecting at the containers outside, we want the producers to come to the households otherwise the municipalities will do that. But in the Swedish law, the municipality are not allowed to collect the packages because it's a producer responsibility and there is a sort of conflict between the producers and the municipalities. We want a better system but we can't take our money to do that. 24 per cent of the packages and papers that are in our household waste today are sent to incineration. It costs us about 20 million Kronas per year to send it to incineration and we want to use that money to have a better system but we can't.*
>
> (Representative from Stockholm municipal waste company, Sorab)

Most municipalities do offer services for the collection of packaging materials from residential

areas/properties in collaboration with the producers, but these are not paid for by the producers. If a property owner or the municipality wants to provide their tenants/residents with property-close collection, they must make an arrangement with the FTI and hire a contractor to deliver this material to the not-for-profit organisation. Property owners and municipalities pay for this service which, it is argued, undermines the principle of producer responsibility.

> *The municipalities argue that the producers' responsibility system doesn't work because the municipalities and property owners take most of the cost. If you have an apartment house and you want to set up a recycling system in that building as a property owner then the property owner has to have a contract with the FTI, not the municipality, but then they have to take all the cost. If the property owner wants to make sure that this house has proper recycling then they are charged, they don't get money from the producers to collect it for them so the municipality argue that the cost of the producer responsibility falls on the municipality and the private housing owners and it doesn't fall on the producers so there is no producer responsibility because they don't take the financial responsibility.*
>
> (Swedish Waste Expert)

Lund and Stockholm were chosen because they represent these variations in the systems in Sweden. In Stockholm, recycling stations in public areas along with recycling rooms in some apartment buildings form the system for packaging collection and these are managed by the FTI. Other household wastes are collected by contracted representatives on behalf of the municipality. In Lund, everything is managed by a limited municipal company, Lunds Renhållningsverk. Apartment buildings may have rooms for packaging waste or they use the bring stations which are placed around Lund (but managed by the municipality rather than the FTI). Single-dwelling houses have the option to have packaging waste collected along with the general waste. The packaging material that is collected by the municipal organisation in Lund is delivered to the FTI for a small fee. A representative from this organisation thought that their system was the best because it delivered the most recyclables and the best service to the household. However, she acknowledged that it may be difficult to offer their system in Stockholm because of the higher percentage of apartment buildings rather than single-dwelling houses.

4.4 Consumers

According to Section 8 of the producer responsibility ordinance:

> *Households and other consumers are to sort their packaging between household waste and other waste and deposit such waste for removal in the collection systems that the producers or the municipality provide for such waste.* (FTI, 2006: 3)

Consumers therefore have the responsibility to clean, store and transport their recyclable waste to recycling stations/centres or to dispose of this material in accordance with whatever local system is in operation. Consumers have to sort their recyclables into packaging and non-packaging materials and dispose of the former at the FTI recycling stations and the latter at the municipal recycling centres. This distinction between material and packaging recycling has been found to cause much uncertainty for the consumer, with cases of consumers incorrectly sorting materials for packaging recycling, for example, pyrex dishes and envelopes (Henriksson et al, 2010). This uncertainty is nicely illustrated in the following observation from one of the Swedish experts.

> *I saw on a glass bin yesterday, it was a glass that you use in the oven to make potatoes gratin, where to put that? It's not a package by definition but the person who's coming from the house, he didn't want to put it in the bin for burnable waste, of course, and it's not hazardous waste, it's just glass so where to put it? So he put it on the container*.

Packaging materials need to be transported to the recycling stations or garbage rooms in apartment blocks and then sorted into many different fractions (paper, glass, plastic, metal

and newspapers). It is expected that the consumer places the correct material into the correct containers and this is particularly important because there are limited technological after-sorting systems available in Sweden. The system really relies on the consumer to sort the material proficiently and the representative from the FTI thought that consumers were generally very good at this.

> *But you see if you have made the effort to transport yourself and the packaging to a recycling station, we see that people are very good. The material we get there is often very good, high quality. In Sweden you know, the people are very keen to do right, we follow the system so to say, most of us do.*

However, as the debate between municipalities and producers regarding the cleaning of stations demonstrates, not all people use the stations as expected. If consumers arrive to the recycling stations and they are full, they are obliged to take their material home with them and try another day rather than creating litter at the sites. In 2006, in an attempt to prevent consumers from littering at the recycling stations, the FTI hired retired police officers to take photos of those leaving incorrect items at the stations so they could be prosecuted for their actions. The practice of using *sopspioner,* or rubbish spies, soon came to an end after an elderly lady was prosecuted for leaving a frying pan at a recycling station. The FTI justified their actions because of the costs of cleaning recycling stations but the uncertainty around what should or should not be left at these stations seems to be at heart of this issue. In the course of our research, we learnt that there have been discussions regarding collecting recycling by materials rather than packaging precisely because of this problem.

> *I think it has already been shown that people recycle in accordance to material; it's very difficult to say one plastic packaging is packaging and the other one is not depending on where you bought it. You know in a hardware store, you get a bucket of nails in a plastic bucket and when it's empty, well that's packaging, but if it contains loganberries, you buy it in a supermarket, then it's a packaging but if you buy an empty bucket in a hardware store then it's not a packaging, but it could be exactly the same product but it's not. So then the household shouldn't sort the other one as plastic packaging but they do because it makes sense and it does make sense for the environment as well, if you have something in metal, it's metal what's the difference? And there's not a difference, it's only a difference in who pays for the recycling because when that metal nail which isn't packaging comes to the producers to be recycled, they have to pay the cost of recycling it, but then again a nail is metal so then they earn money on it. But if it's plastic then they have to pay. So for the households they already sort in materials and that's what we all, we want to have a system that covers material and not just packaging.*
>
> (Representative from Avfall Sverige)

However, at the time of writing this paper, this change has not occurred. Non-packaging materials must be taken to the municipal recycling centres – sites that usually require consumers to have cars in order to access.

By transporting their waste to the bring system, it could be argued that consumers take on some of the financial responsibility for the recycling of packaging waste.

> *Because this ordinance also says that the household should not only sort and clean and store, it should also transport to the system the producer chooses to use. And in this case it could actually be quite highly financed by the household. For at least some households, you could have 20km to recycle, most have not but it could be.*
>
> (Swedish Waste Expert)

However, it appears that consumers are happy to bear this cost and are unwilling to pay someone else to do the sorting and transportation for them (Berglund, 2006). Consumers' willingness to recycle can be accounted for by moral motives (ibid; Hage et al, 2009). The moral economy of recycling in Sweden will be discussed in Section 5.

4.5 Waste management companies

Sweden is generally characterised as a socio-democratic society in which the public sector takes a leading role in the provision of services (Esping-Andersen, 1990). In keeping with this characterisation, there is a dominance of municipal-owned waste management companies in Sweden; companies like Sysav in Malmö which is owned by a collective of 14 municipalities and provides treatment infrastructure (incineration and anaerobic digestion) for those within their locality. Although private waste management companies (like SITA or Liselotte Loof) do operate within Sweden, their role tends to be for the collection of household and packaging waste rather than its treatment. In around 70 percent of Swedish municipalities, household waste collection is outsourced to private companies, while other municipalities provide it as a public service (Avfall Sverige, 2012: 5). Private WMCs often handle business waste and would like to expand their business to include household waste, however they are unable to do this a present because of a municipal 'monopoly'.

> *We have no responsibility for packaging or the household waste, it's just my conclusion that we don't have responsibility in society, but we can make a system for society and do what they need*
>
> (Representative from Private WMC)

Återvinningens Industrierna, or the Swedish Recycling Industries (SRI) lobby for waste management to be open on the market for competition arguing that this will improve standards. Avfall Sverige, the municipal lobby, wants waste management to remain a municipal responsibility because municipalities want to deliver the best they can to their residents.

> *AS: In Sweden, the local municipality has a lot to say in different matters, like waste management, [...] which gives them like a lot of power, I don't know what you'd say, but it's in a good way we think because then they have a very strong incentive to deliver something good to the society, you know they're a local society because they believe that they represent the infrastructure, the district heating and the energy and the waste collection, they do it for the common good.*
>
> *Interviewer: And if for example it was open to the public market, why would that be a problem?*
>
> *AS: Because we believe that you would lose exactly that, that there wouldn't be an incentive for the local society to build sustainable infrastructure because usually you have very high investment costs. For example, if you're going to start biological recycling, collect food waste and set out all the bins and the trucks and that's one cost but then to build a bio-gas plant, who's going to pay for that?*
>
> (Representative from Avfall Sverige)

It is likely that the calls for waste management to be open for competition will increasingly come to the fore as municipal incineration plants seek to fill their over-capacity with waste that does not originate from their locality. This marketisation of waste gives private companies grounds to challenge the municipal monopoly under EU competition laws.

4.6 Third sector

Given entrenched governmental concern for the environment, third sector pressure organisations do not play a large role in the promotion of recycling in Swedish society. Efforts to introduce recycling in Sweden came from government rather than external environmental pressure groups. Nordic civil society organisations tend to act as 'accepted partners of neo-corporatist arrangements instead of being engaged in pluralistic pressure politics and lobbying activities' (Wijkström and Zimmer, 2011: 11). Some municipalities do form partnerships with charities, like the Salvation Army, for the collection of textiles and furniture to facilitate systems of re-use. Also, the deposits for drinks containers can be donated to the Red Cross rather than collected by the consumer should the consumer select this option.

The municipal lobby, Avfall Sverige, and the SRI are probably the most important third sector

organisations working with waste management, promoting the interests of their members and contributing to the debate around the public/private responsibilities for waste management in Swedish society. The only other key third sector organisation working with issues of waste is Hall Sverige Rent (HSR), or Keep Sweden Tidy. This organisation 'promotes recycling and combats litter through public awareness campaigns, awards and environmental education' (HSR, 2013a). Though founded in 1983 by SEPA and Returpack, the campaign to 'Keep Sweden Clean' dates back to the 1960s and was launched by the Swedish Society for Nature Conservation. One of HSR's key campaigns is the National Rubbish Picking Day, which has been running for many years and involves all sections of society (especially kindergartens and schools) in a 'demonstration' against litter. In 2013, 714,691 Swedes took part in the annual National Rubbish Picking Day (HSR, 2013b). As part of their remit, they have worked with the FTI to address the problems of littering at recycling stations. Of particular interest is their operation of the 'Grön Flagg' (Green Flag) award which is offered to preschools and schools to promote sustainable development. This is the Swedish version of the International Eco-Schools programme and over 2500 schools and kindergartens are working with the Green Flag award in Sweden (HSR, 2013c). Teachers are offered educational resources to teach on recycling and sustainability, and schools are expected to engage in collaborative practical activities to improve their environmental policies. Common activities to promote recycling include visiting recycling centres, making their own paper, and creating a waste policy in the school.

> *I don't know how many reports we read here, especially about pre-schools doing, they make a visit to the local garbage station […] and they go with their teacher to the place where you sort the things which I also know that I read in the reports that the kids love to do, they love to sort it and they love to go on excursions to the local station where you sort the things.*
>
> (Representative from HSR)

HSR believe that these kinds of educational programmes can create a ripple effect so that children's families will also be inspired to change their behaviour (HSR, 2011). With resources directed at children to instil environmental awareness and morality, HSR play a key educational role in the promotion of recycling in Swedish society.

4.7 Technology

The sorted waste is treated in different ways depending on what it is. General waste and some plastic packaging waste are incinerated. Food waste is increasingly treated in anaerobic digestion plants and used to generate bio-gas. Recyclable material is sorted by the consumer and there are some limited separation technologies – for example for the plastic packages.

4.7.1 Incineration

General household waste that is not recyclable is placed into Brännbart Avfall (burnable waste) (see image 5). This waste is not sorted before it is taken to an incineration plant (see image 6) so if there is packaging still within it, it will be burned. The energy created is used to power district heating systems, meaning that this system relies on a steady-stream of waste. Waste is being imported from across Europe (principally Norway) to fulfil the capacity of incineration plants. There is no lobby against incineration because Swedes believe that it is an efficient way of handling waste and trust the authorities that it is not too environmentally damaging compared to landfill.

> *Interviewer: In the UK we have quite a lot of lobbies against incineration, and I haven't noticed that here in Sweden and I was just wondering if you knew why that might be?*
>
> *AS: No it's funny, you don't have the nimby effect on waste incineration in Sweden, you have it on recycling centres or biological recycling because that's smelly, but you don't have it on incineration and I think waste incineration in Sweden, it is very clean. I mean in one incineration plant, the amount of emissions from one plant is the equivalent of burning one tyre per year, so the emissions*

> *in one year is like burning one tyre, it's nothing... yeah I don't know, I think it's perhaps because district heating is very common and I mean in Sweden you need heat, so I think people have just accepted that it's not dirty, it contributes with district heating, sometimes up to 30% of the district heating is waste burning, so that's not an issue and it's not an issue at all, not from any, I think Greenpeace and the Nature Conservation society, they're against it but it's not their main priority.*
>
> (Representative from Avfall Sverige)

From some of the personal accounts gathered, the general public often thinks that the waste they sort ends up being incinerated anyway and they therefore do not always make the effort to sort and wash out their plastic, Importantly, incineration in the Swedish system is not them viewed as problematic. A respondent in Ewert, Henriksson et al's study (2009: 29) describes the process of washing a yoghurt pot and decides it is just as efficient to put this out for incineration as to make the effort to recycle it as material

> *It does not happen often but sometimes when you are in a hurry you do not have time [...] I throw it in the residual waste. It's not that bad.*

Image 5: Burnable waste bin

Image 6: Incineration plant in Umeå

4.7.2 Anaerobic Digestion/Composting

The collection of food waste is becoming more prevalent across Sweden, with around 60 per cent of municipalities collecting food waste in 2012 (Avfall Sverige, 2012). Most households have a separate collection/container for the food waste (see image 7). Food waste is either composted or placed into anaerobic digestion for the production of digestate and bio-gas. The bio-gas is often converted to an environmentally sound vehicle fuel for use within municipal vehicles. The AD plants, like EfW, are often part-owned by the municipalities.

Image 7: Matavfall (food waste) collection point

4.7.3 Recycling technology

There are no Material Recovery Facilities in Sweden meaning that the recycling industries really depend upon the household to sort the waste properly. Commingled collections are not possible in Sweden, however they do have the technology to sort hard and soft plastic and this enabled the FTI to expand their rules for plastic collection in 2008. From looking inside the recycling stations, (see image 8) some people are not always sorting properly so the producers are likely to employ some sorting processes, such as hand-sorting and technology that assumes a relatively pure stream, e.g. magnets.

Image 8: Inside a metal recycling container

5 ENVIRONMENTAL MORALITY AND THE MORAL ECONOMY OF RECYCLING

Recycling in Sweden is generally understood as an environmental action. As the 'Policy Context' section highlighted, waste management provision has been heavily shaped by strong environmental values within Swedish political culture. In her study of household sustainability practices, Skill (2008) found that recycling was spontaneously mentioned by nearly all of her 30 households when they were asked what they did for the environment. Recycling is often equated with caring for the environment, as demonstrated in the quotation below where one of Skill's households was asked how to describe they defined environmental consciousness.

> ***Simon:*** *Taking care of nature and the air, and not dumping garbage in the forest when there are local recycling stations … we do not throw candy wrappers from the car any longer, as one used to do. … In our lifetime, people have started to care about the environment, like about chemicals and not pouring them on the ground.*
>
> ***Siv:*** *Yes, because then recycling was not yet invented.*
>
> ***Simon:*** *My dad used to dig a hole and bury them.*
>
> (cited in Skill, 2008: 153)

If we look at how recycling is promoted by those responsible for informing the consumer about recycling, we notice that this environmental message is ubiquitous. In 2008, the municipal association for waste management, *Avfall Sverige*, initiated a nationwide multi-media campaign to encourage households to dispose of their hazardous waste at the appropriate drop-off stations at municipal recycling centres. This campaign introduced the now famous tagline *'Sveriges största miljörörelse'* or 'Sweden's largest environmental movement' which has been used in subsequent municipal campaigns to promote recycling. As Karin Jönsson, editor of the *Avfall Sverige* newsletter, explains

> The boastful tone of, 'Sweden's largest environmental movement,' gained much attention. It implied that all 12,000 professionals who work with Sweden's homes and businesses – together with the public – were together Sweden's largest environmental movement; working alongside each other to perform one of the most important jobs in Sweden. (Jönsson, 2008)

Just as Swedish culture is embedded with the concerns of environmentalists, citizen-consumers were enrolled into the collective environmental movement by virtue of sorting their waste for recycling.

With a nationwide system, it is possible to communicate any changes/messages through national advertising and media. In 2008, there was a change in the consumer sorting requirements for packaging – it was now possible for soft plastic packaging (like plastic bags) to be recycled – and this was accompanied by an informational campaign which articulated a continuing moral discourse surrounding recycling, encouraging consumers to change their daily practices. What previously had been regarded as rubbish (or burnable waste) was now linked to resource stewardship and the protection of the environment for future generations. The FTI print-advertising campaign depicted the Olympic high-jump medallist, Stefan Holm, with a small child on his back. The text read

> *'Recycle your Plastic Packaging. I do – for the children and the future'* (Stefan Holm)
>
> Sweden is a world leader in recycling and we will get even better. Now all soft plastic packaging is recyclable. Think that one kilogram of recycled plastic packaging reduces carbon emissions by two kilos! So don't throw your plastic into the trash, recycle for the environment and our children's sake. (FTI, 2008)

The point to be drawn from this example is that recycling across Sweden is very clearly promoted as an environmental action – something that saves greenhouse gas emissions and makes effective use of the natural resources. Swedes are very proud of their identity as a country with a high recycling rate and there is a shared sense of duty to maintain this collective enterprise.

Households are encouraged to sort their packaging-waste because all citizens 'should contribute to creating a sustainable society' (FTI, 2011). Producer responsibility law mandates citizens to recycle but this is rarely enforced, suggesting that moral and social norms regarding the value and importance of this activity come into play (Hage et al, 2009). The Swedish system, which expects the household not only sort but to transport their waste to bring-banks, does ask a lot of the consumer and relies upon their acculturation into moral norms and duties of citizenship.

> *AS: For a household the only concern is that it [recycling] should be convenient and make sense and that they want to do it for the environment. You know we recycle because we think it's good for the environment.*
>
> *Interviewer: In what sense do you mean environment?*
>
> *AS: Because you save materials, contribute to less climate effect, lower planet gases and you can recycle products so you need less virgin material. So it's an environmental thing.*
>
> [Representative from Avfall Sverige]

Research with consumers in Sweden reveals they are quick to admit their motives for recycling are to personally influence environmental problems and it remains the most common sustainable action that households regularly perform (Skill, 2008). This sense of collective duty is illustrated in the following quotation from a mature student, Wiktoria, who describes her journeys to the bring-stations

> *It feels like I'm contributing by pulling my straw to the ant hill and helping the environment.*
>
> (cited in Skill, 2008: 238)

Similarly, one of the respondents in Ewert et al's (2009:44) research explained their reason for recycling as being environmentally-motivated

> *You feel that you are in this ecocycle helping to improve the environment and care for the environment, so you feel more motivated to do it.*

The experts interviewed agreed that people feel a duty as citizens to recycle for the environment – a sentiment which has a long tradition in Swedish heritage.

> ***Do people find it difficult to recycle in Sweden?***
>
> *No normally not. I would say they are very keen to do it [...] It's part of the awareness from the Swedish people I would say.*
>
> ***Where does that awareness come from?***
>
> *It's a long-term idea, we are a big country with a small population living close to nature, interest in nature and interest to take care of your nature, and that has been at least since the beginning of the 20th Century, and more and more awareness from the 50s until now. And also the children with the schools out in nature and things like that are educated to take care of nature so that is something that has been built up during the years.*
>
> [Representative from Stockholm Municipality]

The narratives of caring for nature and caring for the environment are closely connected in the promotion of recycling to children. Although third sector organisations have not been that active on the issue of household recycling, the exception is HSR, who has developed materials for children, to communicate why they must not destroy nature by littering and handling waste incorrectly. Children are taught that they should care for nature and can protect it through their actions as conscientious recyclers. A good example of this is the '*Mofflor och Människor*' (Mofflor and Humans, see Image 9) storyline which is their most downloaded teaching resource (HSR, 2008). The mofflors are fictional creatures who live in the forest that write to the children to tell them that people are not respecting nature anymore and how they have awoken to find rubbish dumped in their grove. The children are told that one of the mofflor has cut his tail on a glass jar and another has a sock stuck on his nose. The moral of this story is that children should learn to respect nature, reflecting established ideas of the relations between humans and the environment in Sweden. Anyone in Sweden has the 'right of public access' (*Allemansrätten)* to nature as long as they preserve it and do not destroy it. That HSR is the only third sector organisation working with recycling issues highlights that the preservation of the natural environment is a key moral narrative underlying participation in recycling schemes.

Image 9: Mofflor och Människor

Source: HSR (2008)

Similarly, the FTI released a special edition comic of the popular Swedish character, *Bamse och Skräptjuven,* or Bamse and the Rubbish Thief (see Image 10). This comic aimed at children of kindergarten age (4-7 years) and highlights how waste materials can be turned into new items through the recycling process. Children are told to recycle because it saves energy, it's good for the environment, it ensures that material stays within the eco-cycle, and it saves nature for the future. The comic also teaches children the rules of the system for packaging recycling so they learn what can be recycled at the packaging stations and what cannot be, e.g. packages and newspapers are collected whilst plastic toys, envelopes, food waste and general waste are not.

Image 10: Special Edition of Bamse for FTI

The moral economy of waste management is further shaped by the public, not-for-profit basis of its system of provision. Municipalities are responsible for disposing of household waste and the FTI and Returpack are responsible for ensuring that recyclable packaging is processed and made into new materials on a not-for-profit basis. The municipality takes care of household waste in a way that is considered to be the most efficient for the environment; e.g. burning the non-recyclable waste in municipal-owned incineration plants to generate energy for district heating systems. Incineration with energy recovery is promoted as a form of recycling – for example, every Christmas in Stockholm households are encouraged to recycle their Christmas trees to generate electricity and heat, and in the FTI-sponsored children's comic book, the popular bear, Bamse, tells children that non-recyclable garbage keeps them warm. *Avfall Sverige* states that 99 per cent of household waste in Sweden is recycled as energy or material (Avfall Sverige, 2011); but this statement would be quite controversial in England where incineration is not viewed as a form of recycling. But unlike citizens in other European countries (like the UK), Swedish citizens trust the municipality to behave responsibly on environmental issues and, they therefore do not see incineration as a problematic issue.

> ***Ärnst:*** *It is like Ärla says, they burn the waste in Ljungby, and it turns into energy.*
>
> ***Ärla:*** *Yes they make energy out of it in Ljungby.*
>
> ***Ärnst:*** *In that sense I don't think it is a problem at all.*
>
> ***Ärla:*** *No, we think about it so that it doesn't become a problem.*
>
> (cited in Skill, 2008: 167-8)

The households in Skill's research did not "bother keeping informed on environmental problems, since the responsible authorities do" (ibid.). This trust reveals how the relationship

between the state and citizen is quite distinct in Sweden and people relate to waste management as citizens engaged in a collective enterprise rather than consumers.

Citizens do not have to pay to recycle. Recycling is organised in a separate system to general waste disposal. The municipality bills each household depending on how much burnable waste they throw away in a year (volume and weight-based fees), but they can recycle as much as they like for free.[12] Although weight-based fees do influence recycling levels, they are just as important as moral norms in predicting the likelihood of a person recycling (Hage et al, 2009). Without an explicit economic transaction, there is less expectation of automatic entitlement to the service as a consumer, as the following extract demonstrates (taken from an interview with a representative from a municipal company [SORAB] whose daughter was with her to help with her English).

> ***Ingrid:*** *We want more recycling, so we have a system with the containers for packages and we also have recycling centres where you can go with your furniture and other bulky waste, and also hazardous waste you can take to that recycling centre.*
>
> ***Ingrid's daughter:*** *Yes I was just thinking that is a good thing for the people living in this area that you can as a private person come to these places and it's free of charge. I think that's fantastic that it's not that you have bought too many things so you need to, I think that it's my responsibility that I should maybe have paid something for you taking care of it, but it's a really good service.*

Swedes do not pay to use the recycling centres but they are happy to contribute to the maintenance of this economic system by voluntarily visiting them and disposing of their recyclable waste as responsible citizens. The central role that consumers play in the division of labour of waste management within Sweden is the focus of the next section and is the key process that our research project seeks to demonstrate.

6 RECYCLING AND CONSUMPTION WORK

The work consumers regularly perform in preparing their waste for recycling should be recognised as a significant and integral component of the division of labour within waste management. Household recycling represents an exemplary case of 'consumption work' (Glucksmann, 2009; 2013) because the successful operation of the system of waste management presupposes the active participation of the consumer through routine and regular consumption work. By sorting, preparing and transporting their household waste for recycling, the consumer acts as a supplier, warehouse and distributor to industry. Although this work has a non-market character, its performance underpins the global market for material re-use.

This section uses qualitative material from existing Swedish studies (Ewert et al, 2009; Henriksson et al, 2010; Skill, 2008), as well as material from our expert interviews and informal meetings with Swedish households to demonstrate the work of household recycling for the consumer. As Skill notes (2008: 180):

> "Sorting is involved in many recycling-related household activities, including deciding what products to purchase, how to handle them in the home (e.g., washing empty containers), where to store them before recycling, deciding how often to take material to the recycling station, how the municipality has organized the recycling stations, keeping the home clean, and learning about what fractions are recyclable."

The organisation of the Swedish system shapes the character of recycling consumption work so that the task of supply, storage and distribution are distinctive to the system in England. For example, consumers will be directly influenced by the location of the recycling stations/centres in relation to where they live/their daily routines revealing how infrastructures provided by the municipalities and the FTI affect how demanding this work is for them. The gendered division of recycling consumption work is also considered as existing studies have found that women tend to carry the day-to-day burden of this work (Oates and MacDonald, 2006; Pettifor, 2012). Uncovering the gendered differentiation of recycling consumption work is an important task since government sustainability goals do not take into account that their policies often rely

[12] If consumers recycle drinks bottles and cans through the *pant* system, they receive a small deposit back.

disproportionately on the unpaid labour of women.

6.1 Consumer as supplier

For the consumer, the work of household recycling begins when products that have entered the home are unwrapped or used up, leaving empty packaging material to be dealt with. The Swedish consumer must first decide whether the material is packaging or non-packaging. As indicated in an earlier section, the distinction between packaging and non-packaging is the source of much uncertainty for the consumer (Henriksson et al, 2010). One of Henriksson et al's respondents describes the difficulty of distinguishing between materials and packaging:

> *"No, plastics are a bit difficult ... Because there are many different plastic objects in the household. It can be bowls and pots, and toys—everything. And when one thinks that it is plastic it is down in the plastic recycling. But it's not, I know. But I think one is constantly faced with: What is this? Should it go into the plastic recycling? And then you wonder: Why should this plastic toy not be recycled? ... I think that's weird"* (cited in Henriksson et al, 2010, 2804)

The authors also noted how it was common to find plastic toys placed within the waste sorting area in the apartment complex where they conducted their research, indicating that consumers have difficulty supplying the different recycling systems with the correct materials, e.g. packaging to the FTI stations and bulky waste to the municipal recycling centres. Something that consumers often found quite difficult to sort was envelopes. According to the FTI, these should not be sorted as packaging because 'letters are not commodities' and therefore an envelope cannot be considered a package – as according to legislation, a package must contain protect or deliver goods. Furthermore, the glue on the envelopes can cause problems for the processing of other paper in the stream (FTI, 2013c). However, to the consumer unaware of these rules and the consequences of improper sorting, the envelope is just paper.

> *"This thing about newspapers, that you shouldn't put envelopes and stuff among them, it happens easily that you put it there anyway. I mean, it's paper, isn't it?"* (cited in, Henriksson et al, 2010: 2805)

Because consumers have been told that it is good to recycle for the environment, there is no logical justification why only packaging or newspapers should be recycled. The 'structural mismatch between the layman logic and the logic of the waste system' creates uncertainty (ibid: 2806), which in turn affects the supply of materials into the recycling system. Although there have been some discussions in policy circles about changing sorting requirements so that they are based on material rather than packaging/non-packaging, it seems unlikely that this will happen under the current system. Questions remain regarding who would fund such a system given that the FTI currently operates with the funding they receive from producers and a new system would require huge investment in infrastructure to make the bring stations suitable for materials recycling.

Once the consumer has decided that the material/packaging they have is recyclable, the next stage in the process is to prepare it so it is ready to be stored. Washing, squashing and disassembling packaging into its component parts represent key tasks for the consumer to perform at this stage. Food packages often need to be washed out before they are ready to be stored. This task leaves some wondering about the environmental benefits of recycling when using warm water and energy to prepare materials.

> *If you wash a can made of aluminium, and use hot running water, then you have spent the energy savings you would have acquired if you had walked with it to the station, apart from the fact that a can is made of raw material. Just a thing like that. You should not wash the cans too thoroughly, and with cold water. But who wants to keep containers at home that are not thoroughly cleaned?*
>
> (Regina, aged 41, works as Administrator, lives in an apartment, cited in Skill, 2008: 184)

The respondents in Skill's research revealed how the effort involved in washing packages and the desire to keep a clean home resulted in some householders disposing of dirty packaging in the general waste bin. It is not always viewed as inappropriate to dispose of packages in this way because incineration is understood as a positive alternative to recycling.

> *It does not happen often but sometimes when you are in a hurry you do not have time to like: Yeah right! I throw it in the residual waste. It's not so bad!*
>
> (cited in Ewert et al, 2009: 28)

This point was also stressed by one of the Swedish waste experts, revealing the consequences of not washing packaging on the processes that follow.

> ***Robin:*** *Plastic is so diverse and you have these soft packaging on food items you know that you buy for vegetables or meat, and it's greasy and it's messy and you don't want to clean it and it smells and so you just chuck it. Well at least in Sweden if it's chucked at least it will be energy or electricity in incineration so it's not totally bad. It doesn't go to landfill but some things would be better to recycle. [...] I mean you have a very dirty yoghurt tetra pack and to clean that and recycle it, it's not a given environmental benefit in comparison to incineration for heat and electricity.*
>
> ***Interviewer:*** *So it doesn't do anything environmentally to have cleaned and sorted it out?*
>
> ***Robin:*** *No it's the same as throwing it, to incinerate it to get heat. But I mean a yoghurt package, how much yoghurt is still in there, it's very contaminated. I think it's 20% still.*
>
> ***Interviewer:*** *So if that was delivered to a recycling station and it was so dirty, would it be put aside for incineration anyway?*
>
> ***Robin:*** *Possibly yeah.*

In this way, both sorting packaging for recycling and placing it into the residual waste provides feedstock for different industries, e.g. the materials or energy economy. The consumer's decision to clean and sort packaging has a direct effect on the labour processes that follow and the commodities that can be traded as a result of their actions.

6.2 Consumer as warehouse

Once the consumer has prepared the material for recycling, s/he needs to find somewhere to store it before transporting it to the collection point. Each household can be thought of as a warehouse for recyclable material, stowing the material in a dry and/or protected space before their transfer. Images 11 and 12 show the storage zones for packaging materials within the households of two Swedish academics we visited during the course of our research. It is noted that storing packaging takes up considerable room within consumer's homes and given the characteristics of the Swedish system, it is likely that these storage zones are filled before they are emptied.

One of the waste experts interviewed told of how recyclable materials were stored in her cellar before she made visits to the recycling stations.

> *At home I have under the sink different small bins where I sort my packaging, one for paper, one for plastic, one for glass, and one for metal and for paper we also sort newspapers here in Sweden but since the space under the sink is not very large and I live in a villa so I have a cellar where I can also do sorting so, for instance the newspapers that we have, in Sweden we can have a subscription to a newspaper that comes in the mail box every morning so I read the newspaper at home and therefore I have a lot of newspapers at home, so I cannot store them under the sink. So in the cellar I have a paper packaging, like the one you buy when you go to the shop and buy food, I use those and put all the paper there and also glass bottles, wine bottles and so on, there is not enough room under the sink for those either so I have that in the basement, in the cellar also. But for paper and plastic and metal I can under the sink for well a week or so, and then it gets full and I put it down in the cellar and I start all over. And then going to the recycling station, well I should go once a week but I don't perhaps I go once a month or so but that very much depends on how much packaging you have and so on.*

The storage of recyclable packages within the home often requires consumers to provide storage containers (in the form of paper bags or cardboard boxes) to house similar packaging

materials – e.g. all newspapers in one bag and all bottles in another – making the job of distributing these materials to the packaging station easier to manage. As the above quotation reveals, the task of distribution is coordinated in relation the amount of space available within the warehouse, with those consumers having more space enabled to make fewer trips to the stations.

Image 11: Recyclable materials stored under the stairs and in the bags and boxes

Image 12: Food waste stored under the sink with residual waste and packaging stored in separate cupboard.

6.3 Consumer as distributor

Once their storage zone has become full, consumers take on the responsibility for transporting their packaging to the bring stations. Depending on where the consumer lives and their daily routines, this task will be more or less demanding. Those living in apartment blocks where there are property-close collections can walk to their communal garbage rooms (see image 12). Whereas those without property-close collection need to travel to the nearest FTI

recycling station which may be a car journey away or a short walk from their regular place of work or shopping mall. Non-packaging recyclable materials generally need to be driven to the municipal recycling centres. By transporting the materials to these collection points, the consumer effects an act of exchange, transferring ownership from the household to the FTI or municipal contractors. As indicated in the technology section, there are limited after-sorting technologies available in Sweden, meaning that the system relies upon consumers placing the correct materials into the correct containers at the packaging stations. The ability to conduct this task successfully will likely rely on how well materials have been sorted and stored prior to their journey to the recycling stations.

Image 12: Property-close recycling collection in an apartment block

The distance that consumers must travel to access recycling stations has an influence on their willingness to recycle, as one of Skill's respondents explains.

> *In my apartment building they do not have any recycling facilities like they did where I lived before, so I hardly ever recycle anymore.*
>
> (Xiomara, aged 27, works as Municipal officer, lives in an apartment cited in Skill, 2008: 182)

However, not recycling regularly was uncommon amongst the households Skill interviewed. Trips to the recycling station were usually integrated into people's routines and it was common for people to highlight the zero-sum environmental gain from making special trips to the recycling stations.

> *We were looking and now I have found one [recycling station] on the way to work, which I pass anyway. Because, if you have to make an extra trip with the car, you lose what you have gained. [laughs] And then it is not that environmentally friendly anymore. Then you might just as well throw it in the regular waste. (183)*
>
> (Zoran, aged 36, works as printmaker, lives in a house, cited in Skill, 2008: 183)

> ***Evald:*** *If you have one broken light bulb you are expected to take it to the environmental station situated five kilometres away. No way!*
>
> ***Interviewer:*** *You don't think so?*
>
> ***Evald:*** *No! One doesn't take one light bulb there. It consumes more resources to take the car there, than to put it in the regular waste.*
>
> (Evald, aged 51, works as Economist, lives in an apartment, cited in Skill, 2008: 183)

In both of the above quotations, it is interesting to note how trips to recycling stations are evaluated according to the potential gains they bring to the environment. Making special trips undermines the environmental benefit of recycling and in these cases sending the waste to incineration is viewed as a better option. It is in these evaluations of the work and effort involved in carrying out the task of distribution that decisions about providing feedstock for the different industries are made.

The cleanliness and accessibility of the recycling stations equally influences consumers' decisions to deposit their packaging.

> ***Desiree:*** *Things like that make me really annoyed, when you get to the recycling station to throw away the stuff, and it is completely full. But what do you do? Am I supposed to carry it back home again?*
>
> ***Interviewer:*** *Would you?*
>
> ***Desiree:*** *No! Probably not. I would probably leave it beside [the containers]. And then it blows away all over town, and it is a lot worse than carrying it back home again. Or I would take it back home and throw it in the regular waste, because you get so annoyed. If they don't take care of their responsibility, why should I?*
>
> (Desiree, aged 22, Student, lives in an apartment, cited in Skill, 2008: 184)

The effort involved in carting packaging to and from the stations when they are full resulted in Desiree either leaving packaging outside the stations, thus creating litter that will need to cleared by the municipality, or taking the packaging home to be disposed of in the residual waste. We therefore see then how the work of the consumer interacts and interdepends with work conducted under different socio-economic modes, with those employed in the public sector or those contracted out in the private sector having to clear up litter or pick up extra residual waste as a result of the distribution tasks conducted by the consumer.

On the whole consumers in Sweden were happy to make the effort to recycle because of their civic duty to protect the environment, as well as to potentially reduce the fees they pay for waste management (amongst those who live within detached houses with weight-based fees[13]) (Skill, 2008). Just one consumer in Skill's research recognised that waste management is a lucrative business that depends upon his free labour for its maintenance and reproduction.

> *It is all about making money on garbage. There are a lot of people who make enormous amounts of money off it, but it is the people who pay, people who give away voluntarily something that has value. … if I take my car to the recycling station, it costs me 40 Swedish crowns to take it there … it is a cost for the environment and then there is a company that makes money out of it.*
>
> (Peter, aged 45, works as occupational therapist, lives in an apartment, cited in Skill, 2008: 250)

Peter aptly highlights how his voluntary consumption work enables waste management systems to function and profit. Most consumers interviewed thought of recycling as an environmental action and they felt 'good about being able to "help out" by doing what is reasonable ... when they have time' (Skill, 2008: 251). Indeed in their study of the influence of norms and convenience, Berglund et al (2010) asked respondents whether they would be willing to pay to have the burden of transportation removed from them and found that only a minority of respondents were willing to do so. Furthermore, they found that those who

[13] Avfall Sverige (2012: 30) state that just 29 municipalities (of 290) have implemented weight-based fees for residual waste collection.

exhibited strong norm-based motives for recycling (57 per cent of respondents) were the least likely to want the responsibility of distribution removed from them because this was something that they 'felt pleased to pursue on their own' (Berglund et al, 2010: 203-4) Environmental morality therefore plays a key role in encouraging consumers to participate in this economy and their collective performance of all three interrelated tasks of recycling consumption work are integral to the maintenance of the system of Swedish waste management.

6.4 Gender and recycling

Existing research that has explored the relationship between gender and recycling has found that women tend to be more likely to recycle (Oates and MacDonald, 2006; Pettifor, 2012). There is certainly evidence to suggest that women do carry to main burden of recycling within the household.

> ***Interviewer:*** *Do your parents sort their waste too?*
>
> ***Desiree:*** *Yes, they sort.*
>
> ***Interviewer:*** *Have they always done that?*
>
> ***Desiree:*** *Well … as long as I can remember they have, or, well, it is mum who takes care of that, sorting. She sorts milk boxes and newspaper, glass bottles and plastic bottles and plastic containers, and whatever– there she is, doing it. So there are many different bags in the garage.*
>
> ***Interviewer:*** *So your dad does not sort at all?*
>
> ***Desiree:*** *No he doesn't, he isn't that aware. Or, I mean, it is not like he is throwing it in the waste, but it is mum who is organizing it and he knows that he shouldn't throw away milk boxes. And then my mum packs everything up and takes it to the recycling station.*
>
> (cited in Skill, 2008: 228)

However, our research with UK consumers (Wheeler & Glucksmann, forthcoming) encourages us to consider how the different consumption work recycling tasks are divided between household members. Indeed, Skill and Wihlborg (2010: 53-4), in their wider study of sustainability practices within the home, reveal that it is not the case that 'men or women perform more or less environmentally friendly activities, but that the responsibility for different environmental activities is gendered'.

The experts interviewed tended to agree that women tend to take the main responsibility for the sorting and storing of recyclable material, whilst men take the responsibility for driving materials to the recycling stations/centres. However, there is co-ordination between recycling and other domestic tasks suggesting that consumption work is shaped by existing divisions of labour within the household.

> *Mostly the woman [recycles], I think it's about what is going to be waste. I think that men are more interested in metal and they are also more interested in the stuff that they are delivering to the big central because there they deliver the refrigerator but also old car parts and so on. So it depends on, it is not due to that the woman is more environmentally interested, I don't think that. It is due to all the gender activities in the household and the most waste comes from the kitchen so it's her old activities that are just going on and on.*
>
> [Representative from Lund Cleansing Department]

> ***Olivia:*** *I think it's the one who takes most responsibility for preparing the food because it's when you prepare food that you open all the packaging and so on, but then from... that's the first step sorting out under the sink, but the next step is to take those bins to the recycling station and that could be another person.*
>
> ***Interviewer:*** *So there could be a division of labour within the home between sorting and transportation?*
>
> ***Olivia:*** *Mmm, mmm, yes it could be. But you could also say if you divide the*

> *responsibility for cooking so one day I do it, another day my husband does it so then it's divided and if you go together to buy new food, if you buy a lot of food then you go together and perhaps you have your children with you also then you do they transporting also together, so then I think it's difficult to say if it's a male or female, it depends on how you divide other kinds of household doings, don't you think?*
>
> [Swedish Waste Expert]

If women take main responsibility for the first two stages of recycling consumption work, and men take responsibility for the last stage of distribution, it seems likely that women spend more total time engaging in this work relative to men. In a recent article exploring who does the work in sustainable households, Organo et al (2012) found that it was women who took on the everyday implementation and burden of sustainability practices whilst men's contributions mostly related to gardening and transport in longer blocks of time. Within households, there can be diverging understandings amongst members who does the most work.

> ***Interviewer:*** *Who sorts the most then?*
>
> ***Agnes:*** *It is actually mum who does.*
>
> ***Ulla:*** *Yes, it is like that.*
>
> ***Ulrik:*** *[But] if you count the weight, I sort the most.*
>
> ***Ulla:*** *What?*
>
> ***Ulrik:*** *Well, I sort stones, and car tires, and pallets, I take trailer loads!*
>
> ***Ulla:*** *Don't be foolish. Since we sort, it requires a lot of time. It requires a lot of time. I put the different fractions in a bucket here in the kitchen, and then I take it to the garage where I keep different containers for plastics, metals, paper, and batteries.*
>
> (Ulla and Ulrik are aged 50 and 44, Ulla is on sick leave and Ulrik is an Economist, they live in a house, cited in Skill, 2008: 170)

In the extract above, Ulla believes that she does the most work because she carries out the day-to-day sorting and storing, but Ulrik thinks about the weight of the goods that he transports in the less-regular task of distribution.

6.5 Recycling consumption work and Socio-economic Formations of Labour

Recycling processes rely on consumers regularly performing a range of tasks, and although these tasks may not be recognised by them as 'work', they nevertheless interdepend with work tasks conducted within the waste management labour process. This section has demonstrated how consumers act as suppliers, warehousers, and distributors of materials which are then appropriated by the producer organisation, FTI, and municipalities. The consumer plays an integral role in the division of labour within waste management and the materials and energy economy depends upon and presupposes the completion of this work by consumers for its reproduction. How the consumer performs the key stages of recycling consumption work is shaped by the institutional system of provision in which they are conducted, and in turn the labour processes within each distinct system of provision adapts to deal with the performance of this work by the consumer. For example, consumer difficulties in distributing materials at packaging stations can result in them leaving their waste outside these stations which in turn creates litter that must be cleaned by the municipality/FTI. Problems in the relationship between the FTI and municipalities and complaints from consumers about the lack of accessible recycling stations have forced some to adapt their infrastructure of provision by making property-close collection systems available.

In terms of the three dimensions of interdependence and differentiation of labour (Glucksmann, 2009; 2013), recycling tasks are divided between a range of linked industries (from municipalities, to producers, to private waste management and processing companies) and consumers (dimension 1). This is a historically distinctive and specific division of labour which contrasts with arrangements in many countries, especially in the global south, where

consumers do not sort their waste but rather this is done by waste pickers on vast waste dumps (Millar, 2012). Our research further shows that within the household, recycling consumption work tasks are differentiated by gender, with women taking responsibility for sorting materials and men taking responsibility for their distribution to recycling stations/ centre. This finding challenges existing research which has found that women tend to carry the burden of sustainability policies within the household. Having said this, women are likely to spend more total time sorting and storing waste, with men's contribution related to the less regular task of distribution.

The unpaid labour of consumers interacts with the paid work of those employed by the public (usually municipal), not-for-profit and private market sectors, highlighting the interdependencies between work undertaken on different socio-economic bases (dimension 2). Whether it is the municipality that collects the waste and uses it to generate district heating/energy, or the private waste management company who has been contracted to collect materials and residual waste, or the FTI who deliver producer-owned materials to be re-processed, in all cases, their work relies on, and is shaped by, the 'voluntary' contribution of the consumer. Recycling consumption work is often coordinated with existing routines within the household suggesting that other forms of unpaid domestic labour (like cooking and gardening) ought to be explored in this relational complex. Moral norms, such as environmental citizenship, and legal sanctions play an important role in encouraging consumers to participate in this work within a distinctive moral economy of recycling (see Wheeler, forthcoming).

The role of the consumer within the instituted economic process of labour (dimension 3) is readily apparent from our research. At the starting point of the process (production), the consumer acts as a supplier by transforming her/his waste into recyclable materials or residual waste to be burned to generate district heating. After warehousing these materials, s/he then accomplishes the first stage of distribution by transporting the materials to a recycling station/centre. At this point the consumer is involved in an act of exchange where ownership of the waste changes hands and is appropriated either by the FTI or the municipality. The waste is thus transformed from being a hitherto personal individual good into a private or municipal good, a property with potential value to the parties it has been transferred to. Crucially, the potential value or end-destination of this material depends upon the successful performance of key stages of recycling consumption work by the consumer within their system of provision. For example, insufficient washing of plastic materials can result in them being incinerated for district heating rather than them being recycled. After completion of the recycling process, the householder comes back into the picture either as the consumer of recycled materials, or of power and energy via municipal heating systems, so initiating repetition of the cycle. This ever-repeating process comprises the dynamic of the economy of recycling, work undertaken at each stage presupposing and depending on that of the others.

7 CONCLUSION

This paper has explored how and why recycling became so prevalent within Sweden and how its performance has been connected to environmental citizenship. Swedish waste management developed against the backdrop of the country's commitment to environmental policy. Central and local government play an important role in the provision of waste management services and they must monitor their performance against established environmental credentials. Recycling became popular in the 1970s and really took off in the 1990s following the Producer Responsibility Bill, where the 'polluter pays' principle was embedded into the recycling system. Producers must provide collection services for their packaging and pay for the material to be processed or disposed of. Consumers contribute to the collective enterprise of recycling by regularly visiting bring banks with their recyclable waste. With strong relations of trust between the state and its citizens, incineration technology is not viewed as problematic (as in other parts of Europe) and is understood as an efficient way of disposing of waste. Incineration technology generates energy to power municipal heating systems, revealing collective benefits as well as responsibilities for handling waste appropriately.

Consumers are encouraged to recycle through a distinct moral economy of recycling. The

moral economy of recycling in Sweden is organised around the principles of environmental protection, the preservation of nature and a collective responsibility (from government, businesses and citizen-consumers) for these aims. Consumes voluntarily engage in recycling consumption work because they believe they are contributing to a better environment – an idea that has been promoted by all sections of society.

The consumer has been given centre-stage in this report because s/he performs a vital role in the division of labour in the waste management industry. How well the consumer performs the tasks of recycling consumption work (supply, warehousing and distribution) shapes how processes of waste management are performed. The work of the consumer sits in an interdependent relationship with the work of municipalities, producers and private companies, revealing that consumers do much more than simply consume. This paper has provided an important case study to demonstrate why consumers need to be included within an expanded framework for understanding divisions of labour within society (Glucksmann, 2013).

8 REFERENCES

Avfall Sverige. 2010 *Swedish Waste Management 2010*, accessed online 06/04/2011 at <http://www.avfallsverige.se/fileadmin/uploads/Statistikfiler/SWM2010.pdf>

Avfall Sverige. 2011 *Hushållsavfall i siffror: kommun-och länsstatistik 2011, Rapport U2012:18* (Household waste in figures: Municipal and county statistics 2011), accessed online 1st June 2013 at <http://www.avfallsverige.se/fileadmin/uploads/Rapporter/U2012-18.pdf>

Avfall Sverige. 2012 *Swedish Waste Management 2012,* accessed online 29/05/2013 at <http://www.avfallsverige.se/fileadmin/uploads/Arbete/Kurser/SWM2012.pdf>

Berglund, C. 2006 'The assessment of households' recycling costs: The role of personal motives', Ecological Economics 56 : 560– 569.

Berglund, C., Hage, O. & Söderholm, P. 2010 'Household recycling and the Influence of Norms and Convenience', in P. Söderholm (ed.) *Environmental Policy and Household Behaviour*, London: Earthscan: pp. 193-210.

Corvellec, H. & Hultman, J. 2012 'From "less landfilling" to "wasting less": Societal narratives, socio-materiality, and organizations', *Journal of Organizational Change Management* 25(2): 297 – 314.

Corvellec, H., Bramryd, T. & Hultman, J. 2012 'The business model of solid waste management in Sweden – a case study of two municipally-owned companies', in *Waste Management & Research* 30(5): 512-518.

Ericsson, K. 2009 *Introduction and development of the Swedish district heating systems: Critical factors and lessons learned, D5 of WP2 from the RES-H Policy project*, accessed online 29/05/2013 at <http://www.res-h-policy.eu/downloads/Swedish_district_heating_case-study_(D5)_final.pdf>

Esping-Andersen, G. 1990 *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

Ewert, S., Henriksson, G. & Åkesson, L. 2009 '*Osäker Eller Nöjd -kulturella aspekter på vardagens avfallspraktik'* (Uncertain or Satisfied? - Cultural aspects of waste handling and recycling in everyday life), accessed online 09/06/2013 at <http://www.infra.kth.se/fms/pdf/Greger_osaker_nojd_inkl_omslag+summary100222.pdf>

Förpacknings-och Tidningsinsamlingen. 2006 *Ordinance (2006:1273) On Producers' Responsibility For Packaging* (FTI translation), accessed online 03/06/2013 at <http://www.ftiab.se/download/18.53781b2513d681fd9d51160/1363868418430/Ordinance%2B%282006%2C1273%29%2Bon%2Bproducers%2Bresponsibility%2Bfor%2Bpackaging.pdf>

Förpacknings-och Tidningsinsamlingen. 2008 'Hushåll', (Household) *FTI Website,* accessed online 06/06/2012 at <http://www.ftiab.se/hushall.4.405877db1168b3d892a800034.html>

Förpacknings-och Tidningsinsamlingen. 2011 'Varför ska jag källsortera förpackningar och tidningar' (Why should I sort packages and newspapers), accessed online 06/06/2012 at

<http://www.ftiab.se/faqarkiv/varforskajagkallsorteraforpackningarochtidningar.5.6129d4671309c5c335c800027.html>

Förpacknings-och Tidningsinsamlingen. 2013a *Återvinningsstatistik* (Recycling statistics), accessed online 31/05/2013 at <http://www.ftiab.se/180.html>

Förpacknings-och Tidningsinsamlingen. 2013b *Finansiering* (Funding), accessed online 01/06/2013 at <http://www.ftiab.se/194.html>

Förpacknings-och Tidningsinsamlingen. 2013c *Frågor & svar* (Questions and Answers), accessed online 10/06/2013 at <http://www.ftiab.se/80.html>

Glucksmann, M. 2009 'Formations, connections and divisions of labour', *Sociology* 43(5):878-895.

Glucksmann, M. 2013 *Working to consume: consumers as the missing link in the division of labour*, Centre for Research in Economic Sociology and Innovation (CRESI) Working Paper 2013-03, University of Essex: Colchester

Hage, O., Söderholm, P. 2008 'An econometric analysis of regional differences in household waste collection: The case of plastic packaging waste in Sweden', *Waste Management*, Vol. 28: 1720-1731.

Hage, O., Söderholm, P. Berglund, C. (2009) 'Norms and economic motivation in household recycling: Empirical evidence from Sweden', in *Resources, Conservation and Recycling* 53: 155–165'

Hall Sverige Rent. 2008 *Mofflor och Människor,* accessed online 18/09/2012 at < http://www.hsr.se/documents/NY_Skola_o_forskola/Tema_konsumtion/Storyline_liten_2009.pdf>

Hall Sverige Rent. 2011 *Grunden I Grön Flagg* (The principles of the Green Flag Award), accessed online 15/04/2011 at < http://www.hsr.se/GF_grunden_i_gron_flagg>

Hall Sverige Rent. 2013a *About Keep Sweden Tidy,* accessed online 5/06/2013 at < http://www.hsr.se/English>

Hall Sverige Rent. 2013b *Rekordmånga skräpplockare!* (Record numbers of Garbage Pickers), accessed online 5/06/2013 at < http://www.hsr.se/>

Hall Sverige Rent. 2013c *I skolan och förskolan – Grön Flagg* (In schools and kindergartens – Green Flag), accessed online 5/06/2013 at <http://www.hsr.se/det-har-gor-vi/land/i-skolan-och-forskolan-gron-flagg>

Jamison, A., Eyerman, R., Cramer, J. & Læssøe, J. 1990 *The Making of the New Environmental Consciousness*, Edinburgh: Edinburgh University Press.

Jönsson, K. 2008 'Hazardous waste: Sweden's largest environmental movement', accessed online 06/06/2012 at <http://www.waste-management-world.com/index/display/article-display/359463/articles/waste-management-world/volume-10/issue-2/features/hazardous-waste-swedenrsquos-largest-environmental-movement.html>

Millar, K. 2012 'Trash ties: urban politics, economic crisis and Rio de Janeiro's garbage dump', in C. Alexander and J. Reno (eds.), *Economies of Recycling*, London: Zed Books: pp. 164-184.

Oates, C. and McDonald, S. 2006 'Recycling and the domestic division of labour: is green blue or pink?', *Sociology* 40(3):417-433

Organo, V., Head, L. & Waitt, G. 2012 'Who does the work in sustainable households? A time and gender analysis in New South Wales, Australia', in *Gender, Place & Culture*, online version published August 2012.

Packard, V. 1960 *The Waste Makers,* London: Longmans.

Pettifor, H. 2012 'Patterns of Household Practice, An Examination into the Relationship between Housework and Waste Separation for Households in the United Kingdom', *ISER Working Paper Series*, No. 2012-14.

Returpack. 2013a *The Recycling Process*, accessed online 01/06/2013 at <http://www.pantamera.nu/en/recycling-process>

Returpack 2013b *Korta fakta och statistik* (Key facts and Statistics), accessed online 01/06/2013 at <http://www.pantamera.nu/sv/korta-fakta-och-statistik>

Skill, K. 2008 *(Re)creating Ecological Action Space: Householders' activities for sustainable development in Sweden*, Doctoral Thesis, Linköping Studies in Arts and Science: No. 449, Linköping University, Sweden.

Skill, K. & Wihlborg, E. 2010 'Dealing with environmental responsibilities: Living everyday life as political participation, in P. Söderholm (ed.) *Environmental Policy and Household Behaviour*, London: Earthscan: pp. 43 -67.

Statistics Sweden. 2013 *Kalkylerat bostadsbestånd efter region och hustyp. År 1990 – 2012* (Dwelling stock by region and type of building, years 1990 – 2012), accessed online 29/05/2013 at <http://www.scb.se/Pages/SSD/SSD_SelectVariables.aspx?id=340487&px_tableid=ssd_extern%3aBostadsbestandK&rxid=5f271b9e-e907-4433-8f1c-466fa6134fce>

Swedish Environmental Protection Agency. 2005 *A Strategy for Sustainable Waste Management: Sweden's Waste Plan*, Stockholm: SEPA.

Swedish Environmental Protection Agency. 2012 *From waste management to resource efficiency: Sweden's Waste Plan 2012–2017*, Stockholm: SEPA.

Swedish Environmental Protection Agency. 2013 *Avfallsmängder* (Waste quantities) accessed online 31/05/2013 at <http://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Avfallsmangder/>

Wheeler, K. 2013 *The Dirty man of Europe? Rubbish, recycling and Consumption Work in England*, Centre for Research in Economic Sociology and Innovation (CRESI) Working Paper 2013-01, University of Essex: Colchester

Wheeler, K., (forthcoming), 'Nice Save! The Moral Economies of Recycling in Sweden and England', under review *Environment and Planning D*

Wheeler, K., and Glucksmann, M. 2013 'Economies of Recycling, 'Consumption Work' and Divisions of Labour in Sweden and England', *Sociological Research Online* 18 (1)

Wheeler, K. & Glucksmann, M. (forthcoming) ''It's kind of saving them a job isn't it?' The consumption work of household recycling', under review at *Sociological Review.*

Wijkström, F. & Zimmer, A. 2011 'Introduction: Nordic Civil Societies beyond Membership and Movements', in F. Wijkström & A. Zimmer (eds) *Nordic Civil Society at a Cross-roads*, Munich: Nomos.

9 APPENDIX

Features of Comparison	Sweden	England
The key actors and institutions providing waste management services	Municipalities FTI (producer responsibility organisation) Waste management companies Consumer	Local authorities Waste management companies Consumer
The role of the public and private sectors	Public sector dominance	Private sector dominance
Variations in the collection systems between and within the countries	One common system across Sweden	Much variation between and within local authority collection systems
The degree to which recycling waste is separate from other household waste	Recyclable packaging/ newspaper managed in a separate system to general household waste	Recyclable waste managed through the same system as general household waste
Dominant technologies employed to deal with waste	Incineration Limited technological after-sorting	Landfill Material Recovery Facilities
Strategies for mobilising consumers to recycle	Consumer mobilised to recycle for the environment; education aimed at children; no personalised feedback to individual households.	Consumer encouraged to recycle to save public money and for the environment; targeted feedback to individual households

Table A: Waste management in Sweden and England

