



Socio-economic evaluation of furniture re-use

*- an exploratory case study of a community waste
scheme (NOAH)*

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- en utforskande fallstudie av en lokal avfalls-plan (NOAH)

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(NOAH)

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(NOAH)

Abstract

The purpose of this thesis was to complete a socio-economic evaluation of a community recycling organisation and considered re-use of furniture. This study is exploratory as little research has been completed in this area. It entails the study of complex phenomena which were difficult to separate from its context, i.e. donator behaviour from the community recycling organisation. The author adopted a case study approach to explore these complex phenomena, to open the 'black box'. Data was collected entailing the use of multiple methods to elicit data from multiple sources. 31 in depth semi-structured interviews were carried out.

An LCA can account for the environmental impact being offset when re-using a piece of furniture. For this it is necessary to know what product is being offset by re-using furniture, it could be new furniture or second hand furniture. From this study it was discovered that socio-economic factors decide what the offset utility is for re-using furniture. Different policies from community waste schemes, local authorities and the government and motives among people affect what type of furniture that is re-used and the amount of furniture that can be re-used. About half of all furniture offered to the case study selected for this study, NOAH, was refused as they did not fulfil criteria set by NOAH to be accepted and redistributed. Re-use does not necessarily reduce demand for new furniture or reduce waste going to landfill in the long run but is a waste treatment method that can be justified from a socio economic perspective. It benefits people in the community in ways other than environmental, offering furniture for less money and employment opportunities for disadvantaged people.

Keywords: Reuse, community recycling schemes, socio economic, local waste policy

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Fanny Granstrom
Silsoe, August 2006

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CONTENTS

CHAPTER 1.....	1
INTRODUCTION.....	1
1.1 Background to research.....	1
1.2 The research problem.....	2
1.3 Research aims, objectives and questions	3
1.4 Scope of the research.....	4
1.5 Structure of the thesis	4
1.6 The difference between recycling and re-use.....	4
CHAPTER 2.....	5
LITERATURE REVIEW	5
2.1 Introduction.....	5
2.2 The economy and environment interdependence	5
2.3 Waste Management.....	7
2.3.1 Waste Regulation.....	8
2.3.1.1 <i>The Waste Hierarchy</i>	9
2.4 Life Cycle Analysis.....	10
2.4.1 Life Cycle Assessment.....	10
2.4.2 Criteria for Life Cycle Analysis	13
2.4.3 System Boundaries.....	13
2.4.3.1 <i>System Expansion</i>	14
2.4.4 Substitution.....	14
2.5 The Community Waste Sector	15
2.5.1 Charity Shop	16
2.5.1.1 <i>Donators</i>	16
2.5.1.2 <i>Buyers</i>	17
2.6 Consumer Behaviour	17
2.6.1 Income	18
2.7 Case Studies	19
2.7.1 LCA.....	19
2.7.2 Buyer Behaviour	19
2.7.3 Donation Behaviour.....	20
2.8 Conclusions of the literature review	21
2.8.1 Conceptual Framework.....	21
CHAPTER 3.....	24

METHOD	24
3.1 Introduction.....	24
3.2 Research Design	24
3.2.1 Purpose of study	24
3.2.2 Research Strategy	25
3.2.3 Data Collection.....	25
3.2.3.1 <i>Interviews</i>	26
3.2.3.2 <i>Ethnography</i>	26
3.2.4 Data Analysis	27
3.2.4.1 <i>Conceptual Framework</i>	27
3.2.6 Quality of research.....	27
4.1 Summary of Research Design	28
4.2 Application of Research Design	28
4.3 Summary	30
CHAPTER 4.....	31
RESEARCH FINDINGS	31
4.1 Introduction.....	31
4.2 Case Study: NOAH.....	31
4.3 Key organisational criteria determine acceptance of furniture at NOAH.....	32
4.3.1 Criteria 1: compliance with regulation, Health and Safety.....	33
4.3.2 Criteria 2: condition	33
4.3.3 Criteria 3: demand for Furniture	33
4.3.4 Condition 3: access.....	34
4.4 Attributes of participants in NOAH	34
4.4.1 Differences in Income	35
4.5 Differences in motives for Re-use	35
4.5.1 Social Motives of NOAH	35
4.5.1.1 <i>NOAH as a waste disposal channel</i>	36
4.5.1.2 <i>Financial motives of participants</i>	36
4.5.1.3 <i>Attitudes to second hand furniture</i>	36
4.5.1.4 <i>Convenience and Liability</i>	37
4.5.2 Availability of alternatives.....	38
4.5.3 Perceptions of Lifespan	38
4.5.3.1 <i>Remaining years of use and life of sofas</i>	38
4.5.3.2 <i>Offset ratio</i>	39
4.6 Summary of findings from NOAH	40
4.4 Case Study: Bedford Furniture Link.....	41

CHAPTER 5.....	42
DISCUSSION.....	42
CHAPTER 6.....	48
CONCLUSIONS.....	48
6.1 Summary.....	50
REFERENCES.....	51
APPENDICES.....	57

FIGURES

Figure 2.1 The waste Hierarchy.....	10
Figure 2.2 Framework for LCA	11
Figure 2.3 Flowchart on Re-use of Furniture	12
Figure 2.4 Flow Chart.....	23
Figure 5.1 The Re-use Pyramid.....	47

TABLES

Table 1.1 The Aims, Objectives and Questions of the research.....	3
Table 2.1 Research Questions	22
Table 4.1 Donated Sofas.....	34

FACT SHEETS

Fact Sheet 2.1.....	8
Fact Sheet 2.2.....	9

Abbreviations

CWP	The Community Waste Projects
LCA	Life Cycle Assessment
NOAH	New Opportunities and Horizons.

Key Terms

Municipal Waste	Waste generated within a city, town, regional municipality or village government controlled by local authorities or agents acting on their behalf. It incorporates household waste, street litter, municipal parks and gardens waste, beach cleansing waste, commercial or industrial waste and waste resulting from the clearance of fly-tipped materials
Offset Utility	Another name for substituting one product with another equivalent product.
Offset ratio	Offset ratio means e.g. how much material and energy that is used in producing one product in relation to another. In two equivalent products life span could also be used to compare how many years one sofa will last in relation to another sofa.
Recycling	Separating, collecting, processing, marketing, and ultimately using a material that has already been used that would otherwise have been thrown away.
Re-use	Using a product more than one in its original state.
Substitution	Another name is replacing
Substitution Ratio	See offset ratio
System Expansion	Expanding the boundaries set for the life cycle system investigated. This could be to include the environmental burden of another life cycle system interrelated with the product investigated.
Market	The arena in which suppliers and buyers exchange items of value.
Socio economic	human behaviour is based on both moral commitments and economic factors which partially shape each other and which evolve and change within the social environment and structure

CHAPTER 1

INTRODUCTION

1.1 Background to research

The human population has been growing rapidly during the last century. The increased demand on material has put pressure on the world's resource base and meant an increased generation of waste (Perman, 2003). Concerns of climate change, stratospheric ozone depletion, acidification, and depletion of resources have made people aware that consumption and disposal behaviour have a consequence on human health and ecosystems (Pennington, 2004; Ciambrone, 1997). Problems of waste management have resulted in regulations being developed to control the amount of waste and type of waste going to landfill. The Landfill Directive 99/31/EC was an initiative by the European Union to be implemented by member states no later than 1999 (EC, 2006) and the Waste Strategy 2000 was created as a response from England and Wales by the government (Defra, 2005). A revised waste strategy is being developed for the area which will be published later in 2006 (Defra, 2006e).

Re-use has been seen as a preferable method of reduce waste going to landfill and reducing the need to extract raw material from nature (Defra, 2006d). Re-use refers to using a product more than once in its original state (EPA, 2006). Alternative waste treatment methods such as re-use, waste minimisation, recycling, incineration, and landfill have been ranked according to preferable usage in a waste hierarchy pyramid included in the Waste strategy 2000 (Defra, 2006d).

The Environment Agency is developing a life cycle analysis tool for municipal waste that will allow local authorities to model the environmental impacts of different waste management systems, and to make decisions based on evidence, e.g. results of LCA (Thomas et al, 2005). Municipal waste refers to waste generated within a city, town, regional municipality or village government controlled by local authorities or agents acting on their behalf. It incorporates household waste (Defra, 2003a) and bulky waste such as furniture (Defra, 2005b). In order to include unit processes for furniture re-use in an Life cycle Assessment (LCA) it is necessary to know the furniture that is substituted by re-using a piece of furniture and the offset ratio between them (Thomas et al, 2005). However, knowing this does not include social and economic

perspectives (Jönson, 1996) that are relevant for understanding the big picture in the re-use of furniture (Gowdy & Seidl, 2004). There is also a need to be aware of the motives behind consumption behaviour and conditions that need to be fulfilled in order to understand the market for re-used furniture. This then allows policy makers to modify society's pattern of waste and product disposal more easily (Harrell & McConochia, 1992). The author has therefore completed a socio-economic evaluation of a community recycling organisation and considered reuse. Little research has been completed in this area why the nature of this study is exploratory. It entails the study of complex phenomena which were difficult to separate from their context, i.e. donator behaviour from the community recycling organisation. The author therefore adopted a case study approach to explore these complex phenomena, to open the 'black box'.

1.2 The research problem

There are various aspects to be accounted for when re-using furniture. For example, a sofa does not get re-used by itself but it must be diverted back into use again which requires responsible behaviour and willingness by the user to redirect it back to the market. The furniture must also have a receiver on the market place that is ready to re-use it. Community waste organisations such as charity shops are one channel by which furniture can be redistributed. Charity shops have different criteria to determine the acceptance of furniture. For example, criteria might include factors such as condition and those arising from compliance with Health and Safety Regulations. Re-use has been seen as a way to reduce the burden on the environment related to depleting natural resources and pollution as a consequence of extraction. In order to understand how the re-use of furniture stands in relation to other waste treatment options an LCA can be carried out (Thomas et al, 2003). An LCA on re-use of furniture accounts for the environmental burdens that are offset when a useful output of the waste treatment substitutes another useful product on the market (Ekvall, 2000, Weidema, 2003). In order to know the environmental burden that is offset by re-using a product, information is required on what the second hand product actually substitutes (Weidema, 2003). In terms of furniture, does it substitute new furniture or second hand furniture? The answer can be found among the people buying second hand furniture. People have different motives for buying second hand furniture which might give an understanding into the complexity of deciding what a re-used furniture substitutes. Human behaviour is based on both moral commitments and economic

factors which partially shape each other and which evolve and change within the social environment and structure (Gowdy & Seidl, 2004).

1.3 Research aims, objectives and questions

The aim, objectives and research questions enumerated to address the research problem detailed above are presented in table 1.1 as follows:

Table 1.1 The Aims, Objectives and Questions of the research

Aim
<ul style="list-style-type: none"> The aim of this project is to do a socio economic evaluation of furniture re-use in community waste schemes with a view to informing environmental assessment (Life cycle Assessment) and local waste policy.
Objectives and Research Questions
<ul style="list-style-type: none"> To identify and explain socio economic behaviour of re-use in community waste schemes <ul style="list-style-type: none"> - <i>What is the nature and characteristics of socio economic behaviour of re-use in community waste schemes?</i> To identify and understand re-use in community waste schemes and associated environmental assessment techniques and policy <ul style="list-style-type: none"> - <i>What community waste schemes are in existence and how do they function?</i> - <i>How does re-use function in a community waste scheme?</i> - <i>What is the environmental impact of these schemes?</i> - <i>In terms of offset utility of re-using furniture, how is this calculated?</i> - <i>What policy affects influences these schemes?</i> - <i>Why do people donate to community waste schemes?</i> - <i>Why do people receive from community waste schemes?</i> To identify products, if any, which are substituted by redistributed sofas <ul style="list-style-type: none"> - <i>What products, if any, are substituted by redistributed sofas?</i> To estimate an offset utility and the ratio for re-use furniture <ul style="list-style-type: none"> - <i>What represents an estimate of the offset utility and ration for re-use furniture?</i>

Please note that the research questions have been identified in order to pursue the aim and objectives of the study. These were generated in light of the findings from the literature review presented in chapter 2, as well as preliminary findings of case study research.

1.4 Scope of the research

The focus of this study was a community waste scheme dealing with re-used and new furniture in an urban setting, Luton. The scheme is called Furniture Link and is a department of NOAH Enterprise which is an organisation aiming to help disadvantaged people in society. A second case study, a community recycling scheme in Bedford selling second hand furniture, was also chosen to verify data collected from the main case study. The case studies were selected with the criteria that they have to be a member of the Furniture Re-use Network and have to be situated in Bedfordshire, UK. Generalisations made in this thesis will be made only for case studies chosen. Donator and recipients behaviour was studied in relation to re-use of sofas.

1.5 Structure of the thesis

Chapter 1 introduces the concept of Re-use of furniture as well as the aims and objectives of the thesis. The second chapter presents the findings of the literature review, which was completed to develop an understanding of the theoretical and substantive context for the research and to assist in the formulation of research questions. Chapter 3 describes the methods used in conducting the thesis and importantly, the rationale for selecting these. The research findings are presented in chapter 4 and will be discussed in chapter 5 together with the key findings from chapter 2. Conclusions from the discussion are to be found in chapter 6 where the extent to which the aims and objectives of the study are met is considered. Recommendations for further research are also detailed in this chapter.

1.6 The difference between recycling and re-use

Re-use refers to using a product more than once in its original state (EPA, 2006). Reused furniture for example usually ships directly from the seller to the buyer (Allbusiness.com, 2006). Recycling means separating, collecting, processing, marketing, and ultimately using a material that would otherwise have been thrown away. One material can be recycled and used in the production of another product. (EPA, 2006) However, in the text below recycling may sometimes include the term re-use as defined above. The terms will not be clarified further.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter highlights the findings from the literature review on Re-use of Furniture and related issues such as consumer behaviour. The first section describes the Economy and Environment Interdependence and lays the foundation of the broader context in which re-use of furniture takes place in. It also aims to give the reader an understanding of why material consumption and waste needs to be managed more efficiently. The following sections on waste management and relevant legislation intend to explain the position of re-use in comparison to alternative waste treatment methods. It also gives a brief description on the UK's waste management policy and goals that need to be fulfilled in accordance to the Landfill Directive. The fourth section on Life cycle analysis describes the different prerequisites that need to be fulfilled in order to be able to assess the environmental impact of a product that has entered the waste management process. The theory will be conducted in special regards to system expansion, substitution and functional equivalence. It will also provide the reader with a brief introduction into community waste organisations with focus on charity shops. Theory in relation to buyer and donator behaviour of second hand furniture will be presented to inform the reader with socio economic behaviour in relation to re-use of sofas. Finally three case studies detailing the findings of similar studies were reviewed to provide a substantive reference for the findings of this thesis. The last section summarises the literature review with its key findings. Material for this chapter has been collected from published book and articles and from sources via internet. From the literature a conceptual framework was established.

2.2 The economy and environment interdependence

Economic growth has meant that a lot of people have improved their health, wellbeing and material wealth around the world. Economic activity takes place within the environment through consumption and production which draw upon environmental services. Economic activity cannot create material but involves

technical means; transforming material from the environment to states that are more valuable for humans (Perman et al, 2003). Technology and innovation is also a reason for resources becoming more available as extraction costs less (McDoughall, 2001) and for alternative treatment methods of waste (Perman et al, 2003). However, the world's resource base is limited (Perman, 2003). Humankind must learn how to manage the resources and how the management of these resources can affect the environment and in turn mankind (Jönson, 1996). As a resource base natural resources are used in the production of goods and services in different forms. The materials balance principle is based on the laws on thermodynamics which says that matter can neither be created nor destroyed (Perman et al, 2003). All material used eventually results in waste production (Turner et al, 1994). Depending on how this waste is treated or untreated for that matter, the affect on the environment may be different (Ciambone, 1997; Thomas et al, 2005). The consumer's role is considered of particular significance in relation to choice of disposal method (Harrell & McConochia, 1992). Socio economic behaviour is a combination of people making decisions on moral motives and values and out of economic self interest (Morong, 2006). Polluting the environment and using it as a waste sink can be decreased through recycling products (Turner et al, 1994) moreover, less waste will be sent to landfill (Defra, 2006d). Recycling has increased the efficiency of material use and fewer resources having to be extracted from the environment.

In an ideal world all production could be made from recycled materials or used products and no extraction of resources from the environment would be necessary. No material would be sent to landfill or back to the environment in undesirable forms. The material flow would follow a closed loop system instead of an open loop system. Energy would also have to be added (Carlsson et al, 2003). which represents more of an open loop recycling (Ekwall, 2000). A closed loop recycling is when the same material or products are being re-used or recycled without adding any other materials or energy to it. However, this is impossible according to thermodynamics as earlier mentioned as some sort of energy for handling of the products is required in order to for them to be usable again. Depending on if this energy is generated in an environmental sound manner determines if there is an ecological benefit in a closed loop recycling (Schmidt, 2005). A sofa can for example be refurbished before being re-used (Ciambrone, 1997) which requires some additional material and energy as input (Turner et al, 1994). In contrast to both closed and open loop recycling is a linear progress from production, through use, to waste disposal (Schmidt, 2005).

Economic forces and the price of recycled material and raw material can affect the use of recycled material. The supply and demand for recycling and re-use can also be more or less influenced by local authorities who set the policies and framework for recycling (Ekwall, 2000). There is also a social aspect to re-use. People that are on a low income may not be able to afford to buy all goods from new (Williams et al 2003).

2.3 Waste Management

Discarding a product is a critical stage in the life cycle of a product. The product now enters the world of waste management as the intended end user perceives that the product no longer suits the purpose that it was designed for (Cooper, 2004). This is not necessarily the case as the product still can be usable with some minor adjustments. The product can be sold as used equipment or donated to a charity, university or a school (Ciambrone, 1997). One persons waste can be another person's raw material (Bell and McGillivray, 2006).

The waste management process includes collection, processing and final disposal (Ciambrone, 1997). Managing waste is one of the most significant environmental challenges the UK faces in the next 20 years to come (Bell & McGillivray, 2006). Waste refers to lack of value or useless remains, but still contains the same materials as in useful products (McDoughall, 2001). Waste can be divided into different classifications depending on its physical state, original use, material type, physical properties, origin and safety level (Defra, 2006a). Furniture is categorised as bulky waste that further can be classified as household waste. The amount of bulky waste can vary dramatically between years and authorities have different policies how to handle waste (Defra, 2005b).

A sustainable waste management refers to the treatment of waste should be environmentally effective, economically affordable and socially acceptable (McDoughall, 2001). Environmentally effective means reducing the burdens of waste management degrading the quality of the environment. Economically affordable means that the treatment of waste should operate at a cost acceptable to the community. That includes all citizens, businesses and governments. The level of cost depends on existing infrastructure for treating waste. The society must also accept how the waste management systems are being operated. This can be achieved

through holding a dialogue with the public and educate, develop trust and gain support in the treatment methods (McDoughall, 2001).

Fact Sheet 2.1

Around 29.1 million tonnes of municipal waste was produced in the UK 2003/2004 (Defra, 2006a). Municipal Waste includes waste controlled and managed by local authorities or agents acting on their behalf. It incorporates household waste, street litter, municipal parks and gardens waste, beach cleansing waste, commercial or industrial waste and waste resulting from the clearance of fly-tipped materials (Defra, 2003a). A study, the municipal waste strategy 2003/2004 carried out in the UK showed that around 87% of the municipal waste is household waste. 72% of the municipal waste was sent to landfill (Defra, 2006a). A relative small percentage of the household waste is bulky waste, 5 % (Defra).

The Community Composting Network (CCN), the Community Recycling Network (CRN) and the Furniture Reuse Network (FRN) are three umbrella organisations that holds member within the UK community recycling sector. Community groups have many times been pioneers when it comes to re-using waste and recycling. The Furniture Re-use Network promotes re-use of unwanted furniture and household goods in order to help alleviation of hardship and poverty (Defra, 2006b). The Furniture Re-use Network coordinates about 300 organisations Re-use and Recycling organisations that collect household goods and pass them on to families with low income that cannot afford to buy new appliances (FRN, 2003).

There needs to be both a supply and a demand for re-used furniture to give way for a loop of recycling (Defra, 2006b). Charity Re-use organisations have been seen a recipient of bulky waste that could provide environmental, economical and social benefits to the local authority and the community. Charities could provide low cost furniture for people and families in need as well as improve environmental performance and driving down the cost of waste disposal for the local authority (Defra). The supply of goods can sometimes be restricted by conditions beyond the suppliers control for example with legislation (Kotler et al, 2001).

2.3.1 Waste Regulation

The Landfill Directive 99/31/EC was issued by the European Union upon its member states in 1999 to be implemented no later than the year 2001. It aims to control the amount and type of waste going to landfill (EC, 2006). The Landfill Directive will help member states treat waste in more desirable ways according to for example, waste

minimisation and increased levels of recycling and recovery in accordance with the waste hierarchy (Defra 2005). The Waste Strategy 2000 was set up as a strategy for England and Wales to reduce the amount of waste going to landfill each year (Defra, 2006d). A new Waste Strategy 2006 is to be released in the end of 2006 (Defra, 2006e).

Fact Sheet 2.2

In South East England waste is stored in former mineral workings. The space on those sights are decreasing rapidly and to avoid having to use e.g. agricultural land as landfill sights the amount of waste going to landfill needs to decline (Defra, 2006d).

The British Government and the National Assembly have set challenging targets to increase the recycling of municipal waste:

- To recycle or compost at least 25% of household waste by 2005
- To recycle or compost at least 30% of household waste by 2010
- To recycle or compost at least 33% of household waste by 2015

(Defra, 2006d)

2.3.1.1 The Waste Hierarchy

The Waste hierarchy is one of the cornerstones that should be considered when treating waste. It sets out the order for each option to treat waste based on the environmental impact of each treatment method (Defra, 2006c). Waste minimisation and re-use is at the top of the waste hierarchy as they are seen to be important to pollution prevention and, resource conservation and economic efficiency. Waste minimisation means waste is not created in the first place (Ciambrone, 1997). Focussing on durability and extending the life of a product can help prevent and reduce waste (Coggins, 2001). Reusing products and material puts fewer requirements on extracting raw materials from the nature (Ciambrone, 1997). Recovery means waste can be incinerated, and the energy recovered from the waste can provide households in turn with energy. Disposal in the waste hierarchy is seen as waste going to landfill and is the last option to be considered in the waste hierarchy (Ciambrone, 1997) (see figure 2.1 below). Disposal is later in this thesis also used as a term for alternative disposal channels.

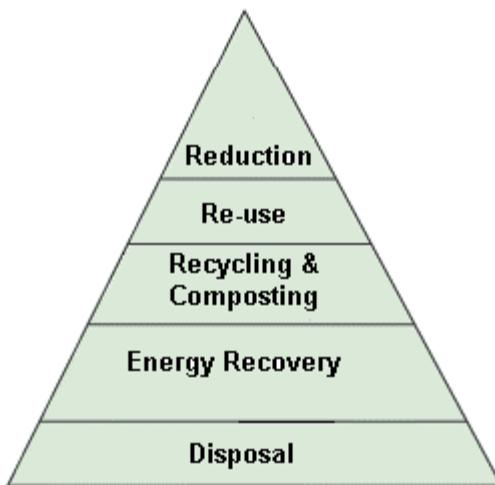


Figure 2.1 The waste Hierarchy. The Waste Hierarchy is one of the frameworks in Sustainable Waste Management. It orders the different steps to treat waste based on the environmental impacts caused by each step (Defra, 2006).

The waste hierarchy does have some limitations in acting as a guideline. The order and ranking of waste in the waste hierarchy according to lowest environmental burden and economic efficiency may vary depending on what waste is being treated. Different materials are best dealt with different processes (McDoughall, 2001). The Environment Agency is developing an LCA tool to compare different waste treatment methods that will help local authorities make decision based on facts (Thomas et al, 2005).

2.4 Life Cycle Analysis

2.4.1 Life Cycle Assessment

Life cycle assessment (LCA) is the process of evaluating the environmental impact a product, process or activity has on the environment. This is achieved by identifying the inputs and outputs, and quantifying the energy and material used and released to the environment during a products life cycle (Jönson, 1996). A life cycle starts with the design of the product, to the mining of the raw materials used in production and distribution, the usage and possible re-use and recycling, (GDRC, 2006) and ends with the disposal, from cradle to grave (Ciambrone, 1997). Life cycle assessment does not include social and economic effects (Jönson, 1996).

LCA goes through three main phases; the goal and scope definition, inventory analysis and impact assessment. A forth phase is also included in the LCA that is called the Interpretation phase. The Interpretation is the “phase of the life cycle where the findings of either the inventory analysis or the impact assessment, or both, are combined consistent with the defined goal and scope in order to reach conclusions and recommendations” (Baumann & Tillman, 2004 Page 175).

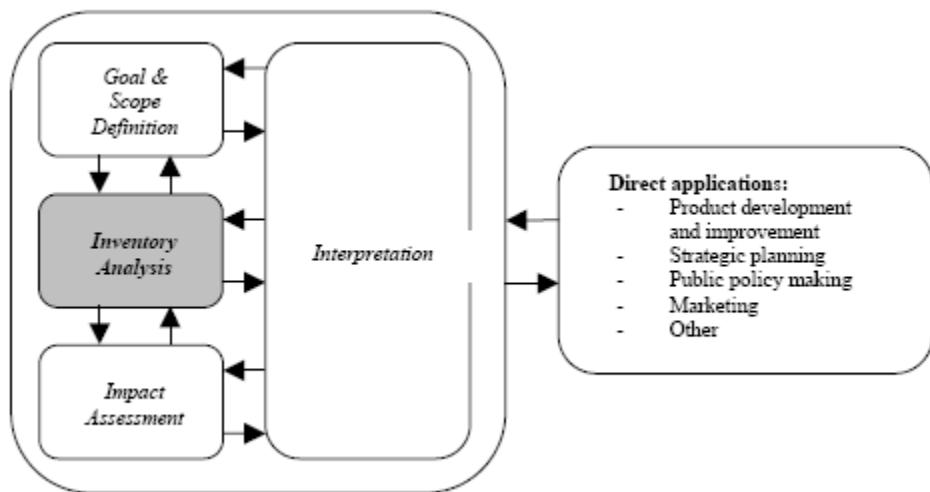


Figure 2.2 Framework for LCA. The framework is taken from the ISO 14041 standard. It includes the three main phases of LCA; Goal and Scope Definition, Inventory Analysis and Impact Assessment. The Interpretation is the phase in which the findings from the inventory analysis and the impact assessment are combined consistent with the defined goal and scope of the LCA in order to reach conclusions and recommendations (Baumann & Tillman, 2004).

In the goal and scope definition the product to be studied and the purpose of the study is decided on. This could be to compare all ingredients in two equivalent products. System boundaries are set for what will be included in the study, environmental impacts are compared as well as level of detail decided. The Inventory analysis phase includes a flow model of the activities included within the system boundaries set. Data is collected for all the activities included in the analysed system; raw material products, solid waste, emissions to air and water (Baumann & Tillman, 2004). The product studied in this research is second hand sofas. This study will complete stage one of the Inventory analysis and construct a flowchart describing the included activities that need to be accounted for when re-using a sofa. The flowchart is shown in Figure 2 below. This thesis will not however quantify or present any quantified data in relation to resource use and pollutant emissions. The third phase is

the life cycle assessment, this stage of the impact assessment aims to describe or at least indicate, the impacts of the environmental loads quantified in the inventory analysis. This means the impacts on the environment rather than information on emissions and resource use. ISO 14040 is an international standard for LCA from which Figure 2.2 has been taken (Baumann & Tillman, 2004).

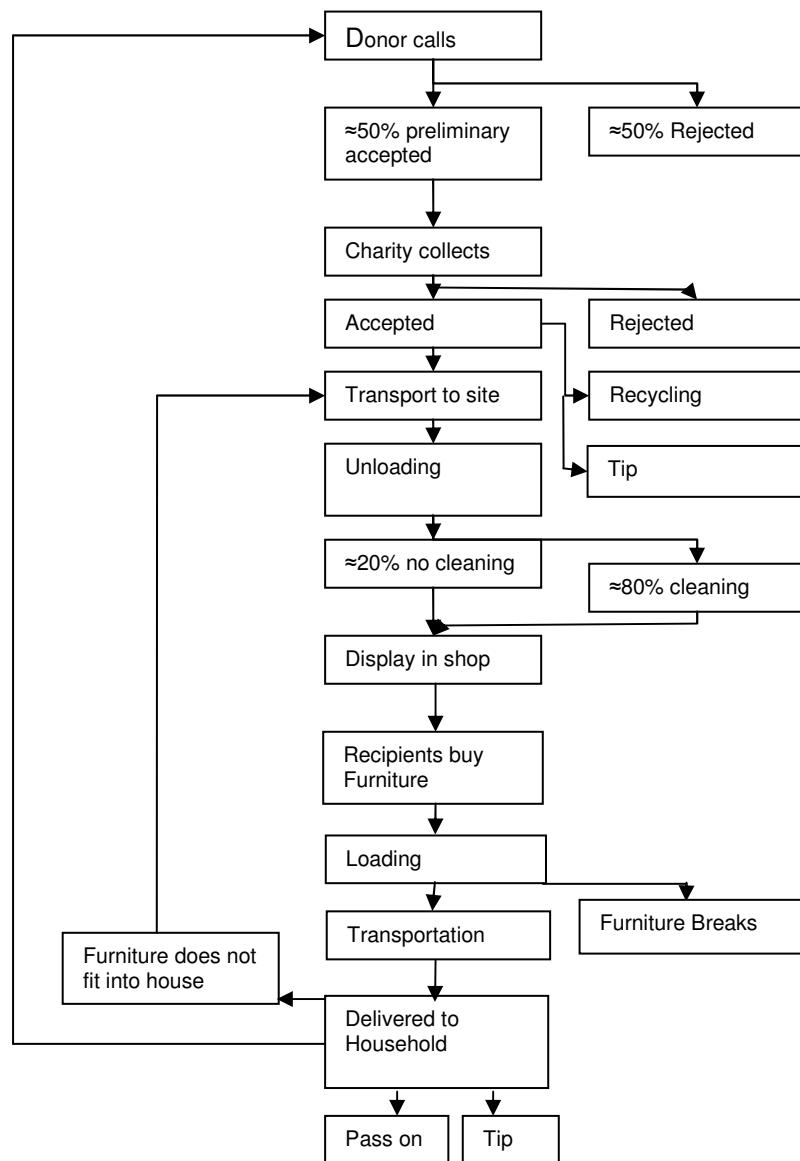


Figure 2.3 Flowchart on Re-use of Furniture. The flowchart and system boundary set for the re-use of sofas that are the focus of this study. The flowchart starts with a person calling and wishing to donate a sofa. The donated sofa must meet different criteria in order to be accepted by the charity shop. Not all furniture being accepted is however sold and some goes to the tip or is recycled. Furniture is being transported to the charity shop where it is being treated and estimated 80% of the sofas are being cleaned. The sofas are bought and redistributed to a new user. Some sofas are occasionally too

big and cannot go into the house they are meant to. The sofas are therefore transported back to the shop again. After use sofa can either be donated back to the charity again, sent to the tip or being passed on as indicated by this study.

2.4.2 Criteria for Life Cycle Analysis

A life cycle analysis must follow some minimum criteria in order to be useful. Firstly it must be quantitative which means that all data should be quantified and documented with suitable quality control. Assumptions and methodology must be specified and the information must also be replicable. The same results should be obtained by another person choosing to do the same research using the same methodology and sources. Data must be scientific and comprehensive which means all significant data such as energy, material and waste are included. Facts that have been left out because of time constraints and costs should be recognised. The detail of the study should be in accordance with the purpose of the study. Documents used for public manner should be peer reviewed using acceptable protocols. The study should finally be useful in making appropriate decisions and the limitations regarding the utility of the study should be acknowledged (Ciambrone, 1997). Quantitative data meeting these requirements will not be obtained in this study. It will identify all activities to be accounted for when re-using sofas.

2.4.3 System Boundaries

One of the most critical step in a life cycle analysis is setting the boundaries of what to include in the analysis (Ciambrone, 1997), what is the cradle and what is the grave for the product investigated (GDRC, 2006). This helps to define what needs to be obtained in carrying out the study (Ciambrone, 1997) and the data collection can be delimited according to the boundaries of the study (GDRC, 2006).

System boundaries must be set in many dimensions, between technological systems and nature, geographical area, time horizon, production of capital goods and boundaries between the life cycle of the studied product and related life cycles of other products (Tillman et al, 1993). The LCA for re-used sofas in this study starts when the sofa is being donated to chosen case study for research, and ends when it reaches next household. However, the system investigated will be expanded to include product being substituted by re-using a sofa. With this information the environmental burden that is offset by re-using sofas can be decided (Ekvall, 2000). More information on system expansion can be found under 2.4.3.1 below.

2.4.3.1 System Expansion

Many of the activities in the global technological and economic system are interrelated which is the reason for boundaries between life cycle of product studied and related products need to be made (Tillman et al, 1993). Methodological difficulties to set the boundaries can occur in processes that involves multiple products such as different waste treatment processes (Tillman et al, 1993; Ekvall & Finnveden, 2001). Changes in the amount of recycled material used or delivered by one product in its life cycle may affect the environmental burdens of life cycles of other products. These indirect effects can potentially be taken into account by expanding the system to include the activities affected. One way this can occur is by looking at what one product substitutes in the market place. Open loop recycling is the recycling of material from one product used in another product. It could by this be difficult to know how much of the environmental burden of producing the primary product that should be allocated to the product investigated. System expansion and the indirect affects are often built on the assumptions that recycled material replaces virgin material when this does not have to be the case (Ekvall, 2000; Weidema, 2003). Recycled material may replace other recycled material or no material at all. This creates complexities in the system need to be analysed further (Ekvall, 2000).

2.4.4 Substitution

Life cycle assessment can be used to compare the material and energy use of two compatible products (McDoughall, 2001) for example a new sofa and a re-used sofa. A life cycle assessment does not guarantee the best environmental option but allows trade offs between each product considered. However, not all consumers see a re-used product and a new product to be compatible (Weidema, 2003) as the disposed product is seen as waste and for this reason no longer has value for the prime user (McDoughall, 2001).

Life Cycle assessments being used as a tool for comparing alternative products depends on market information, how the market affects the different choices and how the different choices can affect the market. Including the market in research can mitigate uncertainty of the life cycle assessment results (Weidema, 2003). This is the reason for investigating alternative consumption options for people buying second hand furniture in this study.

The standard economic model of individual behaviour assumes substitutability of goods. This implies that consumers can maintain an initial level of utility by reducing consumption of one good or service but increasing the consumption of another good or service (van den Bergh et al, 2000). By buying one product a decision is made not to buy another good that may be equivalent to the product bought, by this, the product that is bought substitutes another commodity. Another name for substitution that will be used in this thesis is offset utility. The answer to what the substituted commodity is can be found in the consumer. Furthermore there are different aspects to be accounted for when comparing two products and the offset ratio between them. Offset ratio means e.g. how much material and energy that is used in producing one product in relation to another. However, other factors may also be considered such as functionality and lifespan. The relative functionality and lifespan of a product may be a factor for a consumer to consider when deciding to buy a product or another equivalent product (Weidema, 2003).

2.5 The Community Waste Sector

Community Waste Projects (CWP) can be defined as “non-for-profit organisations concerned with minimisation, reuse or recycling of waste” (Luckin & Sharp, 2004). In other parts of this thesis they are referred to as Community waste schemes. Community sector schemes have been seen to contribute to localities in which they operate by increasing community capacity, boosting local social capital and ensuring the voice of the local community is represented in policy developments (Luckin & Sharp, 2004). The CWPs can range from small, localised voluntary groups relying entirely on grants funding or charitable donations to financially independent social enterprises, operating on regional or national level. Except collecting waste these schemes can provide innovative environmental solutions as well as support low-income families through the provision of low cost, reclaimed and refurbished furniture and electrical appliances. The CWPs can also contribute socially by providing training and employment opportunities for people that are often in deprived areas and among marginalised groups. CWPs can be regarded as an example of sustainable development in practice, because they work to a triple bottom line of environmental, social and economic objectives. In terms of household and individual participation it has been observed that community sector recycling achieves higher participation than those of the private or local authorities. CWP's seems to have higher goodwill than the private and public sector; it is for a good cause and not to generate profit to

go into the pocket of a single person (Luckin & Sharp, 2004). William Booth, founder of the Salvation Army, suggested wastage of goods from upper classes should be redistributed to help those less well off. This idea became the forerunner to today's charity shops (Hibbert et al, 2005).

2.5.1 Charity Shop

Second hand goods can be acquired from charity shops, the newspaper, internet, car-boot sales, and jumble sales and from a relative (Williams, 2002). The majority of Charity Shops in the UK sell second hand goods to raise funds. Second hand goods are re-used by being redistributed. Some Charity shops do also sell new goods, and even Charity shops known for selling new goods generate high profits, average 79%, from the sale of second hand goods (Hibbert et al, 2005 Page 820). Surveys have shown there is a shortage in donated stock to charities. Charities try to target neighbourhoods with higher socioeconomic groups in order to obtain higher quality goods. People have alternative disposal channels other than charity shops for goods such as furniture (Hibbert et al, 2005).

The way in which second hand channels such as charities are used can display some socio-spatial variations. Affluent people rely more on new goods meanwhile the more deprived population rely on more informal and second hand goods of acquisition (Williams, 2002). Furthermore, more affluent people, as indicated by earlier research (Williams, 2002) tend to use second hand shops mainly for buying goods such as furniture, especially older, high quality furniture, or, furniture that suits individual tastes and requirements (Williams, 2002).

2.5.1.1 Donators

Households use a variety of disposal channels within and across categories of goods. They can throw it away, give it away, trade it or sell it (Hibbert et al, 2005). Knowledge on disposal behaviour is highly relevant in order to understand how to stimulate more environmental and socially responsible behaviour (Harrell & McConochia, 1992). Personal, product and situational situations influence disposal behaviour. Features of the product such as functional/style, obsolescence, storage, convertibility and monetary value has affected disposal methods. In the context of recycling, the level of education, age and income have been seen to be important demographic variables. Logistics in discarding the products might also affect way of

disposal. However, there is a lack of research of behaviours in relation to disposal methods (Hibbert et al, 2005).

Making a choice to keep, throw away and sell/swap a used product is seen as non altruistic behaviour, meanwhile donating and giving away is seen to be altruistic behaviour (Harrell & McConocha, 1992). Altruistic motives refer to choices that are not related to the actor's preferences themselves but to a more common good which can benefit others (Johansson, 2006). A sense of social responsibility might underlie the donation behaviour. Someone could be helped instead of the product going to waste. Although, giving a product away can sometimes be associated with expecting something in return which is then less altruistic. Throwing away furniture could be more associated with getting the furniture out of the way. Selling a product is related with getting an economic return, feeling in control and social interaction (Harrell & McConocha, 1992). People that are altruistic are more likely to take part in environmental behaviour and recycling can imply environmental awareness and altruistic behaviour (Barr, 2003).

2.5.1.2 Buyers

People with a higher income have according to earlier studies (Williams & Paddock, 2003; Williams, 2002) bought products second hand because it is about fun, sociality, distinction, display, possession and being seen to buy the right things (Williams, 2002). People on a lower income have bought second hand products because of financial constraints and not so much because of a choice (Williams & Paddock, 2003; Williams, 2002). Decisions to buy one product over another is constrained and influenced by a range of factors such as income, altruistic motives (van den Bergh et al, 2000) and attitudes (Williams & Paddock, 2003).

2.6 Consumer Behaviour

Re-use and redistribution is one solution to reduce waste going to landfill, but to what extent this is carried out depends on the behaviour of consumers. Because of this there is a need to understand better the attitudes and motives of consumers. Then society can modify its patterns of waste and product disposal more easily (Harrell & McConocha, 1992). The demand for re-used furniture has a vital role to play in how much furniture is being supplied and re-used in the market place (Kotler et al, 2001).

People's motives for consumption behaviour can be divided into altruistic or non altruistic motives. However, altruistic behaviour takes into consideration the consequences on the environment of consumption and the social situation of the people manufacturing the goods being consumed, this may conflict with the desired life style and identity expressed through consumption (Johansson, 2006). A higher price can sometimes attract people to buy a good as it conveys a higher status to possess that good. A good can entail a different status depending on who buys that good. For example if a beggar buys a good the status associated with consumption of that good may decrease (Frijters, 1998). Fashion is a factor affecting consumer behaviour and furniture is one of the products that have become in the eye of fashion. This has resulted in people not keeping their furniture for as long as they might otherwise have done (Leslie & Reimer, 2003). However, altruistic behaviour can be a constraint to economic choices and if consumers were better informed about environmental consequences they could be willing to pay more for less polluting products (van den Bergh et al, 2000).

2.6.1 Income

The consumer does not always have the option to choose the product that is most desired on the market because of financial constraints. More money is spent on basic necessities such as food (Johansson, 2006). According to the neoclassical economics theory consumption choices are based on income and financial constraints (van den Bergh et al, 2000). People with different levels of income have different spending patterns. People with higher income spend money on more luxurious items meanwhile middle and low income families are more careful about their spending behaviour (Kotler et al, 2001). Re-used furniture is seen to be a good for families on low income (Defra, 2005b) although some people may see it as a way to save money and buy high quality furniture for less money (Kirkland, 2002).

2.7 Case Studies

2.7.1 LCA

In the UK between 4 and 5% of municipal waste is composed of clothes and textiles. Around 25% is taken by charity shops like for example the Salvation Army Trading Company Limited (SATCOL) for the purpose of being re-used. By carrying out a life cycle assessment of the re-use of textiles the energy consumption of re-using furniture, taking into consideration extraction resources, manufacture of materials, electricity generation, clothing collection, processing and distribution and final disposal of wastes, could be put in relation to energy used when making textiles from virgin cotton. Research has shown that by recycling materials there is an environmental benefit as the environmental burden of manufacturing new textiles is avoided (Woolridge, 2006). A problem does occur when it cannot be stated that one unit of re-used textile displaces the purchase of a garment from virgin material. Furthermore, where waste clothing is re-cycled for example furniture filling, it replaces the use of e.g. paper that can in turn have implication on the life cycle of that paper (Woolridge, 2006).

2.7.2 Buyer Behaviour

In Leicester, England a study was carried out with 120 interviewees to study people's alternative consumption patterns and what factors might affect people's consumption choices in relation to used and second hand goods. Three regions in Leicester were selected with inhabitants of contrasting levels of affluence. In 93% of the cases people stated that they wished to buy new goods from formal market consumption sites. 7% stated that they would prefer an alternative consumptions practice. Alternative consumptions practice means modes of goods that does not involve obtaining goods new from formal retail outlets including mail orders and the internet. The findings showed that in the deprived area of North Braunstone, 6% of the goods from alternative consumption practices were a result of choice. 71% of these goods in the affluent ward of East Knighton were in turn results of choice; the same figure for the area of Thurncourt was 29%. People in the more affluent areas of Leicester use alternative consumption practices because it is "good fun" "a leisure activity" and being seen to buy the right things. For people in deprived areas alternative consumption practices was the first option but second choice. In 94% of cases in the deprived area consumption practices were motivated by economic necessity

(Williams & Paddock, 2003). Another similar study drawing upon 511 interviewees in affluent and deprived areas in two English cities came up with similar results. The ideal acquisition of furniture, cookers and refrigerators for people in deprived areas was to buy them new but they could not afford to do so. For people in affluent areas buying second hand furniture was more of a choice (Williams, 2002).

2.7.3 Donation Behaviour

Knowledge on disposal behaviour is highly relevant in order to know how to stimulate more environmental and socially responsible behaviour. In the US a survey was carried out including 417 participating households in a large mid western town on their disposal behaviour. The survey was carried out using mail questionnaires. Six disposal behaviours could be identified keeping behaviour, throwing away behaviour, selling behaviour, deducting behaviour donating behaviour and passing behaviour. 22% of the initial users would keep the goods, 8.3% of the people would rather throw it away, and 14.7 % liked to sell their products. 23.9% preferred passing along and for 31% of the respondent's donation was the alternative. However, 13.4 % would donate because of tax deductions and not because the good of it. Deducting was negatively correlated with all other disposal option except throwing away. 17.5% would donate as the first option as donating was positively associated with liking to help someone and feeling that the product will be appreciated by someone else. Donation is generally considered as a desirable redistribution of wealth. Charitable organisations can decide which group to target to switch disposal behaviour to donation behaviour (Harrell & McConochia, 1992). A postal survey of 210 households carried out in an area in UK concerning disposal behaviour showed that a relatively even split could be observed between giving furniture to a charity, passing it on to family and friends and throwing items away. Furniture was donated to charities to a lesser extent than other types of goods. A conclusion from the study was therefore that there is a need to persuade people to donate goods such as furniture to charities. People are using charities to a greater extent when disposing books for example (Hibbert et al, 2005).

2.8 Conclusions of the literature review

Furniture is categorised as bulky waste that is in turn seen to be household waste. (Defra, 2005b) By buying one product a decision is made not to buy another good that might be equivalent to the product bought, by this, the product that is bought substitutes another product (Weidema, 2003). Research has shown that by recycling textiles there is an environmental benefit as the environmental burden of manufacturing new textiles is avoided (Woolridge, 2006). This assumes that both products are equivalent (Weidema, 2003). A problem can occur when it cannot be assured that one unit of re-used textile displaces the purchase of a garment from virgin material (Woolridge, 2006). Recycled material might replace other, recycled material or no material at all (Ekvall, 2000). The answer to what recycled material replaces can be found among the people that are buying second hand furniture and depends on what the alternatives are to buying that particular second hand furniture. People may have different reasons for choosing to buy second hand furniture which in turn may affect their alternatives (Kotler et al, 2001). There may also be other factors that affect the ability to re-use furniture such as different policies and restrictions by the local authorities (Ekvall, 2000). This summary reviews the topics that will be investigated in this study.

2.8.1 Conceptual Framework

The conceptual framework explains what the main things are to be studied and the relationship between them. The framework can specify what is and what is not to be studied and for this reason what outcomes are to be measured and analyses made. Figure 2.4 illustrates the conceptual framework that was developed from the literature review and Appendix N in this study. It explains the different alternatives a household have in relation to buying furniture, new or used, and alternative disposal channels, donation, landfill or other.

The conceptual framework in Figure 2.4 puts the household in focus as the people in the households are the ones who possess the information about donation and recipient behaviour. Different factors for example altruistic and less altruistic motives, income and attitudes will decide what the household's role will be in relation to the furniture wished to be bought or disposed. In terms of buying a sofa the household will either buy a used good or a new manufactured sofa. The product substituted by using a second hand sofa could either be another second hand sofa or a new,

manufactured sofa. Furniture that is manufactured means material has been taken from the resource base. Used furniture from a charity shop put less demand on material from the resource base although some energy and material is needed for a sofa to be re-used. The recipients of second hand sofas can after use depending on the condition of the sofa either donate it back to the charity or let it go the landfill or another potential waste treatment. If it is donated back to the charity, there is a potential for a closed loop recycling. However this is not likely as the treatment process and redistribution of used furniture also requires some kind of energy and material. The closed loop recycling, from household to charity to household, becomes more of an open loop recycling as energy added is represented by the dashed line from the resource base in Figure 2.4.

Research questions were detailed below and generated to pursue the objectives made as a result of the findings of the literature review and preliminary findings of case study research. For example, theories of consumer behaviour were used to develop research questions which enabled the behaviour of adopters to be studied and thus a socio-economic evaluation to be completed. The research questions can be seen below in Table 2.1.

Table 2.1 Research Questions

- | |
|--|
| <ul style="list-style-type: none">• What is the nature and characteristics of socio economic behaviour of re-use in community waste schemes?• What community waste schemes are in existence and how do they function?• How does re-use function in a community waste scheme?• What is the environmental impact of these schemes?• In terms of offset utility of re-using furniture, how is this calculated?• What policy affects influences these schemes?• Why do people donate to community waste schemes?• Why do people receive from community waste schemes?• What products, if any, are substituted by redistributed sofas?• What represents an estimate of the offset utility and ration for re-use furniture? |
|--|

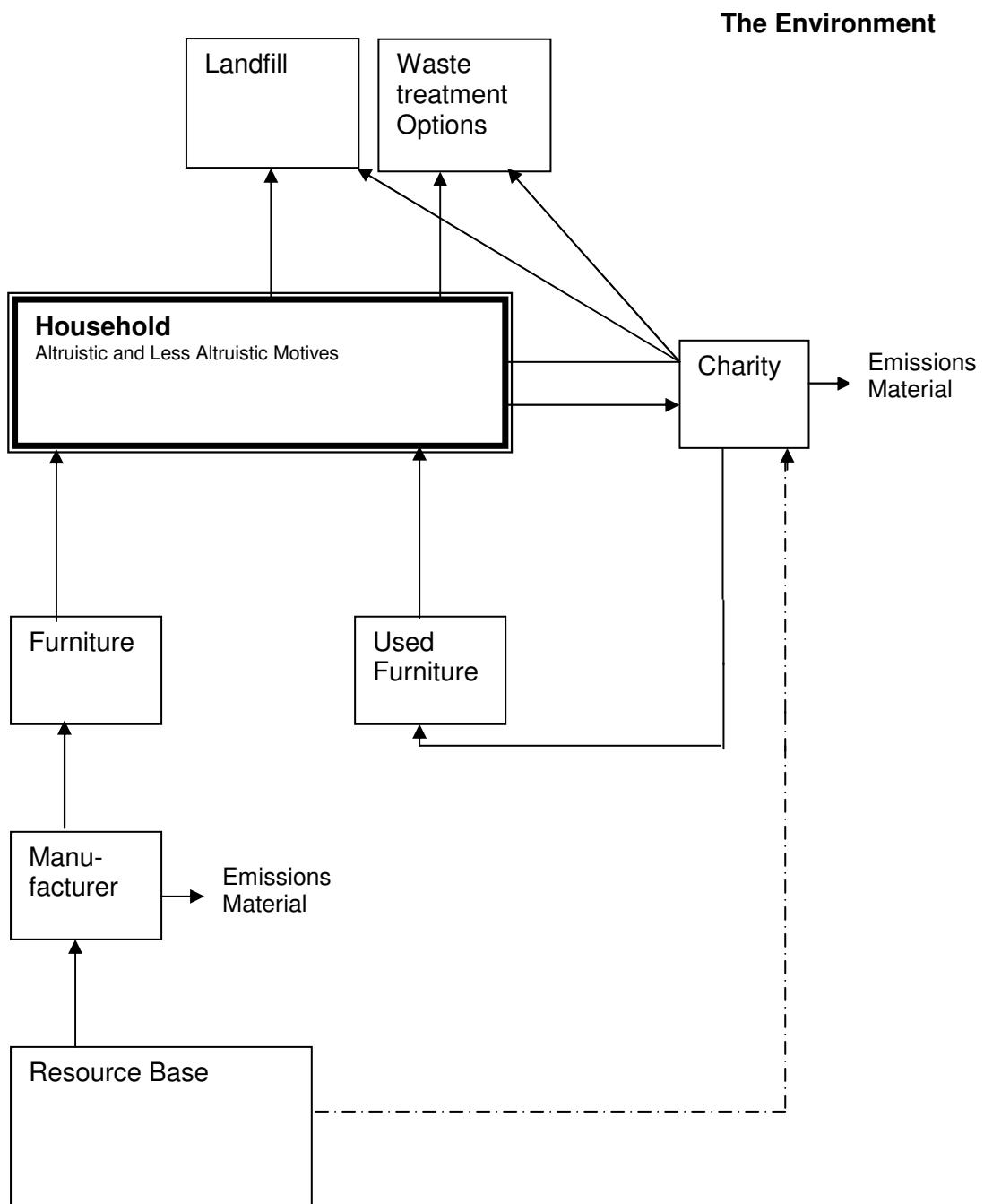


Figure 2.4 Flow Chart. Consequence of alternative behaviour in relation to consumption and disposal behaviour.

CHAPTER 3

METHOD

3.1 Introduction

It can be difficult to explain “real world” situations as they are complex, relatively poorly controlled and generally chaotic (Robson, 2002). Different methods have therefore been developed to try to overcome difficulties and obstacles when carrying out investigations. In order for research to be successful, methods have to be carefully selected that best fit respective research (Robson, 2002). The following chapter is divided into two parts, the first part details the research design and thus the methods selected in pursuit of the aim and objectives and importantly, the rationale for selecting these; and second part details how the research design was applied throughout the study.

3.2 Research Design

A research design was developed giving consideration to the following consideration articulated by Robson, 2002:

- The purpose of the study: exploratory, explanatory, descriptive
- The research strategy: case study, experiment, survey
- The type of data collected: qualitative and quantitative
- The data collection techniques used: interviews, ethnography, checklist and observation
- The approach to data analysis used: coding and clustering, content analysis, discourse analysis.

3.2.1 Purpose of study

Depending on what is necessary to be accomplished the research can be divided into different classifications:

- Exploratory research
- Explanatory research
- Descriptive research

The purpose of exploratory research is to find out what is happening, to seek out new insights and ask questions about situations. It also aims to assess phenomena in a new light and generate ideas and hypothesis for future research. A study can be concerned with more than one purpose; the purpose can also change as the study develops. Exploratory research is almost exclusively of flexible design. Descriptive research seeks to portray an accurate profile of persons, events or situations. Explanatory research seeks out an explanation of a situation or a problem, traditionally but not necessary in the form of causal relationships and explains patterns to the phenomenon being researched (Robson, 2002). This research was exploratory as a limited amount of research has been completed on the re-use of furniture in community waste schemes and new insights are required.

3.2.2 Research Strategy

The need for a case study arises out of the desire to understand complex social phenomena (Yin, 2003). It is a strategy for doing research which involves an empirical investigation of a particular contemporary situation and to study phenomena in more detail. The case study could be made up by an individual in a single setting, a small group, or a larger unit such as a department, organization or community (Miles & Huberman, 1994). Chosen research strategy for this research was case study as this is a suitable method used in exploratory research.

3.2.3 Data Collection

Right methods of investigation should be used when collecting data. The choice of method is partly dependent upon what kind of information is sought, from whom and under what circumstances. There are two approaches for collecting data:

- Quantitative strategy
- Qualitative strategy

Quantitative data is usually in the form of numbers and therefore the collection stage requires a tight pre-specification of the data to be collected. Qualitative data is describing situations and actions and is usually in words, but could also be photographs and videos (Miles & Huberman, 1994; Robson, 2002). Both qualitative

and quantitative data were collected by the author for this study using multiple methods, e.g. via interviews, document analysis, observation and ethnography.

3.2.3.1 Interviews

Interviews are a flexible method of finding things out. Interviews can be structured in three different ways:

- Fully structured interviews
- Semi-structured interviews
- Unstructured interviews

Fully structured interviews have predetermined questions with fixed wording, usually in preset order. The questions are although formed so that it opens for further comments. In semi structured interviews the interviewer has a certain topics that wish to be answered but have freedom in what order to ask the questions and how to formulate them. Unstructured interviews are not standardised and in depth interviews (Robson, 2002). Semi-structured interviews were most suitable for this thesis. This approach gave the author the flexibility to change formulation on question.

3.2.3.2 Ethnography

Ethnography is a data collection method that can be used for social science research and it tends to be descriptive. It involves extended contact with a given community, following day to day events, direct or indirect participation in local activities, with particular care given to the description of local particularities; focus on individual's perspectives and interpretation of their world; and relative little pre-structured instrumentation. An interest exists in relation to everyday situations. Data for this study was collected using the method of ethnography as the author spent three weeks at NOAH participating in day to day events. The author spoke to customers of NOAH, donators, and workers and volunteers at NOAH. It gave the author the possibility to see how re-use of furniture works from the perspectives of people using community waste organisations or schemes. The author also used the method of observing events that later was written down in memos.

3.2.4 Data Analysis

After collecting the data the author must find a way to analyse all the information gathered. Codes and clustering is a method that is useful for a researcher when having to analyse a large amount of data. Tags or labels are used for assigning units of meaning to the descriptive or inferential information compiled during a study. Some words, phrases, sentences or whole paragraphs may be repeated in the text to be analysed and because of this be of significance in its given context. Codes are used to categorise the words or phrases and clustered to relate to a particular research question. The clustering makes it possible to make conclusions from the results (Miles & Huberman, 1994). The author analysed qualitative data, which formed the basis of the main data set using a coding and clustering technique. The coding scheme was developed from research questions and findings from case studies. The Coding Scheme can be observed in Appendix A.

3.2.4.1 Conceptual Framework

The conceptual framework describes what things need to be considered in a study and the relationship between them (Robson, 2002). Two conceptual frameworks was developed for this study, see section 2.9 in Chapter 2 and Figure 5.1 in Chapter 5. See section 2.9 in Chapter 2 for further explanation of Conceptual Frameworks.

3.2.6 Quality of research

The quality of the research can be tested through consideration of the following factors:

- Objectivity
- Dependability
- Credibility
- Transferability

The general methods and procedures should be explained in detail and explicitly to provide a picture of the background information of the study. It should be possible to follow how data was collected, processed, transformed and displayed for specific conclusions. Objectivity put focus on these queries. Dependability means the study should be consistent, reasonably stable over time and across research methods. Data quality checks should be made e.g. for bias, deceit and informant knowledge

ability. The studies should also be credible and make sense, both for the reader and the people being studied. A study's transferability to another context shows to what extent the results can be generalised. Generalised results mean that connections can be made to unstudied parts of the original case or other cases. This is decided by the sampling being theoretically broad enough and the reader being able to connect what is said in the study with their own experiences (Robson, 2002).

4.1 Summary of Research Design

The research methodology describes how a research ought to be carried out. Different methods can be chosen in order to collect, analyse and verify data to fulfil the aim of a study. The purpose of this research was to carryout an exploratory study on the phenomena of re-use in a community waste scheme, NOAH. This could put new light on re-use and generate ideas and hypothesis for future research as there is a gap in knowledge about the matter. For this a case study was chosen where various data could be collected from observations, semi-structured interviews and documents.

4.2 Application of Research Design

The Environment Agency of England and Wales is developing a life cycle analysis tool for municipal waste that will allow local authorities to model the environmental impacts of different waste management systems, and to make decisions based on evidence, e.g. results of LCA (Thomas et al, 2005). With information on what a second hand furniture actually substitutes on the market place the environmental consequences of re-using furniture could be estimated. It is therefore necessary to study people's alternative consumption options to identify the substituted utility. An LCA does not include social and economic perspectives that are relevant for understanding the big picture. Therefore there is a need to understand the motives behind consumption behaviour and conditions that need to be fulfilled in order for furniture to be re-used. This study will be exploratory as the author aims to explore the implications for the re-use of furniture and because there is a gap in knowledge on re-use compared to disposal, energy recovery and recycling. The author decided to focus research on re-use of sofas because it the one of the items of furniture that is in biggest demand in NOAH.

This study is a qualitative research. Two case studies were chosen to collect necessary data to fulfil aim of thesis and answer the research questions. Both case studies chosen were community waste schemes selling second hand furniture. The case studies were selected with the criteria that they have to be charity shops that are members of the Furniture Re-use Network and that are situated in Bedfordshire, UK. The main case study chosen was a charity shop based in Luton called Furniture Link. It was a part of NOAH Enterprise. Second case study chosen was Bedford Furniture Link situated in Bedford. Bedford Furniture Link had similar activities as Furniture Link in Luton but was smaller in size. More focus was put on one case study, NOAH enterprise; Bedford Furniture Link was used mainly to verify information collected from the main case study. More information about selected case studies can be found in Appendix B and C. Because of restricted time the author decided not to chose a third case study to verify the information further. Generalisations are made for studied case studies but results and conclusion from this study cannot be assumed to represent all charities accepting donations and selling furniture.

Direct observation was used as a method for collecting the data necessary for this study. The author spent three weeks in Furniture Link in Luton and made notes everyday about what happened in the charity later summarized in a memorandum (See Appendix E). The author also collected data using the method of ethnography, following day to day events, and to some extent also participated in some activities carried out at NOAH. The time spent at NOAH gave an insight in peoples perspectives on re-use of furniture. Administrative documents and records were gathered from site and interviews were carried out with people in the organisation. Donators and recipients of furniture were also targeted for semi-structured interviews. Semi-structured interviews were chosen as method for interviews in order for the author to be more flexible when interviewing people (Yin, 2003). The interview questions (See Appendix F) were developed in consideration for objectives and research questions of the study. The research questions were in turn developed from objectives of the study and literature. Research questions were slightly modified after spending a couple of days collecting data from case study one, NOAH. In total 29 in depths interviews were done with recipients and donators; 12 donators and 17 recipients of sofas. An overview of how respondent answered to asked questions; see Appendix O. Taping an interview is one way for the author to be allowed to concentrate on the interview. Only the interviews with the recipients and the

administrator at NOAH were digitally recorded as they were made face by face. People that were taped signed an interview consent form to approve the author recording the interview, see Appendix G. Interviews with the donators were not taped as those interviews were carried out by phone and because of the chance of the interviewees deciding to decline participate in the interview if recorded. The interview with the administrator at NOAH was transcribed and can be found in Appendix H. Transcribing means putting the interview on paper in words on paper (Robson, 2002). When the interview was transcribed difficulties were experienced translating everything that was said because of the bad quality in the recording, and background noise as it was not possible to find a room where the interview could be held in private. Other more informal interviews were also held during the time spent in NOAH. A complete list of both formal and informal interviews held at NOAH can be observed in Appendix D. Interviews held and memos were analysed using the method of codes and clustering. Codes were developed from formulated research questions and key points from literature review.

4.3 Summary

This chapter detailed the research methodology developed to realise the aim and objectives of the study. Consideration was given to research design and how this was applied. The next chapter details the main findings of the study.

CHAPTER 4

RESEARCH FINDINGS

4.1 Introduction

This chapter highlights the findings of case study research in pursuit of a socio economic evaluation of a community recycling scheme. This is principally concerned with NOAH but provides data pertaining to Bedford Furniture Link as reference. Findings from data collection are presented in several steps, Information about NOAH, Participant Details, Conditions for re-use, Motives for re-use, Life span and Functionality and findings from Bedford Furniture Link are presented. All citations and references in this section represent personal communications taken from the interviews held with participating respondents. The findings are summarised in the final section.

4.2 Case Study: NOAH

Data was collected using a case study methodology. Two charity shops were selected through the Furniture Re-use Network in the area of Bedfordshire to collect the necessary data needed. NOAH Enterprise in Luton was targeted to be the main case study and the main findings are based on information collected from NOAH. The data collected comes from semi-structured interviews with donators and recipients of second hand sofas, formal and informal interviews with people at NOAH, documents and observations. These findings were put in relation and verified by information collected at Bedford Furniture Link in Bedford. Findings from Bedford Furniture Link are presented at the end of this chapter. Using the approach of Miles and Huberman (1994) the data was analysed using the method of codes and clustering. Given the exploratory nature of the study, all valid findings were brought forward to give new insights and provide a strong platform for future research.

Luton is a town situated in Bedfordshire in UK. Luton has a population of approximately 185 000 people. Ethnic groups account for 35.0% of the total population, compared with an average of 12.5% for England and Wales. Overall, Luton ranks as the 103rd most deprived local authority in England out of 354.

Bedfordshire as a whole however, shows a much lower deprivation score overall as it ranks as the 127th most deprived county in England out of a total of 149. Luton has some areas that are more deprived than others. For the year of 2003-04, 6.8% of the working population of Luton was unemployed compared to 5.0% of the national population, meaning that Luton's rate of unemployment is higher than the country as a whole (The Safer Luton Partnership, 2005).

NOAH Enterprise is a charity situated in Luton (for more information see appendix B). Through its Furniture Link division it sells new and second hand furniture for lower prices to the public and people on benefits and income support. The money it raises goes to support its welfare work that helps the most disadvantaged in the local community and people with drug and alcohol problems. NOAH calls itself to be a Social Enterprise. It can also offer training and volunteering opportunities for people in need of help. The furniture sold in Furniture comes mostly from donations from house clearances, hotel clearances, local donations and high street store seconds (NOAH, 2006). NOAH does not need a waste license to operate and is because of this not allowed to charge people for collecting waste (Manager NOAH Furniture Link, 2006). Neither does Luton Borough Council charge households for sending bulky waste to the tip (Luton Borough Council, 2005a).

Luton Council is taking part of a regional campaign called 'Choose2Reuse' to encourage people in the community to donate and re-use old furniture through charities (Luton Borough Council, 2005b). People are informed that re-use saves landfill space and does not use energy and raw materials as new products are not being made (Choose2Reuse, 2006). An example of the information screened at the home page of Choose2Reuse can be studied in Appendix M.

4.3 Key organisational criteria determine acceptance of furniture at NOAH

The criteria for successful donations found in the study are detailed below. These are grouped under headings for the different criteria that need to be locked upon in order for furniture to be accepted by a community waste scheme such as NOAH. This criteria was identified through the analysis of primary and secondary data collected from NOAH. Furniture and in particular sofas was the target for this research.

4.3.1 Criteria 1: compliance with regulation, Health and Safety

NOAH can only accept sofas that comply with the Furniture and Furnishings (fire)(safety) Regulations 1988 according to law. Sofas that are accepted must have a label saying that it complies with the Fire and Safety Regulations 1988 regulation. The label shows that the furniture is flame resistant. NOAH receives phone calls everyday from people that wish to donate furniture. At the time of the field study about half of all the donations of furniture offered to NOAH were declined. Reasons for sofas and beds being refused was that they did not comply with Health and Safety Regulations. (See criteria for accepting furniture in Appendix I) Sofas and beds were otherwise two of the furniture in most demand of in NOAH and were desired donations by NOAH at the time being. However, some exceptions were observed; NOAH sometimes accepts furniture, such as sofas that do not comply with health and safety regulations. However, this furniture is not resold but is more an act of charity to for example old people so they do not have to get rid of it themselves. NOAH disposes it in turn and it goes to the tip or is recycled. Some furniture occasionally breaks when it is being handled and cannot be sold to potential buyers or people that have bought the furniture and are waiting for it to be delivered. NOAH also accepts electrical equipment but this equipment needs to be tested before it is resold as it does not necessarily have to work but it does need to be safe.

4.3.2 Criteria 2: condition

Sofas accepted must be clean and in good condition, sofas cannot be too worn or torn. Donations accepted by phone can later be refused at collection point. A sofa to be collected by NOAH was later declined as it was white and not clean. The drivers that came to pick the sofa up thought the stains would not come off even if NOAH would have washed it.

4.3.3 Criteria 3: demand for Furniture

NOAH does also consider the demand for the various products donated before deciding to accept furniture. Because of limited space not all furniture can be accepted. Furniture with a high demand is prioritised such as sofas and beds and dining tables with chairs and electrical appliances, e.g. washing machines. A high turnover of furniture assures people will come back NOAH will have new furniture to offer. Table 4.1 gives number of sofas received January to April 2006. To study

numbers of furniture sold and received at NOAH January to April 2006 in detail see Appendices K and L.

Category name	Average weight items kg	Total items number	Items per category %	Total weight kg	Weight per category %
Sofa	40	110	4%	4400	6%
Armchair	25	76	3%	1900	3%
2 piece suite	65	14	1%	910	1%
3 piece suite	90	111	4%	9990	15%
4 piece suite	90	3	0%	270	0,4%
Sofa	20	88	4%	1760	3%
3 piece suite	50	40	2%	2000	3%
Futon/sofa bed	35	1	0%	35	0,1%
Sofa bed	35	2	0%	70	0,1%
Sofa bed	85	11	0%	935	1%

Table 4.1 Donated Sofas Sofas received between January and April 2006. First column describes type of sofa received. Second column describes weight of each item. Data on weight is coming from the Environment Agency in Bristol. Third column gives number of sofas received; fourth column gives percentage of sofas donated of furniture received to NOAH.

4.3.4 Condition 3: access

NOAH can not collect furniture such as sofas that are too large, for logistical reasons. The sofas need to be able to fit through the doorways. NOAH does neither delivers or collects large furniture where there are a lot of stairs and no lift. Care must also be taken to the working environment for the staff. Sofas that are accepted need to be within NOAH's collection area, within a 15 mile radius from Luton. NOAH give donators calling that are not within NOAH's collection area, recommendations to call the Furniture Re-use Network to find their nearest charity shop accepting furniture. People are encouraged to measure the furniture before buying it, however misjudgements still happen and people have to return things they bought. During the authors field visit the same sofa was bought and returned twice as it was too large to go into the flat that it was meant to be.

4.4 Attributes of participants in NOAH

NOAH's business depends on people calling in to donate furniture and on people coming to NOAH to buy furniture. This study noticed differing consumption behaviour between people donating and buying second hand furniture.

4.4.1 Differences in Income

Findings from the case study show that the spending patterns of people donating sofas seemed to differ from income of recipients of second hand sofas. The majority of the people donating sofas to NOAH seemed to be people with an income enough to be able to buy a new sofa. Three of donators could not even consider buying second hand to be an option. A lot of the customers at NOAH are people with less income. The majority of the recipients of second hand sofas say they would like to buy a new sofa but could not afford it or had decided not to, because it was cheaper with second hand and money could be spent on other things. *“Because I don’t have enough money to buy a new one”* (Recipient Number 1). This study indicates that people donating sofas have a higher income than people buying second hand sofas, although this does not have to be the case. *“I have always saved money for buying new furniture. I have not had the need to buy second hand”* (Donator Number 10). Being an observant on one of the vans at NOAH for one day, looking at the procedure of collecting and delivering furniture on the field, and by talking to people in NOAH confirmed the impression of the donators I had got during my interviews. The deliveries were in areas of Luton that were more affordable to live in, whilst donations were made in areas where accommodation is more expensive. One of the donators had a chest of drawers delivered at the same time from NOAH, however it was a new and not a second hand. Some of the donators do not understand why furniture is being re-fused because it is in bad condition as they think people buying second hand furniture can settle with a poorer condition on furniture.

4.5 Differences in motives for Re-use

The study showed that people have different motives for donating furniture and receiving second hand furniture. These motives have been divided into altruistic or non altruistic motives. Altruistic motives refer to choices that benefit and help other persons. Recycling can entail environmental awareness and altruistic behaviour (Barr, 2003).

4.5.1 Social Motives of NOAH

One of the goals of NOAH’s business activities is to “help the most disadvantaged in the community”. The money that NOAH brings in goes to support NOAH enterprise’s activities by helping those in need in society. The motive for NOAH’s business is altruistic.

4.5.1.1 NOAH as a waste disposal channel

Luton Borough Council picks up bulky waste such as sofas free of charge. A trend could be seen from respondents that this was the last option for people calling in to donate furniture. They thought their furniture was in too good of condition to be disposed. "*I called the Salvation Army first but they could not accept it so they suggested me to call NOAH.*" (Donator Number 10) People deciding to donate their sofas do so as they think this is a better choice than throwing it away. "*It is too good to be thrown away.*" (Donator Number 3) They would rather pass it on to someone else. Donator's decisions to donate their sofas indicate environmental behaviour and altruistic motives.

One of the recipients of second hand sofas said reason for buying sofa at NOAH was because it was for a good cause. However same person also said reason for choosing NOAH was because it was a cheaper than buying new furniture.

4.5.1.2 Financial motives of participants

NOAH enterprise advertises in the local newspaper and on its vans to raise the awareness among people about NOAH. People call in to donate furniture that is sold and passed on to people that wishes to buy them. NOAH Furniture Link can offer furniture for less money for both people on low income and higher income. All furniture at NOAH had two price tags, one for people on income support and one for all the rest. Income is according to this study the primary and major factor that affects people's choices to buy second hand sofas. Motives for buying second hand furniture is less altruistic. People purchase their sofas in NOAH because it is cheaper, they wish to save money or they simply cannot afford to buy new sofas. Their choices could be different in another financial situation. NOAH is also offering new furniture as it is believed to attract people that would otherwise not come to NOAH. Some of these people could possibly be attracted to buy second hand goods. Deliveries are free of charge with expenditure above £100 for the public and free for persons on benefits.

4.5.1.3 Attitudes to second hand furniture

From the coding and clustering method it was found that about half of the informants, \$both donators and recipients, preferred buying new furniture instead of second hand furniture. Second hand furniture is the solution, or could be an option considered primary in case of financial difficulties for these people. Although half of the

respondents prefer new furniture not all had a clear reason for why. Some didn't like the fact that the furniture had been used prior to donation by somebody they didn't know while some people thought new furniture last longer. "*If I had the money I would buy it new. It last longer*" (Recipients Number 3). "*I don't like other people's things*" (Donator Number 5). Beds seemed to be the item people apposed to the most. NOAH seemed to have realised this bought in and offered new beds. According to the code and clustering system one third of the buyers of second hand furniture stated they liked second hand furniture. "*I like Second Hand*" (Recipients Number 6). "*I am an OXFAM shopper*" (Donator Number 9). The four questioned landlords buying second hand sofas did choose to buy second hand sofas instead of new as the opinion among the landlords seemed to be that people renting flats tend not to take care of the furniture. "*Not for a rented property*..." "*because to be honest, people just wreck them*" (Recipients Number 7) One of the landlords said that the tenancy could get new furniture if the person was willing to pay extra for it.

4.5.1.4 Convenience and Liability

The next biggest incentive for donating sofas found by this study was that it is convenient. NOAH tries to pick the donated furniture up within a couple of days. Alternatives to donate furniture to NOAH for the donators were to let the furniture go to the tip or putting ads in the newspaper or advertise on the Internet. Advertising in the newspaper or on the internet seemed to be connected with extra work. A large share of the people donating furniture to NOAH was moving to a smaller place and needed to get rid of their furniture. NOAH seemed for the donators to be the optimal way to get rid of their sofas they no longer desired but was for some reason not the optimal place to buy furniture for their home.

Convenience was also a factor affecting the customers of NOAH. The furniture is in stock and can be delivered within a couple of days. The opinion was also that NOAH can offer a variety of good furniture with good quality. All of NOAH's sofas and beds have a Furniture and Furnishings (fire)(safety) Regulations 1988 label. "*Because it is better quality, good price, and it is legal*..." "*It is legal Furniture with Fire Labels and all that*" "*Everything is under one roof*" (Recipients Number 8) Both donators and recipients of second hand sofas seemed to rely on NOAH's reputation and good name and some have been recommended to use NOAH. "*I have used NOAH before.*" (Donator Number 12)

4.5.2 Availability of alternatives

The buyers of second hand sofas, according to this study do not have the option to choose the product most desired to be consumed because of financial constraints. The alternative to buying a second hand sofa found by this study is, for a recipient to buy another second hand sofa in the same price category. Therefore, the offset utility for a second hand sofa is a second hand sofa. Some people would as from earlier results presented above, prefer to buy new furniture if they had the possibility. However this is not something they actually could do. *"To go out and buy a new sofa is very expensive"* (Recipients Number 13) *"No way, it is too expensive"* (Respondent Number 16)

4.5.3 Perceptions of Lifespan

Not all second hand sofas are made of the same material and production process, therefore the environmental effects of one second hand sofa might differ from another. The quality might also vary which might affect the life span of the sofa. The amount of years a sofa can be used is not necessarily the amount of years it is used. The user may decide to tip the sofa instead of donating it even if can be re-used for another few years. Motives for a persons' decision to donate a sofa have been discussed above. The findings from this study show, excluding the quality of the sofa to be a factor that affects number of years it can be used, that amount of years a second hand sofa will last depends according to this study on composition of the household, if there are children in the household, and how it is used. The amount of years it will be used depends in turn on whether it becomes worn out or if the person likes to change the sofa. The owner of a second hand sofa cannot always say how many years the sofa will be in possession. Intended use might differ from actual use.

4.5.3.1 Remaining years of use and life of sofas

People donating sofas to NOAH do so for different reasons. They might be moving and are no longer in need of a sofa or they wish to change the appearance of their household by buying new furniture. A finding from this study showed that people donating sofas estimate the sofas to have a longer life span than the recipients. A majority of the donators said the sofas could last five to ten years although some stated that it depends on if the household have children or not as they might play in the sofa and it could break easier. *"It depends on use, not long with kids"* (Donator Number 12). The majority of the buyers of second hand sofas approximated the sofa

to last one to two years and about one third thought it would last between 5-10 years. Half of the recipients expected they would use it between 1-2 years. Some of the respondents estimated years of possession to be longer than expected remaining years the sofa could be used. These answers could be a consequence of misinterpretations of the questions asked or because they have not thought the answers through. Furthermore the results are ambiguous concerning people thoughts on expected years of possession and remaining years the sofas can be used. The people buying second hand sofas said they were expecting to have the sofa until it breaks or until it gets to dirty or in to bad condition to be used. "As long as it last" (Recipients Number 7). Still they could consider give the sofa back to NOAH when it is no longer desired or pass it on to someone else. However, the results give and indication that the people that bought second hand sofas did not necessarily do so with the intention to have it until the end of its life. One of the donators had bought her sofa second hand at NOAH and was donating it back after six month of use. People can, for this reason not necessarily be expected to have the sofa until it's worn out depending on if the person or charity is willing to accept the sofa to be donated. If the sofa is re-usable or not, it will be up to the receiver of the sofa to decide on, for example NOAH or another charity, not the donator. A majority of the recipients of second hand furniture had bought second hand furniture before. The sofas they had bought have lasted between 1-5 years. One landlords had bought 40 sofas in NOAH over the years and was expecting to have them one year before getting rid of them.

4.5.3.2 Offset ratio

Selling second hand sofas is a multifunction process involving sofas with various quality and lifespan. Because of this it is difficult to identify the life span of each individual sofa. The lifespan for calculating an offset ratio of a re-distributed sofa will depend on estimated remaining years of usage by the recipient. The estimated lifespan of second hand sofas for deciding an offset ratio is done on the assumption that all lifespan are the same. However, the offset utility of a second hand sofa is as presented above another second hand sofa. Therefore is the offset ratio between a re-used sofa and another second hand sofa 1:1.

4.6 Summary of findings from NOAH

Key findings from data collected are summarized in bullet points below:

- Different policies within NOAH, by local authorities and by the British Government affect number of Furniture that is donated, accepted and redistributed by NOAH.
- Policies or criteria developed by NOAH are: furniture and sofas need to be in good condition, in manageable size, and be within defined collection area. There needs also be a demand for a piece of furniture in order for it to be accepted.
- People have different motives for receiving and donating furniture to NOAH. People can also be constrained by their income and don't have the option to buy new furniture. Donators seem to be people on higher income that have the option to buy new furniture. People donating are doing so more out of altruistic motives.
- People on low income do not automatically accept furniture in poor condition because they cannot afford new furniture. NOAH can offer quality furniture to its customers as only furniture that meets criteria from NOAH and policies such as the Fire and Safety Regulation 1988 can be re-used.
- There are socio economic concerns of re-use that an LCA does not account for such as; not excluding people with less income from consumption, helping disadvantaged people and people in need in society, and providing employment.
- Re-use does decrease the demand for new furniture as people buying second hand furniture does not have the option to buy new furniture. It delays the amount of waste going to alternative waste treatment methods between 1-10 years depending on household.

4.4 Case Study: Bedford Furniture Link

Bedford Furniture Link aims to sell affordable furniture to people on low income and divert usable household goods from the waste stream. It also aims to provide training and volunteering opportunities for all members of the community, particularly for people who are disadvantaged or excluded. It accepts donations from households and house clearances and is like NOAH not allowed charging for collecting furniture. Bedford Furniture Link does only sell second hand furniture. Some furniture is excluded for the general public to buy. Only people on benefits are allowed to buy mattresses. All furniture that are being accepted has to comply with the Furniture and Furnishings (fire)(safety) Regulations 1988. Sofas accepted must also be clean and in good condition and not to worn and torn. Because of limited space not all furniture can be accepted. At the time of the visit no more sofas were accepted as the stock was filled. Bedford Furniture Link had had to increase criteria for furniture being accepted as not all furniture accepted could be sold and some had to go back to the waste stream again. Occasionally NOAH and Bedford Furniture Link did help each other by exchanging furniture. When choosing the case studies it was not known that the two charities had regular contact and was cooperating.

In Bedford both Bedford Furniture Link and households are being charged for taking bulky waste to the tip. Because of this Bedford Furniture Link feels more people are willing to donate as they don't want to pay for disposing. This also means Bedford Furniture Link have to be picky about what they collect. What is not sold in Bedford Furniture Link is recycled as much as possible. Sofas are being torn apart and being recycled in materials. One person buying a sofa is interviewed at Bedford Furniture Link. His alternative to buying a second hand sofa could be to buy a new sofa, but only if he was willing to be in debts. He was planning to save money for one year and then buy a new sofa as he would prefer to have a new sofa. No interviews were held with donators at Bedford Furniture Link. For this reasons no conclusions can be made about motives for their behaviour. For more information about Bedford Furniture Link, see appendix C.

CHAPTER 5

DISCUSSION

This Chapter presents the discussion of the research findings in light of the findings of the literature review. It will discuss identified phenomena related to re-use of furniture that could be explored further in additional research. Comments in the discussion about charities will refer to NOAH and Bedford Furniture Link.

Extraction of natural resources and generation of waste are taking place within the technical and economic system in society (Perman et al, 2003) but is also linked to the political, ecological and social environment (Gowdy & Seidl, 2004). New technologies may result in more efficient ways to manufacturing new products and waste for less money. Factors that could lead to changes in consumption patterns and changes in social structure as people with less money could possibly afford product being cheaper than before. Consequently, it could result in an increased (or decreased) burden on the environment. New regulation could be formulated to control consumption patterns and protect human health. In terms of re-use of furniture, and in particular sofas that have been the focus for this study, new furniture is still too expensive for all people to afford. Community Waste Schemes, such as Charity shops selling second hand furniture, have been seen as a sustainable solution for redistribution of used furniture that could subsequently provide social benefits to the local authority and the community (Defra). Socio economic behaviour is a combination of people making decisions out of moral motives and values as well economic self interest (Morong, 2006).

There are two dimensions to re-use of furniture. First it is stated that re-use reduce the burden on the environment with less resources having to be extracted with consequences such as pollution as a result. Second it reduces the amount of waste going to landfill. The author questions both arguments for re-using of furniture. Findings from this study discovered that that second hand sofa does not actually substitute production of new sofas but second hand sofas.

There are different motives for re-using furniture, both from the society as a whole and for the individual person. The expectations on Luton Borough Council to act upon the triple bottom line of environmental, social and environmental solutions can be expected to be higher by stakeholders than expectations on the individual customer. The Borough Council should set a good example in how it expects the rest of the society to act. A sustainable waste management refers to the treatment of waste in that it should be environmentally effective, economically affordable and socially acceptable (McDoughall, 2001). This research has studied motives for re-use of furniture from an individual perspective of people donating furniture and people buying second hand, including characteristics of both donators and recipients. Behaviour of a household, both donators and recipients affects the community.

The Luton Borough Council is part of a campaign called 'Choose2Reuse' to encourage people to act in a more socially responsible behaviour and to re-use. From findings on what decides peoples motives for donating furniture and buying second hand furniture it can be questioned who such campaigns is aimed for? Most people that participated in interviews for this study would have preferred to buy new furniture. People donating were according to this study people that, in relation to recipients of second hand furniture, bought new furniture as they had the option to do so. Recipients of second hand furniture were discovered not to have the option to do so or did not see it as an option, last view most represented by landlords. People buying second hand furniture did so because they saw it to be a cheaper option than buying new furniture and because income were a constraint to their consumption options. These findings are supported by findings from the literature review (Williams & Paddock, 2003; Williams, 2002). People donating furniture seemed therefore to differ from people that bought second hand furniture in terms of income and options of consumption. Choose2Reuse in Luton promotes to re-use as it "Doesn't use up energy or raw materials as new products are not being made" (Choose2Reuse, 2006). This statement cannot be applied to people on low income buying their furniture in Luton. Previous research carried out has shown that by recycling materials there is an environmental benefit as the environmental burden of manufacturing new textiles is avoided (Woolridge, 2006). Findings from this research do not support findings from previous research in terms of re-use of furniture (Woolridge, 2006). People buying second hand are not reducing the demand for new furniture being manufactured as they cannot afford it to buy new; the furniture being substituted by a redistributed sofa is another second hand sofa. Neither landlords

see new furniture to be an option for letting a property. The statement from Choose2Reuse as earlier read could however be applied to people buying their furniture in a charity shop with options to buy a new second hand sofa. Campaigns like Choose2Reuse in Luton seem therefore to be targeting more on people with higher income as they are the people that have the options to choose to buy a new sofa or possibly a second hand sofa. People on low income are already buying second hand furniture. Consumption behaviour by recipients of second hand furniture seems to be less altruistic concerning motives for consumption, because of financial motives. (See appendix M for information from the campaign of Choose2Reuse in Luton) Furthermore, people are also encouraged by the campaign to donate their furniture to charities as it reduces the amount of waste going to landfill. It is more difficult for people buying second hand furniture to donate back a sofa as it might be in the end of its life. The life span of a sofa is determined by a household and how it is used. If the furniture breaks or gets too worn the household won't be able to donate it back to the charity. Furniture accepted by NOAH must meet up to certain standards in order to be accepted. NOAH does not accept sofas or furniture in too bad condition, furniture needs to be clean and not to worn and torn. Donations studied in this research were believed by the author to be done out of altruistic behaviour, as supported by findings from the literature review (Harrell & McConochia, 1992). Donating was seen to be a better option than throwing away by the respondents participating in the interviews for this study, reflecting an altruistic behaviour in terms of behaviour of donators. Recipients of second hand furniture could however be assumed from responses to have, similar to Donators more of an altruistic behaviour concerning disposal of product after use. If a sofa still could be used, recipients of second hand furniture could consider donate the sofa back after use even if it would no be not possible reflected from earlier arguments.

Income cannot explain why a majority of people, both donators and recipients of second hand furniture would prefer to buy new furniture. This seems more to be controlled by other factors such as attitude and from motives people sometimes cannot explain. Goods can sometimes give status to a person and is a way for a person to express identity (Frijters, 1998). In many of the articles read by the author when searching information on re-use of furniture on the internet, it was in most cases stated that second hand furniture is for people with low income. Even NOAH and Bedford Furniture Link saw themselves according to information on their web pages to offer furniture for disadvantaged people and people on low income. The

general opinion seems already to be created that people on low income buy second hand furniture. There may be nothing wrong with this and maybe re-use is already fulfilling its purpose even without all shares of the public using it for purchasing furniture including those that can afford to buy new furniture.

Re-use is an alternative waste disposal method that can reduce waste going to landfill. However, this study has touched upon the fact that even though re-use is a preferable waste method in the waste hierarchy, it is not always the preferable means of consumption of household. In order for furniture to be re-used it demands a market, a supply and demand for second hand furniture. Even though a supply and demand exist there need also to be a channel that can redistribute the furniture. The channel studied for research has been two charity shops, with more focus being put on one; NOAH. In order for furniture to be accepted and redistributed by a charity certain criteria needs to be meet. The furniture needs to be in good condition and safe according to regulations as for example the Fire and safety Regulation 1988, there needs to be a demand for the furniture and enough room to storage the furniture. The Fire and Safety Regulation is a policy that is constraining the use of second hand furniture. The furniture cannot be too large, why kilos of furniture received by a charity (see table 4.1) that is important in an LCA can be considered to be of less importance for NOAH. Size of the furniture received is of more importance. All the criteria that need to be fulfilled in order for furniture to be re-used has resulted in that about half of the furniture being offered to NOAH is refused. See developed conceptual framework table 5.1 below, the Re-use pyramid.

Estimated use of a second hand sofa is between 1-10 years. Most respondent buying second hand furniture said they would use it between 1-3 years. It can therefore be assumed that amount of bulky waste going to landfill will not really be reduced in the long term but be delayed reaching a landfill site, unless recycled. It can therefore be discussed the environmental benefit of re-using furniture in the long run. Re-use seem to be of more social value to society than a sustainable solution from an environmental point of view. However, this is only an assumption and view from the author than might be proved wrong with further research.

An LCA can help account for the environmental impact being offset by re-using sofas (Ekvall, 2000). However, to know what environmental burdens that are offset by re-using a sofa information is needed on what furniture is being substituted by re-using

a sofa (Weidema, 2003). It could be a new sofa or a second hand sofa. According to theory of LCA, a flowchart with included activities can be designed in order to determine the environmental impacts of re-using a sofa (Baumann & Tillman, 2004). The flowchart of a re-used sofa and the sofa being substituted is according to findings from this study the same, as the offset utility of a second hand sofa is a second hand sofa. The environmental impacts associated with re-use in community waste schemes such as NOAH are not quantified in this research. This research was exploratory and focused instead on the socio economics behind this flowchart. See Figure 2.3 for developed flowchart for this thesis.

The Local Waste policy in Luton and Bedford seemed differ somewhat. Bedford Furniture Link had to pay for taking waste to the tip meanwhile NOAH could do it for free. According to the manager of Bedford Furniture Link it put more pressure on Bedford Furniture to be meticulous when accepting furniture as people had more motives to donate furniture as they otherwise had to pay for it to go to the tip. Bedford Furniture Link had also had to increase criteria to prevent furniture ending up in other waste less preferable treatment method because furniture could not be sold in the charity shop. That could be recycling or landfill. Bedford Furniture Link did keep a much better track on waste generated. As can be read by Ekvall (2000), the supply and demand for recycling and re-use can be more or less influenced by for example local authorities who set policies and framework for recycling. NOAH did have high criteria on condition on furniture being accepted through donations so furniture could be sold and minimum waste created. People at NOAH had little knowledge on environmental concerns in relation to energy use, water use although washing machines was tested everyday, and did not keep track on number of miles the vans was used for every day.

Figure 2.5 is developed from data collected from the case study. It explains the relation between furniture that is offered to the specific charity studied and the amount of furniture that actually can be re-used. The conceptual framework is not just representing sofas. The findings from this study showed that fare from all furniture offered to the studied charity NOAH was accepted by the charity. The bottom section of the pyramid represents all furniture that is no longer desired by present user. Different factors will affect the person's behaviour to donate the furniture. These factors could be altruistic as for example doing something good for the environment and less altruistic motives such as convenience and economic

motives and attitudes. Furniture that is donated and offered to the charity reaches the next step in the pyramid. To be able to accept the sofas these must comply with Fire and Safety Regulation, be in good condition and reasonable clean. The charity must also have enough room to accept the furniture and there needs to be a demand for the furniture. Some furniture that is donated must also be disposed of or recycled as they are not or cannot be resold for different reasons. Furniture that is redistributed to other users is the furniture that reaches the last step in the Re-use pyramid. Conclusion is that fare from all furniture and sofas donated is being re-used as demonstrated by the top of the Re-use pyramid. Even if there if people are willing to take their responsibility and donate sofas and redirect bulky waste from the waste stream it cannot always be meet because of different barriers. The different areas in the pyramid are not proportionate to furniture that is to be disposed and furniture re-used.

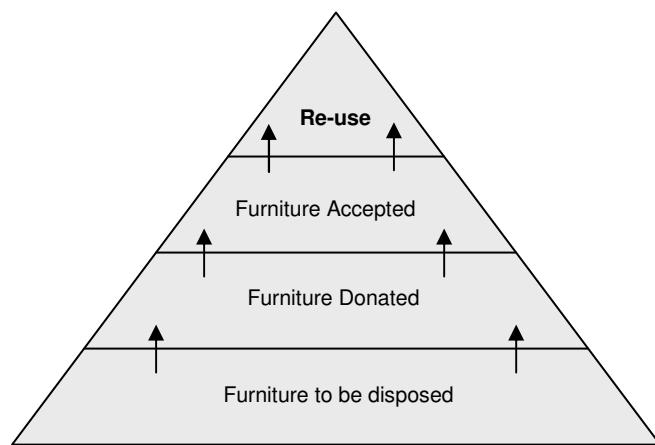


Figure 5.1 The Re-use Pyramid.

CHAPTER 6

CONCLUSIONS

This chapter will summarise the major conclusions from this research. It will also provide a review of aims and objectives and give recommendations for further research.

The aim of this thesis was to complete a socio economic evaluation of furniture reuse in community waste schemes with a view to informing environmental assessment (Life cycle Assessment) and local waste policy. Three objectives were developed in order to answer the aim. The aim of the thesis was met. The author completed a socio-economic evaluation for this thesis of a community recycling organisation and considered reuse. The study was exploratory as little research has been completed in this area. It entailed the study of complex phenomena which were difficult to separate from their context, i.e. donator behaviour from the community recycling organisation. The author did therefore adopt a case study approach to explore these complex phenomena, to open the 'black box'. The data collected from the chosen case was analyzed using the method of codes and clustering. Codes are related and developed from the interpretation of the existing literature review.

The intentions of this study were first to do an LCA of re-used sofas and evaluate reuse as waste treatment methods compared to alternative treatment methods. LCA can be considered to evaluate the offset utility of re-use. The author did discover that there are socio economic factors that could affect the offset utility of re-used sofas and in turn the outcome of an LCA. LCA can account for the environmental impacts that are offset when re-using furniture by knowing the offset utility to a re-used sofa. People have however different motives for re-using furniture. Income was observed in this study to be a constraint to people and often made the alternative to buy new furniture not possible. Is it more justified to re-use sofas if people with higher income would buy second hand sofas as their offset utility would be to buy new furniture, not second hand furniture? This could be the impression from previous arguments looking at the environmental impact that is offset by re-using furniture assuming that the environmental impact of manufacturing new furniture is higher than re-used furniture.

Policies have significant impacts on the scope for furniture re-use, e.g. if driven by tools such as LCA, etc. Re-use of furniture was discovered by the author not to be an environmental concern to NOAH. The author decided therefore to explore the socio economic aspects of re-use of furniture further. Community waste schemes such as NOAH provide people on lower income with affordable furniture, if offers employment opportunities, and is a disposal channel for people with altruistic behaviour. People buying used furniture was from the study seen to be primarily people with low income that could not afford to buy new furniture. However, people on a low income do not subsequently accept furniture in bad condition because they cannot afford new furniture. Community waste schemes such as NOAH has different criteria for accepting used furniture that assures furniture being accepted and redistributed is in good condition. This has in turn resulted in that half of all furniture being offered NOAH, is declined (See Conceptual Framework Figure 5.1).

Re-use does not necessarily reduce demand for new furniture or reduce waste going to landfill in the long run but is a waste treatment method that can be justified from a socio economic perspective. Re-use tends to arise from lower income groups, but this should not be exclusive. Community waste schemes like NOAH and campaigns like Choose2Reuse could although have the potential to attract customers that otherwise would not buy second hand, reducing the demand for new furniture. Different policy instruments from local authority could target useable furniture going to the tip and furniture suitable for re-use. In terms of sofas, people could be charged for taking sofas with a Fire and Safety Regulation label to the tip but not charged for sofas missing the Fire and Safety Regulation label. It could give incentive to people only to buy sofas with a Fire and Safety label.

It is recommended for future research to understand policy development options for re-use of furniture and also how Local Authority options influences the role of the intermediary such as community waste schemes. The environmental impact and potential benefits or drawbacks in re-using furniture could also be quantified in future research by using an LCA. This thesis has begun by drawing up a flowchart of activities included when doing an LCA. Furthermore it would be interesting to know what happens to all donations being re-fused by NOAH? Further recommendations are also to; Question additional people on alternative consumption behaviour to verify findings from this study on motives for re-use? Why do people prefer new furniture? If

more people changed from consuming new furniture to second hand furniture how would this affect community schemes like NOAH in terms of accepting and redistributing furniture? How would a higher competition of re-used furniture affect people on low income? Would it really be more beneficial for the environment if more people bought re-used furniture including people that otherwise would buy new furniture? Are policies prohibiting furniture being re-used in NOAH a barrier or a necessary “good” in order for furniture to be re-used? Additional research could target additional community waste schemes and other types of furniture to verify and further explore data collected from this study. Further research is required on the socioeconomics of reuse and community recycling schemes to inform LCA and waste policy.

It cannot be assumed that collected data from NOAH represents all charity shops. Some similarities could although be seen between NOAH and Bedford Furniture Link. People might have different consumption preferences in relation to different kinds of furniture. This research did furthermore only focus on sofas.

6.1 Summary

The author adopted a case study approach to explore the complex phenomena of re-use. The author found that policies have significant impact on the scope for furniture re-use if driven by LCA. LCA could be considered to evaluate the offset utility of re-use. The author found that for example consumer behaviour is affected by socio economic factors such as income that in turn affect the product offset by re-using furniture and the outcome of an LCA. Re-use tends to arise from lower income groups, but this should not be exclusive. Re-use does not necessarily reduce demand for new furniture or reduce waste going to landfill in the long run but is a waste treatment method that can be justified from a socio economic perspective. Donators and recipients have further more different motives for using NOAH in terms of re-use of furniture. It is recommended for future research to understand policy development options for re-use of furniture and also how Local Authority options influences the role of the intermediary such as community waste schemes.

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APPENDICES

APPENDIX A- CODES

LS:	Donators	Could Last 1-2 Could Last 2-3 Could Last 3-4 Could Last 5-10 years or longer Can't say	LS-DON-CL-1-2 LS-DON-CL-2-3 LS-DON-CL-3-4 LS-DON-CL-5-10 LS-DON-CL-CS
LS:	Disposal	Donators/Moving/Buying New Sofa Donators/Moving/Need No Sofa Donators/Buying New Sofa Recipients/Condition Recipients /Worn Out Recipients /Want to Change Recipients /Money to Other Recipients /Hazard Recipients /Size	LS-DISP-DON-MOV-NEWS LS-DISP-DON-MOV-NNS LS-DISP-DON-NEWS LS-DISP-REC-COND LS-DISP-REC-WOUT LS-DISP-REC-WTC LS-DISP-REC-MTOOTH LS-DISP-REC-HAZ LS-DISP-REC-SIZE

APPENDIX B- CASE STUDY 1

Case Study NOAH Enterprise

Name:	NOAH Enterprise
Organisation Structure:	Consist of a Welfare Centre, Training Centre and <u>Furniture Link</u>
Website Address:	www.noahenterprise.org
Charity Correspondent:	The NOAH Enterprise 141 Park Street Luton Bedfordshire LU1 3HG
Classification:	Charity (Registered Charity Number 1059672)
Registered:	1996
Area of Operation:	Operates in locations in England and Wales. Luton.
Vision:	“ NOAH Enterprise is a charity which seeks, out of Christian conviction, to help the most disadvantaged in the local community. Particularly, it is concerned with providing a practical, empowering and caring service to homeless, marginalised and socially excluded people”. (NOAH, 2006a)

Focus of Research

Department:	Furniture Link 52-54 Church Street Luton LU1 3JG
Area of Operation:	Collects and delivers furniture within a 15 miles radius of Luton
Staff:	8 staff, 8 paid work placements training with Furniture Link for about 1 years and between 30 to 40 volunteers a week.

Open Hours:	6 days a week all year except during Christmas.
Area of Business:	Sell New and Secondhand Furniture, Clothing, Small Household items and Reconditioned White. Supply consist of new and secondhand beds, assembled new wardrobes, bedside tables, reconditioned sofas, kitchen tables and chairs, desks etc. Furniture Links also offer handmade pine and other wooden goods custom made to requirements.
Donations:	Donations come from house clearances, hotel clearances, local donations and high street store seconds

NOAH has guidelines to follow for donated furniture being collected. Sofas, Arm chairs and 2,3,4 piece suites must have a fire label that complies with the Furniture and Furnishings (fire)(safety) Regulations 1988. Zips must be intact or in good order. There can be no significant pet hair, damage, rips or wear on the sofas. The sofas must also be clean or easily be cleaned by NOAH. NOAH has a special machine for cleaning sofas. The sofa sets must be complete and no cushions are allowed to be missed. Mattresses must also have the Furniture and Furnishings (fire)(safety) Regulations 1988 and be cleaned. White goods sold must be tested and made sure to be safe before sold, they don't have to work. Although White Goods have a 3 months guarantee. Microwaves are not accepted as there is not enough demand for them. (Nina Morgan+ guidelines sheet from NOAH). NOAH has an arrangement with Electrolux and to buy and redistribute damaged white goods.

NOAH has three vans that are used to collect and deliver furniture. The vans were donated to NOAH enterprise. Two of the vans are used more frequently. Deliveries and collections are carried out twice a day according to a specific schedule. People can call to donate their old furniture to NOAH. The van drivers have the final say if NOAH will accept the furniture or not following the guidelines for accepting furniture as above mentioned. Because of lack of space it is not always possible to accept all furniture that is being donated to NOAH. NOAH can sometimes be forced to refuse a certain item that is too much of in stock. NOAH can later accept it when there is room again for it. Arm chairs are not accepted on their own (Respondent 1). NOAH exchange second hand goods with Bedford Furniture Link from time to time. NOAH can offer Bedford Furniture Link washing machines in return for sofas

NOAH does not need a Waste license; therefore it cannot charge its donor for accepting goods. People can although make donations. NOAH does not have to pay for tipping some furniture that cannot be used. It negotiates with the council on times and amounts of waste that need to be sent to the tip (Respondent 2).

NOAH can offer furniture for people with lower income. All furniture is marked with two prices. People on benefits such as income support or tax credits such as council tax benefits get a discount and pay the lower price in the shop.

Metals are recycled via local scrap yard. Paper, plastics and cardboard are recycled at the tip. Clothing is bought from NOAH by a clothing recycler. Waste in forms of wood is re-used on site. Unusable mattresses and sofas are disposed off.

APPENDIX C- CASE STUDY 2

Case Study Bedford Furniture Link

Name:	Bedford Furniture Link
Organisation Structure:	Furniture Link
Website Address:	www.flb.org.uk
Charity Correspondent:	Furniture Link Bedford 1A Gadsby Street Bedford Bedfordshire MK40 3HP
Classification:	Charity (Registered Charity Number 1071982)
Registered:	1998
Area of Operation:	Operates in locations in England and Wales. Bedford. Collects and delivers furniture within a 15 miles radius of Luton
Aim:	<ul style="list-style-type: none">* support disadvantaged local people who are living on low incomes or suffering hardship or distress* divert usable household goods from the waste stream* provide worthwhile training and volunteering opportunities for all members of the community but particularly for people who are disadvantaged or excluded (Bedford Furniture Link, 2006a)
Staff:	
Open Hours:	6 days a week all year except during Christmas.
Area of Business:	Sell quality, reusable furniture and electrical appliances, everything second hand. Volunteers can come out to put furniture together, build shelves or make repairs.
Donations:	Donations come from house clearances, hotel clearances, local donations

Bedford Furniture Link has guidelines to follow when accepting furniture. All soft furnishing must have fire labels in accordance with the Furniture and Furnishings

(fire)(safety) Regulations 1988, mattresses must be clean and not too torn and electrical appliances must be working. Only people on benefits are allowed to buy second hand mattresses.

Bedford Furniture Link does not need a Waste license and cannot charge it's donator for accepting goods. People can although make donations. Bedford Furniture has to pay for tipping some furniture that cannot be used. It tries to recycle as much as possible. Old sofas are torn apart and recycled.

All furniture that Bedford Furniture Link is offering is marked with two prices. People on benefits such as income support or tax credits such as council tax benefits get a discount and pay the lower price in the shop.

Bedford has three vans that are used to collect and deliver furniture. One of the vans was donated to Bedford Furniture Link. The other one is on loan for three years. Deliveries and collections are carried according to a specific schedule. People can call to donate their old furniture to NOAH. The van drivers have the final say if Bedford Furniture Link will accept the furniture or not.

APPENDIX D- INTERVIEW LIST

Name	Role	Method	Location	Formal/ Informal	Recorded	Consent Form
Respondent 1	Administrator	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Respondent 2	Manager	Face to Face	NOAH Furniture Link	Informal	No	No
Respondent 3	Lead Driver	Face to Face	NOAH Furniture Link	Informal	No	No
Respondent 4	In charge of restoration	Face to Face	NOAH Furniture Link	Informal	No	No
Respondent 5	Supervisor White Goods	Face to Face	NOAH Furniture Link	Informal	No	No
Respondent 6	Manager	Face to Face	Bedford Furniture Link	Formal	Yes	Yes
Donator 1	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 2	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 3	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 4	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 5	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 6	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 7	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 8	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 9	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 10	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 11	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Donator 12	Donate	Telephone	NOAH Furniture Link	Formal	No	No
Recipient 1	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 2	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 3	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 4	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 5	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 6	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 7	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 8	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 9	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 10	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 11	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 12	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 13	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 14	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 15	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 16	Buy	Face to Face	NOAH Furniture Link	Formal	Yes	Yes
Recipient 17	Buy	Face to Face	Bedford Furniture Link	Formal	No	Yes

APPENDIX E- MEMOS CASE STUDY 1

Pre Words

NOAH enterprise stands for New Opportunities and Horizons and are based in Luton. NOAH is a part of FRN, the Furniture Re-use Network. NOAH constitutes of three different parts, a Welfare Centre, a Training Centre and Furniture Link. The case study for my research was NOAH's Furniture Link. When I mention NOAH in the text below I will refer NOAH to be Furniture Link.

All the observations and data collected between the 19th of June and 7th of July, presented as follows does include everything that happened in NOAH during these three weeks. Not all phone calls have been registered as the author could have been at another place at the time of the phone call collecting other types of data. Further, sometimes the personnel have not been able to hand the author the phone for different reasons when someone has called to donate a sofa. As well not all people donating or buying sofas has been able or willing to talk to the author. Some data can for this reason have been missed out.

Monday 19th of June 2006

First day at Furniture Link within NOAH enterprise. It seems to be a lot of people working at NOAH Furniture Link. Respondent 1, the administrator of NOAH Furniture Link shows me around the place. It is big. It looks really clean and tidy. NOAH has two floors of furniture opened for the public. Downstairs are the sofas, the white goods, dining tables and chairs and cabinets. I can also see some TVs for sale although NOAH no longer accepts TVs for collection. TVs are hard to get rid of. Some of the things NOAH are offering looks new and with some old plants and paintings on the wall NOAH tries to make it look a bit more like home. It works for me although the surrounding is not new. The premises upstairs are in turn divided into three rooms. The place is packed with furniture. One of the rooms mostly contains of coffee tables, kitchen tables, a few wall units and chest of drawers among other things. I can also see three sofas but they look old and dirty and I would personally not buy any of those. Respondent 1 shows me into another room where all the bed, mattresses, chairs and wardrobes are. Respondent 1 tells me that some of the things NOAH is offering are new. A lot of the mattresses and bedsteads NOAH have for sale are new. Respondent 1 explains that people usually prefer new beds and that is why they

are selling new mattresses and bed sets. The third room is a storage room with office chairs and likewise. The public is not allowed into this room. On ground floor Respondent 1 shows me two other parts of the building were the public is not allowed to go. One of them is a work shop were sofas are being cleaned and repaired and furniture being built upon request. The work shop is a mess and there is a few sofas waiting to be cleaned. NOAH's got a special machine for cleaning sofas and it takes about one hour to do so. NOAH's third place is where they test all the white goods. Neither here is the public allowed to go in for safety reasons. Washing machines, refrigerators and freezers are being tested so that they are safe and working and are available for Re-sail.

All furniture in NOAH has two price tags, one with a lower and one with a higher price. People on benefits with less income, single persons in households that do not have to pay full council tax and people that social services buy furniture to, pay the lower price.

Marks and Spencer donates food that has passed the best before date to NOAH. Most of the food goes to the Luton Day Centre for homeless but some of the food is taken by the people at Furniture Link. This is another kind of prevention by NOAH in cooperation with Marks and Spencer from goods going to waste.

A young man comes to NOAH and wants to change a sofa he bought a couple of days ago to another sofa. NOAH has not delivered the sofa he bought yet which makes it possible for him to change it. He picks a two piece suite with a flowery textile. There is no problem for him to change the sofa. He pays the amount of money that is missing to the bigger sofa.

Collections and deliveries of Furniture are carried out everyday with the use of the two vans according to a special schedule. To make collections and deliveries more efficient they go to one specific area for each day of the week. NOAH has restricted the area to make collections and deliveries to cover Luton, Dunstable and Barton. One of the phone calls that NOAH receives during the day is from a person outside the collection area. NOAH gives this person the number to the Furniture Re-use Network that can help her find another charity closer to where she lives.

Three people calls during the day and wants to donate sofas. Two of them I get to talk with. One of the donations is refused as the sofa does not have a label saying that it comply with The Furniture and Furnishings (Fire) (Safety) Regulations 1988. This is a must according to law in order for NOAH to be able to accept such as sofas and mattresses for beds. As all charities have the same criteria for accepting sofas the alternatives I assume the alternatives for the person having the sofa without the label will probably be to sell it through the newspaper, Internet or to take it to the tip. The sofas as well as the other furniture must also be in a reasonable condition in order to be accepted. They can't be to dirty or broken. The donators are informed that the driver collecting the furniture have the last say if NOAH is willing to accept the donated furniture or not. I interview the two people donating sofas.

Furniture that has been sold is marked with a number so that the customers know that the furniture has been sold and so that the people delivering the furniture know were to deliver each item. A table that is to be delivered has disappeared. It has been resold because a customer has taken the stick away. It has been sold twice. This might be one thing that takes away some of the professionalism within NOAH and why people decide to buy their furniture new.

Tuesday 20th of June 2006

I make an interview with Respondent 1 in the morning. I recorded the interview and will transcribe it. The interview is not extensive but gives me an introduction to what NOAH does. She tells me that less than one percent of the things NOAH collects are being disposed of. About 80% of the sofas are being cleaned. As I will spend a lot of time in the shop I won't be able to verify this. The furniture that NOAH receives has to comply with certain standards. NOAH has contracts with a manufacturer Seconique were they buy new beds and flat packs to resale to customers. This is believed to attract other customers that would normally not go to a charity shop and buy things second hand. NOAH needs to reach these customers somehow. It seems the turnover of furniture needs to be quite high in order for people to come back if they can't find what they are looking for at the moment.

People are calling through the day to donate furniture but not all furniture is being accepted. NOAH does not accept microwaves. Neither do they accept single armchairs as they are hard to get rid of and for the moment NOAH neither accepts

coffee tables, sideboards, big wall units or single tables. NOAH got to many coffee tables and need to sell some of the furniture before they can accept any more.

I talk to Respondent 4 that build and do minor reparations on furniture. I ask about how much material that is used for repairing furniture and water use for cleaning sofas. She tells me she does not know. She suggests me to take contact with a furniture manufacturer instead. It takes them about one hour to clean a sofa with a special machine NOAH has on sight. Not all sofas have to be cleaned. The persons driving the vans tells me they don't know how many miles their vans go each day. One tank on each van holds about 50 litres of Diesel. They fill each van up with Diesel about once a week. I get the impression by talking to the people on NOAH that they don't bother to keep record on those things. From my point of view things could get done much more efficiently and environmental friendly, on the other hand, this is not one of NOAH's major concerns.

No sofas are donated that day although one person calls and would like to donate one. It does not have the fire label and can not be accepted. I have decided to only interview people donating sofas which include single 2 and 3 seat sofas plus 2 piece and 3 piece suites sofas that NOAH is willing to accept over the phone.

Wednesday 21th of June 2006

Furniture that has been sold are being taken outside and loaded on the two big vans that NOAH have. This is the procedure for NOAH everyday. Sofas and other furniture collected during the day are being carried into the shop. NOAH tries to collect and deliver the furniture same week as they have been donated or bought. That is not always possible and sometimes deliveries and collections have to be scheduled for the following week. The donators and buyers usually approve of this but sometimes the donators wants to get rid of the furniture quicker and ask NOAH to pick it up earlier. This happened today when a person wants to donate a piece of furniture. NOAH declines the wish but the person decides to donate the furniture anyway. This donator asks if it is possible to leave the furniture outside. NOAH does accept furniture that is left outside; however, if it rains NOAH will not take the furniture. The person phoning is made aware of this.

Some of the staff at NOAH has gone to Birmingham to pick up beds to be sold in NOAH. It does not happen often that NOAH has to travel this fare to get its furniture.

It seems like a long way to go to get furniture when people are calling to donate furniture but NOAH has to decline them because of lack or space. However I can understand that NOAH needs to provide a wide assortment in order to be more attractive.

Three sofas are sold during the day and one sofa donated from a person that I can speak to. One of the persons buying a sofa is a landlord. He usually buys things for his flat second hand as he does not think that the tenancy takes care of the furniture that he provides in the household.

A young man that was interviewed on Monday comes to change the sofa bough to another as the one bought was too big to fit into his household. He chooses a smaller sofa with one of his friends.

Thursday 22nd of June 2006

People are calling in to donate furniture and as the days before furniture has to be refused as they don't comply with Health and Safety Regulations and because NOAH does not accept some furniture because of lack of space or because the item is not desirable. People does not know that a sofa being donated needs to have a Fire Regulation Label and one person calling says she will look at her sofa and then come back. That woman never gets back to NOAH during the day. This is probably because the sofa that could be donated does not have a label. This happens almost every day according to the people working at NOAH answering the phone. Even if it is a new sofa in really good condition the sofa has to be refused. I manage to interview one person donating a sofa that is accepted.

NOAH has a lot visitors coming during the day looking at the furniture. The first thing that the customers see when they come in is the sofas. People look at them but thereafter decide to move on and look at something else. One guy wants a particular piece of furniture that NOAH does not have. He is allowed to write his name on a board where people can place request on things they wishes to buy. NOAH can thereafter contact them if the furniture comes to the shop.

An angry lady calls and wants to complain about a washing machine that she has returned two times already. She wants a new one a third time. It seems to annoy the staff testing the washing machines before they are sold. According to them they

should work more than one week. One guy will go out and have a look at the machine. One of the staff sighs and says that people sometimes buys a washing machine for the weekend to do their laundry and thereafter returns it. People that complain about their washing machines seem to be a thing repeating itself according to the discussion among the staff. One of the staff says she would not buy electrical goods second hand.

One sofa is sold to a lady on benefits. She got 4 children and cannot afford anything new. She bough a sofa one year ago that broke and she now needs to replace it.

Friday 23rd of June 2006

The same pattern is repeating itself as during everyday of the week. People are calling and are willing to donate furniture but some furniture is more desirable than other to accept for NOAH. As well they have to comply with NOAHs minimum criteria in order to be accepted. NOAH especially welcomes sofas 3 piece suites in particular as the demand for those are higher than other furniture. I estimate that NOAH has been refusing about half of the things they have been offered.

I interview one person that is donating a sofa. The 5 people that I have spoken to during the week seem to think that there are better ways to dispose of their sofa than the tip. Although this would be an option if no one else would like to have the furniture. It seems that people are willing to recycle but it is difficult without the facilities to do so.

Monday 26th of June 2006

Respondent 2 the manager of the Furniture Link tells me a few things about NOAH. She tells me that NOAH is not a typical charity as they sell new things. However she does think that they benefit from selling new things as it attracts other kinds of customer that would normally not buy second hand. Landlords that are coming to buy furniture in NOAH can buy both new and second hand furniture as everything is found under one roof. Respondent 2 further explains that NOAH accepts white goods if they think that they can fix them. However the electrical equipment that NOAH sells does not have to work but it needs to be safe. NOAH has a three month guarantee on white goods. People with less money seem to buy electrical equipment like washing machines in a bigger extent than people with money.

From July FRN, the Furniture Re-use Network will put adverts in Argos catalogue to inform people that they can contact the FRN to get information on the closest organisation next to where people can donate furniture they no longer need.

Respondent 2, the manager of NOAH Furniture Link informs the people in the shop that they need to get rid of furniture in the shop in order to be able to accept new. For every £10 that is spent a customer is offered to spend £1 on another item. Respondent 2 seems really determined how things are supposed to be managed. One of her role is to make NOAH sell enough furniture to generate an income to support the business of NOAH enterprise.

A lady comes in and wants to donate a wardrobe. At the same time she buys a 3 piece suite sofa. She has to stabilize her present sofa with catalogues.

Phonecalls Donations:

Accepted

Sofa

Fridge Freezer

Refused

Sofa that does not have the Fire Regulation label on
2x tables single without chairs

Sideboard. The donator is given the number to the FRN helpline.

Cloths

Tuesday 27th of June 2006

One person comes in and wants to buy a sofa. It is a landlord. She has bought 7-8 second hand sofas before. All of them have lasted for approximately for 2-3 years. Her experiences with second hand sofas have been good. She points out that how long they last will depend on use and household. She has chosen to buy her stuff at NOAH as she can't be bothered to go anywhere else.

One of the vans goes to Bedford to pick up some furniture from Furniture Link over there. Sometimes the two charities exchange goods with each other.

One sofa is donated from a person. Respondent 1 points out that NOAH should accept 3 piece suites sofas in particular above other furniture as the demand for those are higher and NOAH have to much of the other furniture.

Phonecalls Donations:

Accepted

Sofa

Refused

TV. It is hard to sell TVs

Furniture that is not within the area that NOAH goes to collect furniture

Wednesday 28th of June 2006

A person buying a sofa is questioned whether she thinks that the sofa that she wishes to buy can be carried upstairs. If it is too big and the stairs to narrow the people at NOAH wont be able to deliver it. Neither will they carry a heavy sofa upstairs if the stairs are to long as the work load would be too much for their bodies. The people carrying the sofas are volunteers and cannot be asked to do such things for free according to NOAH. People that are not sure if the furniture would fit into their home are given a tape measure to measure the furniture that wishes to be bought. This seems to delimit the market even more as people buying furniture on less income tend to live in smaller houses.

A boy comes in with a letter from Social Services. He's got a budget from the social services of £250 to spend on furniture. He picks the furniture he wishes to have in his new home given to him. The boy got his caretaker with him.

A housebound woman calls and wants to buy a sofa over the phone. She is unable to come to the shop. NOAH does not sell her a sofa over the phone without her looking at it first. Although this seems to be possible from my point of view.

I go to the white goods department at NOAH. I talk to respondent 5 that is in charge of the white goods. I can see a lot of new white goods on the sight. Apparently NOAH has been dealing with Electrolux for one year that has resulted in a contract with NOAH being able to buy damaged material from Electrolux for much less money. This is expected to become a big income for NOAH. However these white goods will

still be too expensive for people with little income to buy. The new but damaged white goods will still be sold for around 300 in relation to 500 that is the price that they would go for as undamaged. Even if the machines are new they have to go through the full visual test. The washing machines got 6 tests, the refrigerator a 24 hours test and the tumble drier has to be tested 7-8 times. The products are expected to be bought mostly by landlord as one landlord on the same day of arrival bought 20 machines. 120 mixed white goods are expected to be received each month. A machine that cannot be fixed goes to metal recycling. It feels like NOAH is not just a small charity trying to survive. Instead NOAH is trying to find way to increase its income for different reasons. Accepting new but damaged white goods might be recycling, but is still not for customers on low income that come to NOAH to buy white goods. However this can help NOAH support the people benefiting directly from NOAH's activities such as the homeless and people on drug and alcohol rehabilitations programs working on NOAH.

A family buys a sofa with squares. They need a sofa and seem eager to buy a cheap sofa just because they need one. The appearance seems less important.

Phonecalls Donations:

Accepted:

3x Wardrobes

2x 3 piece suite sofas

Bookshelf

Refused:

Electrical blankets

Dining table without chairs

Coffee table

Sideboard

A man wants to donate a sofa and wardrobe but does not know it comply with Health and Safety Regulations.

Thursday 29th of June 2006

A person is coming from a hostel in London for people with drug and alcohol problems. They have similar rehabilitations programs as NOAH. They are willing to buy their furniture from NOAH in the future.

NOAH has plans to build accommodations in the future for the people they are trying to help. NOAH got doctors, psychiatrist and other facilities to help people in need. A homeless person can come to NOAH and ask for help and NOAH will try to help them after best ability.

A sofa that is to be collected by the van is refused by the van driver. The sofa is white and got stains. The owner had tried to wash it ones but it still didn't come off.

One person buying a small table comes back o return it after a while as she can't afford to take the bus home.

NOAH gives the number to FRN helpline if they can't accept a piece of furniture that is in good condition. NOAH does occasionally also recommends the willing donator to call the council for furniture that wishes to be donated but can't be accepted for one or another reason.

Phonecalls Donations:

Accepted

Semi fridge freezer

Refused

Cabinet

Single chairs

Pinedresser

Friday 30th of June 2006

A person comes in and complains about her washing machine being broken. Some one from the white goods department will go out and have a look at it.

One of the van lifts breaks down and NOAH can neither pick up nor leave things.

During the two weeks people have come in to look at the new furniture. It gives NOAH a clean look as well. I can't judge by the look of them how their financial situations look like. Three sofas are sold during the day.

Phonecalls Donations:

Accepted

A sofa

Refused

2x cloths People that wishes to donate cloths are directed to another part of NOAH that's got its office in High Town. NOAH Furniture Links does not accept furniture on their own.

A customer will come back if the sofa that wishes to be donated got the Fire Regulation label 1988.

Monday 3rd of July 2006

Some one calls and complains about the washing machine not washing.

One sofa is sold to a very happy person that saw the sofa that she wished to buy even before it left the van.

One sofa is being sold.

Phonecalls Donations:

Accepted

Table and chairs

Freezer

House clearance; NOAH will go there to have a look on what can be collected.

Refused

Sofa without fire label

Side table

Single Bed; the donator decides not to donate a single bed as NOAH can't pick it up fast enough.

Tuesday 4th of June 2006

A young man comes in with his mother to buy furniture. He was advised by his social worker to come to NOAH. He is on benefits. He buys a sofa and seems to be really happy over his sofa.

Phonecalls Donations:

Accepted

Matress

Sofa

Refused

Sofa
Wall unit
Coffee table

Wednesday 5th of June 2006

When I arrive at NOAH the place is a mess. The staff is cleaning up the place after the rainstorm that came in over Luton the previous day. A lot of the white goods got destroyed. I decide to go home again and come back the following day. NOAH will be closed and it will be no people for me to interview.

Thursday 6th of June 2006

In the morning a sofa is sold to a landlord. He wants just the 2 armchairs but is forced to buy it with the 3 seated sofa as well as they goes as a package. Another sofa is sold but the ladies buying it do not have the time to talk to me. They are landlord and their schedule is too tight to give me an interview.

The same sofa that was bought on the 19th and returned on the 21st because it was too big for the intended household is returned again after being sold a second time to another household. The sofa was too big for this household as well.

For the afternoon I went out in one of the vans to see the procedure of picking up and collecting furniture. We are three people in the van. Usually 2 or 3 people go out in each van of the two vans. NOAH does have a smaller van as well but because the furniture is quite big it does not get used as often. The schedule for the afternoon in the van I am going in is to deliver a dining table with chairs, a cabinet, a washing machine, and a table. The items to pick up are a chest of drawers and a cabinet together with a dining table and some chairs. The first thing to drop off is the dining table with chairs. A landlord bought the furniture. He wants to have the things delivered to three different addresses. Somehow he did not have to pay extra for that although he should have. If you spend more than £100 in NOAH you get your furniture delivered for free. People on benefits always get their deliveries for free. We have to wait for half an hour for the landlord to show up. This is unnecessary time spent for NOAH as it could be used to try to collect or dropping of more furniture from my point of view. According to Respondent 3 it is quite normal to stand and wait for the people to come. The landlord finally shows up and can sign the form that says he has received the furniture in one piece. We are following him and drop the other

furniture as well. The areas we are going to deliver furniture seem to be rough in comparison to where we later go to pick up furniture. Those areas seem to be quieter and less rough and I get the impression that people are wealthier here. The driver says as well that people donating furniture seems to think that people buying furniture accepts a lower standard and condition of the goods they are receiving. Because of this they don't understand when furniture is being re-fused because it is in bad condition.

We pass Oxfam in Dunstable. Oxfam is another charity shop that collects furniture and second hand goods. Oxfam is a big chain and can be found all over the country. The shop looks nice from the outside. It got a lot of furniture displayed in the window. NOAH goes there once in a while to look at the prices of Oxfam's furniture. Respondent 3 explains that in a way they are in competition but in another way they are not.

Phonecalls Donations before 1pm

Refused

Sofa bed needs a fire and resistance label.

A table wants to be donated. NOAH tells the person to come back with the offer in a couple of weeks when things have been sold and there is more room to fit new things in.

Friday 7th of July 2006

It is my last day in NOAH. One person calls for a house clearance but in an area that NOAH normally does not go to. However when it is a lot of furniture NOAH can make an acceptance and go out of their collection area.

A sofa is sold to a couple expecting a baby. They were looking at another sofa than the one they bought. However, that sofa was reserved. Normally NOAH does not reserve furniture for people.

Phonecalls Donations:

Accepted

Wardrobe. The wardrobe is 20 years old but as long as it is in good condition it is accepted.

3x single beds

Table and chairs

Washing machine

House clearance; washing machine etc

Chest of drawers

Bedside cabinet

Refused

3 piece suite sofa. The sofa does not have a Fire Resistance Label.

APPENDIX F – QUESTIONS

Questions for Donators

- What type of furniture is it, describe it, where did you buy it?
- Describe the household where the furniture has been and what it was used for
- How was the Functionality of the furniture?
- Why did you decide to donate the Furniture to a charity?
- What were your alternatives if not donating furniture to a charity?
- For how long have you had the furniture?
- Why did you decide to get rid of the furniture?
- Do you put any economic value on the furniture donated? Other?
- Do you see the furniture to be waste?
- How many years do you expect your furniture to continue to last?
- Are you planning to buy new furniture?
- Could you consider buying second hand furniture? Why, Why not?
- Where did you buy the furniture?

Questions for Recipients

- Why did you decide to buy your furniture with a charity?
- What were your alternatives if not buying your furniture with a charity?
- For how long are you expecting to have the furniture in possession?
- For how long are you expecting the furniture to last?
- What will you do with the furniture after use?
- What will make you decide to get rid of the furniture?
- Do you put any economic value on your furniture received? Other?
- How many years do you expect your furniture to continue to last?
- Could you consider buying new furniture? Why, Why not?
- Have you bought second hand furniture before? What were your experiences with this?

Questions for Charity

- What kind of furniture are you receiving?
- What criteria do you have in mind when accepting furniture?
- How do you get your furniture?
- How is it transported to you (by car, van, lorry)?
 - How many kilometres on average?
 - What type of route (urban, rural or motorway)?
- What is the turnover on furniture over a week? (number, kg/tonnes) over a year?
- What is the tonnage or percentage of different types of furniture (e.g. percent of sofas, percentage of beds etc). If you don't know, please guestimate.
- How many weeks are you open per year?
- Is there a seasonal difference in the quantity and/or types of furniture you receive?
- What is needed to make it resalable?
- Are you doing any repairs on furniture?
 - What % are you repairing?
 - Is there a difference between different types of furniture in the needs for repair?
 - What % of each type of furniture need repair?
- What kinds of repairs are carried out?
 - What equipment and materials do you use for the repairs?
 - How many kg per year of each material?
 - Estimate of how many kg or what % of each material is used for each type of furniture?
- Do you use any water and energy for handling the furniture?
If yes, how much per year?
- Are any plant vehicles (e.. forklift trucks) used on site for handling the furniture?
 - What types of vehicles? How many? What fuel do they use? How much per year?
 - Are the vehicles used equally much for all furniture types?

- Are there any emissions to air (what substances, what quantities of substances?)
 - Any water out, how much?
 - What waste and by-product materials? How many kg of each material? Is that from the furniture itself or from the ancillary materials?
- Is all the donated furniture passed on/re-sold or do you have to dispose of some furniture? (I.e. what is the quantity of product output?)
- What is the expected remaining lifespan of furniture donated?
- Who is the typical customer?
- What are the costs associated with receiving furniture? (cost to FRN of receiving donations, or costs to the final customer or receiving/buying re-use furniture?)
- Why are you a part of FRN?

APPENDIX G – CONSENT FORM

INTERVIEW CONSENT FORM

The Cranfield Student below is conducting research for an academic thesis as a part of the MSc degree in Environmental Management for Business. You are requested to give your voluntary informed consent for this interview and for the use of your responses, by signed below.

General Conditions

1. **Participation.** Your participation is entirely voluntary; you are free to refuse to answer any questions or to withdraw from this interview at any time.
2. **Purpose.** Your responses will be used for academic non-commercial purposes.
3. **Interview recording.** For reasons of both data analysis facilitation and research credibility this interview will be recorded.
4. **Confidentiality and anonymity.** Unless you give your consent to be identified, your responses will be treated confidentially and anonymously. This means that excerpts from the interview may be made part of the final research report but your personal identity will not be disclosed in any distributed or published material resulting from this research.
5. **Follow-up.** You may be contacted after the interview by the researcher to clarify any important research points, or by a member of Cranfield University staff if it is necessary to verify the general facts of the interview.
6. **Feedback.** For reasons of cost, it will not be possible to provide copies of the full results of this research. However, any request for feedback on the research will be accommodated where possible.
7. **Complaints.** If you have any complaints about the research you should raise these with the researcher or, if you prefer, with the researcher's supervisor.

The researcher, on behalf of Cranfield University, wishes to thank you in advance for your participation in this research. Please sign this form to show that the contents have been read to you.

Researcher: Fanny Granstrom - Tel:07722030431 Email: f.m.granstrom.s05@Cranfield.ac.uk
 Supervisor: Dr Matthew B. Cook – Tel: 01525863307 Email: m.b.cook@Cranfield.ac.uk

Research topic: **Reuse in a life cycle assessment-environmental process flows and user behaviour**

Specific consents (see above) :

Interview may be recorded	YES / NO
---------------------------	----------

Respondent may be identified in research	YES / NO
--	----------

Interview respondent (name)

Signed.....

Date.....

APPENDIX H – INTERVIEW TRANSCRIPT

Tina Morgan

Head Administrator at NOAH Furniture Link

NOAH Enterprise
52-54 Church Street
Luton
LU1 3JG

Recorded Digital 20th of June 2006

Present at interview: Fanny Granstrom and Tina Morgan

It is Wednesday 9.15am and I am making an interview with Tina Morgan administrator at NOAH enterprise Furniture Link.

Difficulties were experienced when trying to transcribe the interview from the digital recording of the interview. Other voices than my own and the interviewee Tina Morgan can be heard as I had to carry out the interviews in the reception as there was no other quieter place to do the interview in. The interview was made early in the morning before most of the customers started to come but unfortunately this did not help. The interview got interrupted a couple of times as well as people needed to talk to Tina Morgan during the interview. Comments and notes when it has not been possible to translate what was recorded on the tape are made within brackets [].

- Thank you for making this interview. Could you state your name and your position?

- Yeah. My name is Tina Morgan and I am administrator at NOAH enterprise.

- What type of furniture are you receiving?

- We receive all types of household furniture. We also take electrical goods, certain electrical goods such as cookers, washing machine, fridge freezers. There are certain types we can't take in which is microwaves, which are unsafe for recycling. The main bulk of the furniture we take in are sofas, armchairs, sofa beds, tables, chairs, beds, wardrobes, chest of drawers, most things that people need to start of a home.

- What criteria do you have in mind when accepting furniture?

- Exactly that, we bear in mind what a person would need to start of a home for the first time, ok? The criteria is that laid down by Health and Safety rules. In other words, anything flammable such as sofas, mattresses, padded dining chairs etc must be covered by the 1988 Regulation Act...which states that it is all made of fire resistance material. If they are not then we can't accept them and we can't pass on.

- How do you get your furniture?

- The Furniture, we take donations by phone mostly. NOAH has been operating for a number of years In Luton so a lot of it is by words and mouth. We also advertise in the daily newspapers. Also our drivers are run and about, and they put leaflets of our details through customer's doors.

- How is it transported to you?

- We have three vehicles which were donated to us and we collect...we collect within a certain limit, I would say roughly...probably a 15 miles radius with Luton town centre were we are based. Some of the people are kind enough to bring it in themselves, but the majority is collected by NOAH.

- How many kilometres on average?

- Kilometres...a day?

-Yes

- I really can't tell you that. You need to speak to the transport manager, and he will give you the milometers of the vehicles, yeah?

-Yeah. What type of route? Urban, Rural [having problems pronunciation the word]

-Rural [laughing]

-Rural or motorway?

- We don't run motorways, no! we don't....very very seldom. Because of the catchments area we don't need to use the motorways.....at this time, at this time.

- Do you collect furniture from other places...and outside Luton?

-I mean at the moment..I mean..I would say we have to within a 15 miles radius. We have, as we speak, we have been offered a lot of furniture from Hull, you know Hull? It is a long long way up north. It involves, I think, a weekend....60 houses in Hull. Furniture for us so this is.. but this a..this is not he usual thing..but obviously we would travel a distance if it was worth travelling for, yeah?

-But it need to be quite a lot?

-It needs to be a lot to take up like to take up the [I don't know this word but she means the people who travel to collect the furniture] people's weekend, it can costs up to £60 pounds, which I think is quite good

-What is the turnover on furniture over a week?

-You're talking money?

-No, quantity.

-Quantity, I can't tell you. I mean, I can break it down and tell you how many for instance sofas we sold last month.... but, if you see...I mean, that is just the short list, the generalize list, of how many of each It would take a big break down. I mean, I can tell you last month maybe, last month we sold, I think, 48 suites of furniture... 3 piece suites.....3 piece suites, You got it? 3 piece suites...and that's like an

armchair, two armchairs and a sofa. That is what we call a 3 piece suite...which is what most people want.

-What is the tonnage and or percentage of different types of furniture?

-The tonnage?

-Yeah

-The tonnage would be on Jade. I do the money side here. I am involved in that.
[laughing] I don't deal with the tonnages.

- Ok. How many weeks are you opened per year?

-52.

- And how many days a week?

- 6 days a week. Given of course Christmas and Easter, but we still take in

- Is there a seasonal difference in the quantity....

- Yes. Yeah. We are offered more furniture, ok.. in the month before
Christmas...October, November.

- Why do you think...

- Because everybody buys new furniture for Christmas. Because they have guests
and they have parties. So..it is always the case, October, November time..people are
getting a new armchair for Christmas and having their old taken away.

- Ok. And do you receive a specific type of furniture for Christmas day or is it..

- Yes, mostly tables, armchairs and children's beds. Because people are having
guests for Christmas and they want a new bed.

[Interview interrupted]

- **What is needed to make them resalable?**

- What is needed?

- **Mmmm**

- Ok, it could be a different mix. The sofas and the armchairs need to be cleaned..... Yeah? With an Industrial cleaner. They are cleaned first. Same with the mattresses of course. So the mattresses are cleaned. Just the main [thinking]..main..main.. criteria for that. Most the leather obviously..what are you talking, what...are you interested in electrical things? There is a lot more involved in it.

- **Ok. Well actually I am more interested in sofas.**

- Well, ok. We'll leave that for now. The soft furniture has to be properly cleaned, but the vast majority is ok. Tables and chairs you might have to rough, you know, sand them with a polisher... clean and polishing. Certainly speaking most of them don't even need a lot of renovations.

- **Are you doing any repairs on furniture?**

- We do minor repairs on Wooden I say...and also could...things like...smaller refurbishment on dining chairs. You know the seats on dining chairs that can be recovered, and you can barely see if they were dirty, we can do that.

- **How many percentages are you repairing?**

- Well if you are talking suites I would say a huge percentage needs cleaning. Wooden things..you could say..I would say [Undecipherable] The tables and chairs and things quite small percentage I think.

- **Ok. Not all of them needs to be..**

- Well then, you know you get things, leather ones which quite simply I could phone an agency to clean them, but I would say that almost all of them to some extent need some sort of cleaning. Obviously some need completely. You have seen, you know, them out there. Have you seen the industrial cleaner in use? Oh Good. The majority it is just certain areas you clean up.

- How many do you receive [Undecipherable] sofas and leather sofas? How many, do you get any more of .. [Undecipherable]

- No, no. Leather sofas are a one off. People tend to keep, they last longer you see. If you got a cloth sofa they get dirty but leather just last much much longer. But we do get them in, we do get them in but in a small percentage.

- Are they in good condition when they get in? Are they..

- Which, the leather ones?

- Yeah

- They need to be in a reasonable condition for us to take them you see. Because If a cloth comes dirty you can clean it but the leather ones is cut or marked it not really much you can do. They need to be in quite good condition for us to pass on.

- How long do you think a leather sofa last compared to a textile?

- Me personally?

- Yes. I would say probably three times. Three times the last...that is my guess.

- And how many years do you think a textile sofa would last?

- How long?

- You think a textile sofa would last?

- Textile sofa...well that depends whether it has been in a family with children or..... I mean I would say...[thinking] three...[thinking]I'd say three to five years..

- When do you think you get them?

- When do we get them?

- Yeah.

- In the end of their life you mean? A lot of people phone up and say they have an old leather sofa, so we would get them [Undecipherable]

- And how long do you think they could last?

- Again, the fact that we get them, you know this might sound a bit obscure but I would say probably about.... at least a year, at least a year. And then..I can't answer that easily, maybe if it is just a young couple working, they could last then three,four, five years. If they would look after it.

- Is there a difference between different types of furniture in the needs for repair?

- Well It not to say that we aren't interested in white goods, but it is the white goods that needs more work on than soft furnishings and tables and chairs to be honest.....because of the health and safety rules of course.

- There is a lot of energy used for testing or?

- Exactly. Because we are talking electricity you can't carry out strict tests

- What kinds of repairs are being carried out [Undecipherable]? What equipment and material are used?

Again, you need to speak to Mary about that, but the main one we use is detergent in the cleaning of sofas. I mean if you need the names of the detergents things it would be on...but other than that it is really just the labour.

- Do you use any water and energy for handling of the furniture and if yes how much?

- Again, it goes back to cleaning of...furniture that it. You need to ask.. I can't give them to you but we'll ask Mary and George who actually does the cleaning, how many litres if you like, yeah? How many litres the machine uses of water and how much percetange of detergent. They could have a better idea than me....but other than that the main [Undecipherable]

- Are any plant vehicles used on site for handling the furniture?

- Removal plants you mean?

- Yeah, do you move them by hand or do you use any vehicles?

- I see. No, forklifts trucks and things like that? No, just sack barrels, the normal sack barrels. Do you know sack barrels? Ok, it is a barrel nightmare. Put that underneath the sack barrel, s a c k. [laughing]

.- [Undecipherable]

- No, not at all.

- Are there any emissions to air?

- No. none at all

[Interview interrupted]

- What kind of waste are...

- Waste...let me see. Are you talking waste as in furniture or waste as in material used?

- Material used for.....

- Well, very little, very little. What waste could that be I mean rather than the actual water used for overall cleaning. I don't think there is many other...it can't be any other waste. Because the cloth we use to clean with for instance are recycled. They are just the rags that people have been giving to us, which we tear up into little bits. There is nothing that we buy in that we waste. It is all recycled. Is that what you need to know? Because..apart from that there isn't any waste...[thinking]..no. It can't be. Apart from cleaning material and dirty water use, as I have just said. Things like sand paper which you, which is thrown away afterwards. I'm trying to think, but I can't think of anything.

- You don't used to do change of textiles or..?

- No, no. We don't do that, it is just cleaning.

- Is all the furniture donated or..I mean passed on/ re-sold or do you have to get rid of them?

- Occasionally, occasionally we have to get rid of certain things. For instance if we..if an elderly person donates furniture to us and say they have couple of armchairs for instance which are not covered by the fire labels. I would say to them, we would take them but obviously we can't sell them on.

[Interview Interrupted]

- Yes, we do. And we might have small breakages about the place which might be too expensive to clean. In which case we would tip those but not a lot, not a lot at all. Most of the things we take are recycled.

- Ok. And can you estimate how many..

- Very small, very very small percentage. Because as you know, you've been listening to Jade, the things we take must have a fire label. Very very small. Not even...actually it blew me.. A bit like one percentage of the stuff we collect. Because sometimes we just simply can't take it

- Who is the typical customer?

- The typical customer?

- Yes.

- The typical customer. Oh, Jade...[looking at another staff member] what is.. the typical customer..[thinking] I'll tell you we....yeah, the ones we get most of..a lot of people now are what we are calling downsizing. They sell a bigger house to buy a smaller one..and I think a lot of people in that situation, they've got too much with then to take on. That is the typical donor. Or sadly, people who lost their parents..... and they need to clear those houses. Other than that it is just simply people who want new furniture. They want to buy a new three piece suite.

- So what kinds of people are buying the furniture?

- Buying? People on low income.

- What are the costs associated with receiving the furniture?

- The biggest cost is wages. Wages and possibly things like the heating, and then the most ongoing costs are the cost of the vehicles with the diesel. And then the expenses of keeping them on the road. [Undecipherable] the cost of the NOC, the tax. I guess those are the biggest costs, yeah.

- Do you use them everyday?

- Yeah, everyday except for Saturdays. Five days a week we use them.

- And the energy like [Undecipherable]?

- The main cost is wages, followed by the next one which is the vehicles costs. Then the rental, the electricity, the water.

- Why are you a part of the Furniture Re-use Network?

- Why...?

- Why are you a part of the Furniture Re-use Network?

- Why are we? I don't know.

- No?

- No, I don't know. See Kathy.

- Does the furniture donator get anything in return for donating the furniture?

- No. No. They don't get much, nothing in monetary terms except having the convenience of having their old furniture taken away. Because basically they don't have the time to take it to landfill.

- Do you make furniture?

- We can make furniture. We would make it...I..Mary..in..... the restoration next door we can make furniture to order. We don't make furniture to sell off the peak. They would have to made to order.

- Ok. And you have new furniture, why?

- We do. The main new furniture guideline would be that most...no, not most but a lot of the people like to sleep on a new mattress if they don't have a mattress. They want it to be clean which is understandable. We also buy other wooden furniture, wardrobes, chest of drawers. It comes in flat packs. Flat packs. You know flat packs? A flat pack is like a wardrobe that comes in pieces. You take them up the stairs and you assembly it yourselves. And we buy this because you need them. There are a lot of small houses where you need this flat pack furniture, and a lot of the furniture that is donated comes from bigger houses and you can't get it upstairs. So a lot of the people got the flat packs.

- Where do you buy that?

- The flat packs? We don't buy it locally, we buy it from manufacturers. Do you want the names of them?

- Yes

- The Beds, 22.55 [Undecipherable] Contact Beds. The Bedroom Furniture from Seconique. S e c o n i q u e. Like the French, Seconique. It is a large-scale trader, it is not for the public.

[Interview interrupted]

- Seconique.

- and ... and the flat packs.

- Yes, they are from Seconique. [Undecipherable] Bed contracts. All the bed rooms furniture other than the beds is from Seconique.

- Do you think you attract other customers by offering new furniture?

- Yes I do. [Paus] Do you want to know why?

- Yes

- Because you can buy flat packs as they are called anyway... but what differs us from the shop is that we actually put them together for you. Doing it yourselves put a lot of people off. What we can offer here you see is that we can sell people the flat packs, and we can deliver it and for a small fee, a very small fee, we can take it upstairs and put it together, so its win win for them

- What decides the quality? What price..How do you decide...to put the price on the furniture?

- By the age and the condition of it. [Paus] And the size. As I mentioned they have got the houses and the bigger suites, you know, the bigger the houses, the bigger the choice. But a lot of the suites we can't get into small houses, so they tend to be cheaper.

- **What quality [Undecipherable]**

- By the size of it? There is no way we can. [Undecipherable] Kept general. Some have their own cushions with them. Back cushions.

- **Ok, I think I have..**

- You got enough? [Undecipherable]

- **Thank You**

APPENDIX I – COLLECTION CRITERIA

VAN COLLECTION CRITERIA

These guidelines are important. We cannot pass on unsuitable items and it costs the charity money to store or dispose of them.

The most important thing to remember is that we collect REUSABLE items. They must be clean, unstained and fit for their purpose. They must not have been stored outside or in damp conditions. If they need repairs it must be something we can easily fix. We do not clear rubbish.

Think – would you have it in your home? Is it the sort of thing our clients want? Can we pass it on quickly?

SOFAS, CHAIRS, SUITES	<ul style="list-style-type: none"> • We do not take anything without the correct fire labels. No exceptions. • Zips must be intact/good order • No significant pet hair or damage • No significant rips or wear • Clean – or easily cleaned by us • Complete – no cushions or feet missing.
BEDS & MATTRESSES	<ul style="list-style-type: none"> • Clean – no stains • No rips or tears • Fire labels attached • If it comes to pieces are all the bits there?
FRIDGES & FREEZERS	<ul style="list-style-type: none"> • Must not have been stored outside • Door seals intact and in good condition • Shelves and accessories complete • NO RUST • Must be in working order
COOKERS	<ul style="list-style-type: none"> • Does it work? We can usually replace elements and rings but if there's too much wrong with it we can't afford to do this. • Is it clean or could we easily clean it? • Grill pans, shelves are included. • No rust
SMALL ELECTRICALS	<ul style="list-style-type: none"> • Must be working
TV's	<ul style="list-style-type: none"> • Does it work? • Can it be tuned? (the remote <u>must</u> be with it if it needs the remote to tune it or change channel) <p style="text-align: center;">TV's are hazardous waste and cost a lot of money to dispose of. You must use the RCD breaker, plug it in and check yourself.</p>
WARDROBES	<ul style="list-style-type: none"> • Must be in good condition. Check the back panel, hinges, drawer runners etc. • If it needs a key is it attached? • Does the clothes rail run side to side? If it goes front to back we don't want it. • Is it small enough to get into someone's home/in a lift etc? • Can it moved by two people? • Are you able to get it out of the property easily without any significant manual handling risk?
WALL UNITS, SIDEBOARDS &	<ul style="list-style-type: none"> • Must be under 5ft wide

DRESSERS	<ul style="list-style-type: none"> Preferably comes to pieces Not glass fronted No significant damage Special care with sideboards – low quality ones are very hard to shift and take up a lot of room.
DINING TABLES & CHAIRS	<ul style="list-style-type: none"> Legs should come off tables where possible. Solid tables are OK if they are in good condition No odd dining chairs Preferably full set of dining table with chairs. Use discretion – no junk please
DRAWERS	<ul style="list-style-type: none"> Good condition – check the back panel and the drawers runners Handles – it costs over £10 for a set of new handles – are they easy to fix/replace from spares?
CARPET/UNDERLAY	<ul style="list-style-type: none"> Clean (or can be cut down to a reasonably sized clean piece) Must be rolled up ready – we do not lift carpets Must have been stored well – not musty or damp.

WE DO NOT TAKE

- | | |
|------------------|--|
| Single armchairs | Beds or sofas & chairs without fire labels |
| Microwaves | Computer equipment |
| Gas appliances | Cots |
| Pushchairs | High chairs |
| Car seats | Electrical power tools/lawnmowers |
| Bikes | Anything that is damp or has been stored outside |

REMEMBER

YOUR SAFETY COMES FIRST.

IF IT'S TOO LARGE / HEAVY TO BE MOVED SAFELY YOU MUST TURN IT DOWN

We will take unsuitable items in some cases (i.e. full house clearance) but you will be advised beforehand if this is the case. Unsuitable items cannot be taken on normal scheduled collections – even if the customer offers to pay. Apologise and explain that we don't have the time or space to store and dispose of things. If there any queries or problems you should call the office for advice.

APPENDIX J – ITEMS CATEGORY NUMBER

<u>ITEM CATEGORY NUMBER</u>	<u>FURNITURE</u>
1 Bed base	double
2 Bed base	king size
3 Bed base	single
4 Mattress	single
5 Mattress	double
6 Mattress	kingsize
7 Sofa	
8 Armchair	
9 2 piece suite	
10 3 piece suite	
11 4 piece suite	
12 Wardrobe	double
13 Wardrobe	single
14 Chest of drawers	
15 Bedside table	unit, table, cupboard
16 Table	cane, coffee, occassional, nest of
17 Table	dining
18 Table	kitchen
19 Wall Unit	
20 Wardrobe set	Wardrobe with drawers underneath
21 Welsh dresser	
22 Chair	not padded, kitchen, dining, carver
23 Cabinet	display, corner, kitchen
24 Chair	padded kitchen dining, carver
25 Sofa	cane, conservatory with cushions
26 Bench	garden or kitchen
27 Blanketbox	
28 Bookcase	
29 Bureau	
30 Chair	high, childs, rocking
31 Cot	
32 Desk	childs
33 Desk	wooden
34 Dressing table	
35 Fire surround	
36 Headboard unit	with built in bedside cabinets
37 Headboard	double, kingsize
38 Headboard	single
39 Hi-fi unit	
40 Ottoman	
41 Sideboard	
42 Tallboy	
43 TV unit	
44 3 piece suite	cane with cushions
45 Bunk / cabin bed	
46 Chair	conservatory, cane
47 Chair	easy, fireside, lounge
48 Chaise longue	
49 Futon / sofabed	wooden base with mattress
50 Pouffe	
51 Reclining chair / lazy boy	
52 Sofa bed	foam flop out
53 Sofa bed	metal frame
54 Miscellaneous small	eo stool tea trolley shelf

ELECTRICAL

A	Food mixer	
B	Baby belling	
C	Cooker	
D	Dishwasher	
E	Freezer	chest
F	Fan	
G	Fridge Freezer	under counter or free standing
H	Hair & Beauty	
J	Video	
K	Fridge Freezer	large
L	Lamp	
M	Microwave	
N	Hi-fi	with speakers
P	Heater / fire	small, medium
Q	Heater / radiator	large
R	Radio	
S	Spin dryer	
T	Tumble dryer	
U	Small electrical	eg kettle, toaster, clock
V	Vacuum	
W	Washing machine	
Y	TV unit	
Z	Twin tub	

OTHER

55	Bedding	
56	Bric-a-brac	box of
57	Carpet	flooring, underlay
58	Clothes horse	
59	Ironing board	
60	Lino	
61	Mirror	large
62	Mirror	small
63	Piano	
64	Plant / coat stand	
65	Rug	
66	Miscellaneous small	eg scales, shoe racks, pedal bin

OFFICE

67	Office cabinet
68	Office filing cabinet
69	Office chair
70	Office desk

HOUSE CLEARANCE

HC1	House clearance	small
HC2	House clearance	medium
HC3	House clearance	large

APPENDIX K – FURNITURE RECEIVED 2006

Furniture can be identified in Appendix J – Items Category Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14
19	4	12	18	21	3	24	23	2	16	1	17	12	22
13	0	16	22	12	0	14	22	2	25	2	2	12	21
18	1	8	8	11	0	22	12	6	40	0	0	9	20
7	1	10	9	8	2	24	4	2	13	0	0	9	8
8	1	17	18	5	1	26	15	2	17	0	0	1	20
15	16	17	18	19	20	21	22	23	24	25	26	27	28
10	24	26	3	17	0	3	71	18	32	0	0	0	7
29	12	28	26	0	15	2	2	94	14	11	0	0	0
35	16	40	33	12	8	2	1	114	22	45	2	0	0
16	9	17	15	1	3	0	2	51	16	11	0	0	0
17	23	23	24	4	11	0	2	92	20	21	0	0	0
29	30	31	32	33	34	35	36	37	38	39	40	41	42
2	1	0	0	6	12	0	1	2	0	5	2	7	1
6	2	2	0	1	12	14	0	0	2	1	6	1	6
16	3	4	1	0	6	12	0	1	2	5	6	0	7
5	0	1	0	0	7	8	0	0	0	0	1	1	2
8	1	1	1	0	16	19	2	0	0	1	2	2	9
43	44	45	46	47	48	49	50	51	52	53	54	55	56
8	0	0	0	1	0	1	1	0	2	5	28	0	2
5	12	0	0	0	1	0	0	1	0	4	1	26	0
0	16	1	5	2	4	0	0	2	0	0	2	15	0
0	5	1	3	0	2	0	2	1	0	2	0	6	0
2	7	0	4	4	5	0	0	0	0	0	2	11	0
57	58	59	60	61	62	63	64	65	66	67	68	69	70
0	0	0	0	0	1	0	0	0	0	0	2	1	1
7	0	0	1	0	1	0	0	0	1	0	0	1	0
7	0	2	0	0	2	4	0	0	1	13	1	7	1
4	0	0	0	0	1	1	0	0	4	10	1	0	3
15	0	0	0	0	0	0	0	0	0	0	0	0	61
A	B	C	D	E	F	G	H	I	J	K	L	M	N
0	0	6	0	1	0	4	1	0	2	1	2	0	0
0	0	0	13	0	1	0	6	0	0	1	2	1	0
2	0	0	7	1	5	1	8	0	0	2	3	1	1
0	0	0	3	0	5	0	1	0	0	0	0	0	1
0	0	0	4	3	10	1	0	0	0	0	6	1	0

O	P	Q	R	S	T	U	V	W	X	Y	Z	HC1	HC2	HC3	Month
0	0	0	0	0	1	0	0	4	0	0	0	0	0	0	Jan
0	0	1	0	1	0	2	0	0	6	0	4	0	1	0	Feb
2	0	2	0	1	0	2	2	0	4	0	5	0	0	0	Mar

0	0	1	0	1	1	1	1	2	3	0	2	0	1	0	Apr
0	0	0	0	0	0	2	5	1	4	0	3	0	6	0	May

APPENDIX L - SOLD FURNITURE 2006

Furniture can be identified in Appendix J – Items Category Number

APPENDIX M – CHOOSE2REUSE



[HOME](#) | [DIRECTORY](#) | [@HOME](#) | [@WORK](#) | [LINKS](#)

HOME

Choose2Reuse to help Charities, the Environment and your local Community!

What is REUSE?

Reuse and recycling are often considered to be the same, but they are quite different.

Reuse - is taking idle goods and materials and using them in their original form, with possibly just a small amount of repair, either for the same purpose or something different.

Benefits of Reuse

- Saves landfill space
- Doesn't use up energy or raw materials as new products are not being made
- Reduces waste handling and disposal costs
- Generates an income for charities and other social groups
- Helps those that need reused items like schools, community organisations and members of the public
- Creates opportunities for jobs and training





What are the opportunities for Reuse?

The community sector offer many services to the general public including

- Repairing and sending tools and bicycles to third world countries
- Repairing and selling second hand furniture and electrical equipment including computers, washing machines, TV's, tables, chairs, cabinets...
- Selling unused textiles / footwear and books, toys, CD's in local charity shops and at jumble and car boot sales
- Reusing leftover pots of paint

Do you have any of the above items? Then please DONATE them to your local community group or [charity shop](#).

Do you need any of the above items? Please support your local community group or charity shop by buying them from these outlets.

Did you know that there are some amazing things to be found at your local charity shop and furniture project at very reasonable prices! From the obvious of clothes and books, to the more unusual electronic appliances, furniture, crockery, cutlery, bedding, games and toys; there is something for everyone at a bargain price!

[Choose2Reuse](#) started in Cambridgeshire in 2004, and has now been expanded to cover Essex, Suffolk, Norfolk, Northamptonshire, Hertfordshire and Bedfordshire, with support from the [Defra Environment Action Fund](#).

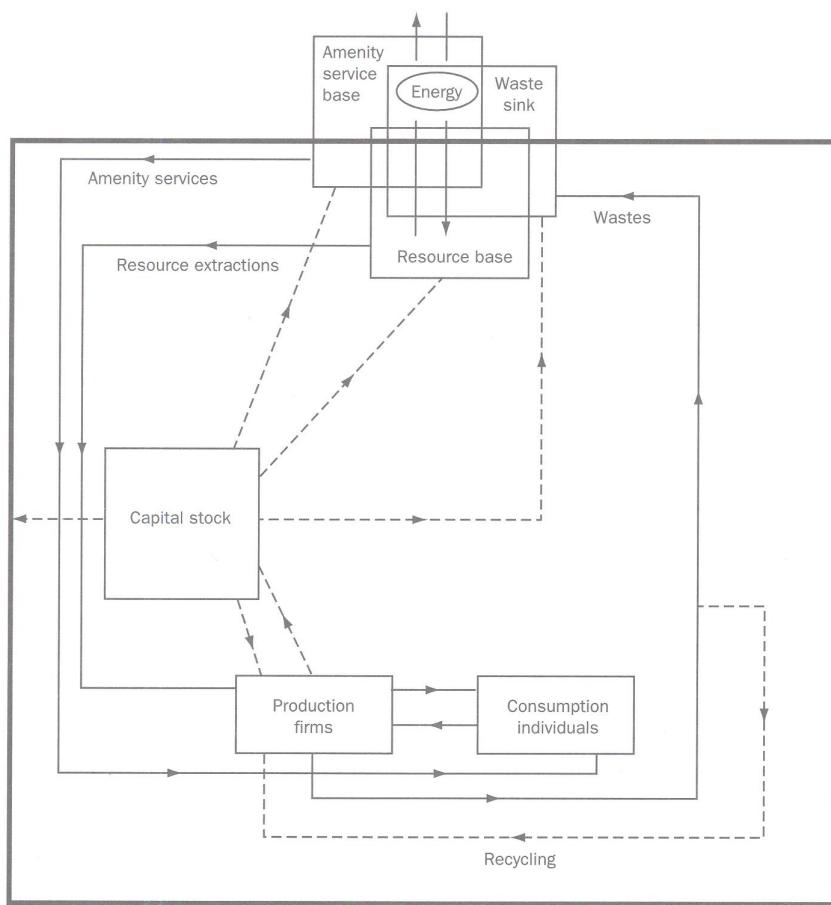


website designed and maintained by [Rockmill Webspinners](#)

APPENDIX N

The economy and environment interdependence

Economic growth has since the 1950s; 1960s been seen as the solution to the problem of poverty around the earth and the nature the provider of resources necessary to do so. Roger Perman (2003) has in his book Natural Resource and Environmental Economics written about the economy and environment interdependence. This means the economic activity that is a part of, and takes place within the natural environment which is the earth and its atmosphere. Perman (2003) has constructed a framework (see Figure 1 below) where he is explaining the relation between the environment and the economy.



Figur 1

The system called the environment has itself an outer environment. The outer heavy lined box represents the environment, earth, and is a thermodynamically closed

system. (Perman et al, 2003) The earth might be an open system for energy as for example solar radiation but is a closed system for material. (McDoughall, 2001, Perman et al, 2003) Global Climate system functions supporting human life are determined by the energy going in and out of the environment represented by the outer line black box. The three boxes on top of the black box represent (Perman et al, 2003) economically valuable services and functions that the environment provides humans (Turner et al, 1994). The environment can work as a resource base, a waste sink or as a resource providing amenity services for the population on earth. Economic activity takes place within the environment, the black box, through consumption and production which draw upon environmental services. This is shown by the solid lines drawn from the production and consumption boxes inside the black box. (Perman et al, 2003) As a resource base natural resources are used in the production of goods and services in different forms, either as flow resources or as stock resources. Wind, wave and solar radiation are flow resources, and the use of these does not affect the use and availability of those in the future. Stock resources can be divided into two further groups, renewable and non-renewable resources. Renewable resources are flora and fauna. If the consumption of these resources is the same as the natural growth the consumption is sustainable and resources can be used indefinitely. Non-renewable resources can not reproduce in the same extent and the use of these does effect the use of non-renewable resources in the future. Non-renewable resources are minerals as for example fossil fuels. (Perman et al, 2003) All material use eventually results in waste production (Turner et al, 1994) when going back to the environment is considered to be pollution (Perman et al, 2003). There is a concern that the pollution and waste that is generated exceeds the environments capability to absorb the waste and transform it to harmless compounds. (McDoughall, 2001) However by recycling polluting the environment and using it as a waste sink can be decreased. (Turner et al, 1994) Recycling has increased the efficiency of material use and fewer resources having to be extracted from the environment. Technology and innovation is furthermore a reason for resources becoming more available for extraction for less cost. (McDoughall, 2001)

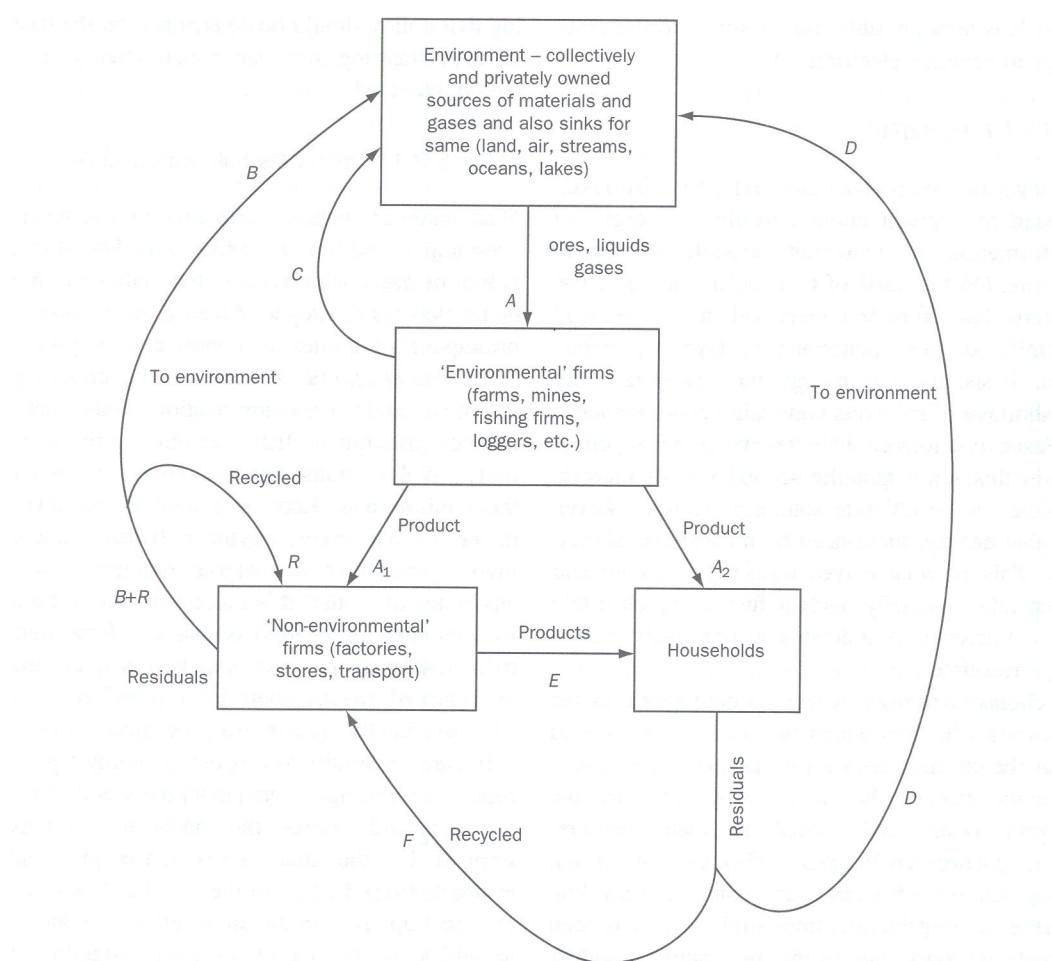
Amenity services do not necessarily include any consumptive material flow. Wilderness recreation, swimming from an ocean beach and lying out of doors in sunshine is examples of amenity services. Consumption of amenity services can still have an effect physically on the natural environment. Except being a resource base, waste sink and providing amenity services the biosphere is essential to support life

(Perman et al, 2003, Turner). All services that the environment provides interact with each other. Polluting a resource base can have the affect that the resource base can't be used as it would have a negative impact on human health. (Perman et al, 2003)

Recycling material could prohibit waste reaching and potentially degrade the environment's resource base at the same time as it could decrease material being extracted from the environment in the first place. The dashed lines in Figure 1 that goes from the Capital Stock to the other three boxes and the thick line show the ability to substitute environmental assets as for reproducible capital. The burden as using the natural environment as waste sink can decrease by treating for example sewage before realising it to the river again. (Perman et al, 2003) Some materials are higher in concentration in landfills than in original material ores. (McDoughall, 2001)

2.2.1 The materials balance principle

Economic activity can't create material but involves transforming material from the environment to states that are more valuable for humans. The materials balance principle is based on the laws on thermodynamics saying that matter can neither be created nor destroyed. The flow of materials from and to the environment can be studied in Figure 2. The Figure represents a materially closed economy.



Figur 2

The different arrows, marked out as letters, shows the different flows of material taking place within the interaction of the environment and the economy.

- The Environment: $A = B+C+D$

The Environment are the collectively owned sources of materials and gases and also sinks for same such as land, air, streams, oceans, lakes.

- Environmental firms: $A = A_1+A_2+C$

Environmental firms are farms, mines, fishing firms, loggers, etc.

- Non-environmental firms: $B+R+E=R+A_1+F$

Non-environmental firms are factories, stores and transport.

- Households: $A_2+E=D+F$

The material taken from the environment (A) must be equal to the material that goes back into the environment (B+C+D). Waste management could be seen as a way to treat residuals and transform them into a more benign form as it can't be destroyed and eventually will go back to the environment no matter what. (Perman et al, 2003) Polluting the environment and using as an infinite sink for waste will deteriorate its value and environmental quality and for this not to take place there is a need for efficient management of waste. (McDoughall, 2001) It might also have a negative impact on human health. Looking at the relation between $B+R+E=R+A_1+F$ shows that if recycling can be increased than the input as A_1 can be decreased and less extraction from the environment can take place. Household will still get their products in form of E. (Perman et al, 2003)

In an ideal world all production could be made from recycled materials or used products and no extraction of resources from the environment would be necessary. No material would neither be sent to landfill and nor back to the environment in undesirable forms. The material flow would follow a closed loop system instead of an open one. Energy would although have to be added. (Carlsson et al, 2003) A closed loop recycling is when the same material or products being re-used or recycled without adding any other materials or energy to it. However, this is impossible according to thermodynamics as earlier mentioned as some sort of energy for handling of the products are required in order to make them usable again. (Schmidt, 2005)

Recycling in the materials flow chart includes the term re-use (Turner et al, 1994) but is in the waste hierarchy seen as a separate waste treatment method (Ciambrone, 1997).