Waste Sorting
A PROPOSED SOCIAL DESIGN WORKSHOP TO IMPROVE BEHAVIOUR AND MANAGEMENT OF RECYCLING.
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ABSTRACT

This study and design concept explores the need for a change of the behaviour and recycling knowledge in Nybro Municipality, situated in Eastern Sweden.

The main aim of this study is to provide support for discussion and act as an inspiration for the future development of projects with participatory citizenship. Additionally, to invigorate the need for a sustainable and circular waste management to reach sustainable development.

The theoretical framework set up for this study focus on sustainable development, citizens’ behaviour and knowledge of recycling. The explorative research stage of the project is performed through several methods, including interviews with current waste management companies and Nybro Municipality’s Sustainability Department. Furthermore, a survey of the citizens of Nybro municipality, to investigate the behaviour and knowledge about recycling. Correspondingly, relevant secondary research and compulsory review of the context, waste management and circular economy in Sweden, but also the behaviour within recycling of the system users - citizens, is being examined. The project focuses on sorting and analysing the data and findings by using methods of several different visual thinking tools.

The outcome of the project is a proposal of a design concept to facilitate the recycling of waste for the citizens as the users. Moreover, to emphasize the need and importance of recycling our everyday waste materials. This project is not a solution-based project, but more widely to provide a basis for discussion and inspire.

The goal is to find a way that encourages citizens to recycle waste from products purchased in their daily living. A social design workshop, focusing on circular waste management and recycling behaviour, together with the citizens living in Nybro municipality, will be proposed and co-designed with the municipality’s sustainability department of Nybro Municipality.

KEYWORDS

Sustainable development, Circular economy, Recycling, Recycling behaviours, Social Design Workshop
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1. Introduction
1.1 BACKGROUND

Annually, large economic values are disposed because of products and materials that are used only once become waste. Sweden yearly loses billions of crowns due to materials and products not given new life with retained quality after the first lifecycle of use see figure 1. To change this, the rules at the societal level must be reviewed.

Climate policy has so far focused on energy supply. But material use also has a great climate impact. Nearly a third of the world’s energy consumption and 36% of carbon dioxide (CO2) emissions are attributable to manufacturing industries (Emissions, 2007).

Despite today’s awareness of environmental problems due to increased consumption followed by waste as the aftermath, the goals for recycling, that has been set up by the government in Sweden and the EU, is not reached. They still need to speed up the transition to a bio-based and circular economy, with a higher percentage of renewable energy (The government office of Sweden, 2017).

With today’s production technology and low degree of recycling, there is no chance of meeting the Paris agreement’s objectives with the goal of strengthening the global response to the threat of climate change. The aim is to keep a global temperature rise, this century, well below 2 degrees Celsius and continuing the work of limiting the temperature rise further 1.5 degrees Celsius. This is an agreement aimed at strengthening countries’ ability to come to terms with climate change (Paris Agreement, 2017). If recycling and reuse are given priority, emissions can be reduced sharply (see figure 1). Products put on the market must be designed to be recycled, reused or remanufactured. Thorpe argues that 80 percent of a products environmental impact is already determent in the design phase (Thorpe, 2007). By minimizing the numbers of parts that are connected e.g. with fasteners that are visually and physically accessible, makes it easier to disassemble the product or to avoid combinations of materials that are difficult to separate by using clear materials and not hybrids which obstructs the material identification (Åkermark, 1997).

![Figure 1. The image above shows reduced carbon dioxide emissions by recycling material compared to extraction of new raw materials at 1 ton of each material type (Klimatnytta, 2017)](image-url)
We must get away from the linear material flow (see figure 2) and create a paradigm shift by introducing circular material flow (see figure 3). This would save billions of Swedish crowns annually, create various new jobs (Cooper, 1999; The government office of Sweden, 2017) and increase the opportunities to reach the goal of zero emissions of greenhouse gases into the atmosphere.

Figure 2. Model of the linear material flow

Figure 3. Model of the circular material flow
1.2 PERSONAL MOTIVATION

I moved to Nybro almost six years ago, to study my bachelor degree in product design at Linnaeus University and have been living here ever since. Nybro Municipality is located amongst the forests of Småland and the seacoast at Kalmarsund.

I’m currently living in an apartment where we have a common gathering of recyclable materials. I have noticed several times that many of the things, people in the area where I live throw out, is not sorted in the correct way that is being instructed. Time to time, I see everything in one bag and thrown in the container for disposal.

I see the potential of focusing on the users of the current recycling system to investigate the why and the behaviour behind not sorting materials but also a possibility to redesign and propose a new idea, to increase recycling with the participation of the citizens of Nybro Municipality.

My educational backgrounds in product design and interior design have given me great insights in sustainable development. This includes economic, social and ecological aspects, as a basic standpoint of planning and analysing for better design decisions and product development. My recent design master studies, with a broader understanding of design, the role of a designer has been changed to a larger and more responsible title “Change agent”. The role of a designer in emerging a sustainable society is not simply to create sustainable products, but through the realization of situations, envision products, processes and services that inspire and encourage sustainable behaviours.

With this project, I find a great possibility to explore and utilize my knowledge that I have gained from my current studies at Linnaeus University. Furthermore, to enhance the opportunity of deepening my acquaintance with Nybro Municipality as the county I live in.
Furthermore, this study aims to strengthen the knowledge and the need of continue recycling of materials in Nybro Municipality, to achieve such a sustainable development as social sustainability and thus, economical sustainability. In a broader aspect, to act as a role for Sweden and the global world to decrease environmental problems due to increased consumption followed by waste as the repercussions.

Another purpose of this study is to find out the reasons that support the theory of production with waste and recycling, reuse and remanufacturing as the end of life of a product. The basic purpose of the theoretical framework is to investigate the subject of this study in a strong aspect of sustainability, focusing on social-economic and social-environmental sustainability.

Aside from establishing a relevant contextual framework for the research, the goal of the design project is a proposal of a Social Design Workshop focusing on circular waste management and recycling behaviour, to facilitate the recycling of waste for the citizens as the users in the Municipality of Nybro. To emphasize, this project’s goal is not solution based, but much more to provide support for discussion and hopefully act as an inspiration for the future, by development of projects with participatory citizenship.
1.4 DELINEATION OF THE FIELD OF STUDY AND PROJECT

The focus of my study is the citizens’ interference with the current recycling system in Nybro Municipality. The broader contexture of this study implicates sustainable development theories that give emphasis to materially reduce the waste generation through recycling and reuse in relation to sustainability. In this study, social-economic, social-environmental and socio-political sustainability is of the essential parts, but it also refers to cultural aspects of sustainability as well. The behaviour towards recycling and the interference of the citizens in relation to recycling are studied through exploratory research along with secondary research to review already available literature, articles and desktop research.

My hypothesis is that the contrast is big, between living in a house with the space to store containers for recyclable materials, but with own responsibility for receiving it at the recycling stations and living in an apartment with little space to store containers and a common gathering of recyclable materials, with no own responsibility of receiving it at the recycling stations.

My second hypothesis is that citizens’ do not recycle everything that they purchase on their daily bases. Much of the things that can be recycled is not recycled and is ended up as combustibles. From a socio-cultural perspective, one of the most important aims is to find out citizens’ genuine feelings about recycling and how they recycle on their daily bases. It is necessary to give the citizens of Nybro Municipality a voice when developing this design project, as they are the users of the current recycling system.
1.5 RESEARCH QUESTIONS:

- How can consumers as users act locally within their own household and thus have a greater impact on the global within recycling of products purchased in their daily living?

- How is the citizens behaviour and attitude towards recycling of household waste in the Municipality of Nybro?

- Is it possible to facilitate the waste management through a social design workshop with participatory citizenship that contribute to improvement of recycling in the Municipality of Nybro?

Figure 5. The Municipality of Nybro
2. Theory & Research
2.1 THEORETICAL FRAMEWORK

The delineation of study and research of my project implicates sustainable development theories that give emphasis to materially reduce the waste generation through recycling and reuse in relation to sustainability but also the involvement of the citizens in relation to recycling. To accomplish an extensive and solid foundation for my design project, different theories were used to develop my research and design project. The research process has included both theoretical parts and empirical studies to gain knowledge for my design project. When it comes to the theoretical framework, this thesis is very much based on sustainable development, waste management and citizens in relation to recycling.

2.1.1 SUSTAINABLE DEVELOPMENT

The Brundtland Commission, now known as World Commission on Environment and Development, wrote a report on the behalf of the United Nations (UN) in 1987. In the Brundtland Report, sustainable development was defined as a “development that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987, p.15). The concept of sustainable development aims to maintain economic growth and progress while protecting the environment in long-term. Furthermore, to move towards development that is truly sustainable, environmental, social, and economic, concerns must be integrated throughout decision-making processes in different levels (Emas, 2015), therefore, sustainable development needs to be implemented on a regional, national, and global level (Brundtland, 1987). The concept of sustainable development “provides a framework for the integration of environmental policies and development strategies” (Brundtland, 1987, p.33). Cabezas and Diwekar (2012) describe sustainability as a summary of a concept developed by people to help promote the welfare of people. Hence, sustainability is about people for people (Cabezas et al., 2012, p.4). By this, a change in the local behaviour and environment can help the future generation through sustainable development.

2.1.2 CIRCULAR ECONOMY

Our industrial economy has been dominated by a linear model of production and consumption, meaning goods are manufactured from raw materials, sold as a product, used and then disposed of as waste (Cooper, 1999). Against the backdrop of an increasing global population, the growing resource consumption and negative environmental impacts, it becomes clearer that continuing with the linear model of production and consumption is not an option for a sustainable future (Wautelet, 2018). It was initially presented by Pearce and Turner in 1989 and is inspired by the environmental economist Boulding’s concept of a circular system that he called spaceman economy (Boulding, 1966). The transition from a traditional economic system to a circular economic system can be explained as a logical consequence of the principle of thermodynamics that contemplates the decomposition of matter and energy (Pearce et al., 1989).

The concept of circular economy has aimed to provide an alternative to the linear model of economics based on “take, make and dispose of” (Ness, 2008, Ellen Macarthur Foundation,
It has gained great interest worldwide (Ness, 2008) within the understanding of the negative effects of the system that threatens the integrity of the natural system and consequently human survival (Ellen Macarthur Foundation, 2012). The purpose of circular economy is to lead the world to sustainable development and a harmonious society (Ness, 2008, Ellen Macarthur Foundation, 2012). A circular economy is characterized by three main actions, so-called 3 R’s principles: Reduce, Reuse and Recycling (Sakai et al., 2011).

**REDUCE PRINCIPLE:**
The Reduce principle aims to decrease or minimise the use of primary energy, raw materials and waste. Zhijun et al (2007) argues that this can be done by an improvement of consumption processes, efficiency in production (eco-efficiency) by e.g. through establishing of preferred technologies, compact and lightweight products with simplified packaging, more efficient household appliances, hence, a simpler living (Zhijun et al., 2007, Sakai et al., 2011).

**REUSE PRINCIPLE:**
The Reuse principle refers to “all non-waste products or components which is reused for the same purpose as they were intended for” (European Commission Reuse, 2014). The reuse of products is very sympathetic in terms of environmental advantages, as it requires fewer resources by using less energy compared to the new products that manufacture, being extracted from virgin materials or even recycling or disposal (Sakai et al., 2011, Castellani et al., 2015).

**RECYCLING PRINCIPLE:**
The Recycle principle refers to the recovery of waste materials which are “reprocessed into products, materials or substances whether for the original or other purposes” (European Commission Recycle, 2014). Recycling of waste gives the opportunity to use useful resources, which reduces the amount of waste that needs to be treated or disposed of, thereby, reducing the cohesive environmental impact (Sakai et al., 2011).

### 2.1.3 THE EUROPEAN UNION WASTE HIERARCHY

Members of the European Union (EU) have agreed that each country is responsible for taking care of their own produced waste in to protect the environment. For this to be done, each member shall treat their waste according to the waste hierarchy established by the EU (Waste Framework Directive, 2016) see figure 6. According to the EU Waste Framework Directives (2016), all members of EU shall ensure that the configuration of waste legislation and waste policy takes place in a procedure that allows for full insight by considering existing national provisions on consultation and involvement of citizens and stakeholders (Waste Framework Directive, 2016).

Primarily, according to EU’s waste hierarchy, is to minimize the use of the earth’s resources as well as the impact on the environment, it is important to create as little waste as possible, especially dangerous waste. The existing waste should be reused. If there is no possibility to reuse the materials, the materials should be recycled. If the waste cannot be recycled, energy should be recovered through combustion of the materials. The usage of landfills should only be used if nothing else can be done with the materials (Waste Framework Directive, 2016).
From an environmental and an economic point of view, recycling is apprehended to be a good solution for collecting wastes that later can become something else instead of ending up in landfills. For instance, to produce new packages from recycled materials is less of an environmental extends than extracting new raw material for production (European Environment Agency, 2016).

Figure 6. The waste hierarchy
2.1.4 WASTE MANAGEMENT

Today’s environmental issues revolve around and related to how waste originates and how it is handled after it gets thrown away (Ewert et al., 2009). The Swedish Environmental Protection Agency defined waste as any item or substance that the owner wishes to dispose of or is obliged to dispose of (Naturvårdsverket, 2017). Each produced item involves an environmental impact, such as climate impact, meaning the usage of natural resources with harmful by-products as the repercussions. It is of significance to know how waste is handled from an environmental point of view and how it occurs in everyday life, to influence this. This applies to the entire chain of actors and technologies from waste disposal to return to the economic or natural systems (Ekvall et al., 2012).

The ways of arranging the collection of waste as municipalities, but also real estate companies, can differ depending on the municipality (Ekvall et al., 2012). Most municipalities have similar distributions when it comes to sorting household waste in packages of e.g. carton, metal, plastic, paper but also coloured and uncoloured glass and compost (Food waste) (Ewert et al., 2009). There are variations in how the waste is taken care of within different types of living. In some households, the waste is disposed of directly to the waste companies, i.e. by own recycling bins or the waste being left at the recycling stations. Other households have an intermediary in the form of landlords or tenants who are responsible for the waste rooms, where the waste is sorted and then collected by the waste management companies (Ewert et al., 2009, Ekvall et al., 2012).

WASTE MANAGEMENT IN SWEDEN

In Sweden, there are different types of companies who collect different types of waste. These companies are usually procured by the municipality (E. Adrian, personal communication, March 19, 2018). The government has delegated this object to the local municipalities (in this study, Nybro municipality).

WASTE MANAGEMENT IN THE MUNICIPALITY OF NYBRO

In the Municipality of Nybro, two companies are responsible for the waste management, Förpacknings & Tidningsinsamlingen (FTI AB) and Kalmarsundsregionens Renhållare (KSRR) (Nybro Municipality, 2018)

2.1.5 THE CITIZEN’S ACTIVE INVOLVEMENT IN RELATION TO RECYCLING

One of the most consisting challenges of public policy is the balancing of the state intervention and personal responsibility. Controversies around the regulation of public behaviours, the provision of public services and the solutions to collective problems revolve, partly, around finding an appropriate balance between government activism and individual responsibility (Askew et al., 2009).

Environmental policy is an engagement of the official rules, regulations and other policies regarding the environmental issues (Eccleston et al., 2011). An environmental policy often requires citizen’s active involvement and responsibility to implement a solution to this issue.
Many of the environmental policy obligations are expressed in the household related everyday activities such as sorting of waste materials and the active purchase of yet more sustainable products and services (Hage et al., 2009, Söderholm, 2011). Söderholm (2011) stress that Swedish environmental policy has “an explicit objective to increase and maintain active, individual responsibility for the environment”.

2.1.6 THE SWEDISH CULTURAL ASPECTS OF RECYCLING

People’s behaviour and attitude towards recycling are positive in general. According to Ekvall et al. (2012), this attitude is the result of the satisfaction achieved from the performance of contributing to a better environment. The users tend to act in accordance with this attitude if it is easy to use the recycling system.

Ekvall et al. (2012) describes the difficulties of the recycling system and the general opinion of the systems which is not fully functional. To recycle and doing something good for the environment but also the uncertain feeling of how to do it properly, is an issue. This uncertainty comes from the many different packages and their materials the packages consist of. Many packages are difficult to disassemble or consist of different hybrid materials that are difficult to distinguish. Another uncertainty of recycling is related to what happens with the waste once it is sorted (Ekvall et al., 2012).

Recycling stations waste sorting refers to packages and not materials in general. When the categories of how to recycle do not match the cultural categories of materials, people easily mistake certain categories of materials such as plastic and paper, but not between others such as packaging and “non-packaging” (Ewert et al., 2009). Thus, the common cause of uncertainty is that the basic categories of the waste management system do not match with the basic categories used in everyday life households. The shortage of categories, create an uncertainty from the perspective of the user. An item that cannot be categorised and sorted for recycling, make the collection of waste incomplete and brings down the credibility of the system (Henriksson et al., 2010).

The feeling of insecurity regarding recycling will diminish if knowledge about what happens to waste after it has been disposed of becoming known. It is important to let people know about the process since the feeling of insecurity regarding the recycling is quite common (Henriksson et al., 2010).

2.1.7 KNOWLEDGE AND BEHAVIOUR OF RECYCLING

A study in mass communication of information through socio-psychological and environmental psychological studies was made by Naturvårdsverket’s research program (Ekvall et al., 2012), the study showed that information has difficulties reaching the intended receiver without reinforcing their motivation (Ekvall et al., 2012). “A plastic package is not the same as a toothbrush made in plastic”. This is also argued by Gardner and Stern (1996) in the book, Environmental problems and human behaviour. Information alone often has a slight effect on the behaviour of people and therefore needs to be combined with other measures (Ekvall et al., 2012). Gardner and Stern (1996) stress that a broader viewpoint is needed to reach a
better solution for the issue. “There are many different psychological components and dimensions of environmental problems, and all of them must be addressed in efforts to lessen these problems if the efforts are to succeed” (Gardner et al., 1996, p. 249). Solution approach is likely to work better in combination with other techniques e.g., the use of motivational actions combined with education.

Environmental oriented information has mainly served to educate people, with the belief, that the reason people are not recycling or not recycling in the right way is the lack of knowledge and understanding within the subject (Ekvall et al., 2012). Hence, to change the behaviour of a person it is not enough to increase the knowledge, moreover, some knowledge is a necessity for accomplishing this, but it needs to be combined with other measures. Information that points out the moral significance of acting environmental friendly, together with activating social and personal norms, has a bigger impact on a person’s behaviour (Hage et al., 2009, Ekvall et al., 2012). Information should, therefore, be adapted to the significant target group, it should be well formulated, so it adjusts with the values and beliefs of the person, furthermore, it should point out that effort makes a difference. If not, the effort will be rejected as an unnecessary measure, which has a negative influence on the person’s action (McCarty et al., 1993). To change a person’s habits towards recycling and environmental care requires different types of information e.g. information so that the person’s behaviour of value can be recognized (Hage et al., 2009, Ekvall et al., 2012). Hage and Berglund (2009) stress that habits and norms are important for explaining household recycling behaviours (Hage et al., 2009). A norm is in large defined as an expectation, standard or pattern held by an individual about how he or she should act especially of social behaviour that is typical or expected (Oxford Dictionaries, 2018). Previous studies have shown that norms constitute a highly motive for environmental behaviour (Hage et al., 2009, Borgstedt et al., 2010).

People who are doubtful of the necessity and effectiveness of recycling often have neutral or negative approaches towards recycling and are usually perceived as individuals with a lack of knowledge (Borgstedt et al., 2010). To reach these individuals with doubtfulness, Borgstedt and Andersson (2010) stress that one solution is to frame the information differently in order to reach them e.g. environmental benefits or how local goals for recycling and waste separation are being met. “People who have internalized social norms into personal norms can be assumed to be in the latter stages of behaviour change and feedback information can motivate them to continue with the behaviour” (Borgstedt et al., 2010).
Figure 7. Theoretical framework
2.2 METHODOLOGICAL FRAMEWORK

2.2.1 SECONDARY RESEARCH

In addition to the primary research, which in this study relates to exploratory research, involving participants and communicators to provide me with insight in the given situation of the field which I am studying, I used secondary research as a method to gain further information and insight to formulate my research questions. Secondary research is a collection of information and incorporations from already existing sources, such as books, research papers and journals articles, governmental statistics, and so forth, to capture the essentiality of previous researchers to inform my current design project (Hanington et al., 2012, p. 154). At the beginning of my research process, I started by reading some research papers and journals articles in the field of sustainable development and circular economy, to gain more knowledge and understanding. I also went through governmental protocols and statistics to find out the goals and objectives for recycling and sustainable development that has been set up by the government in Sweden and the EU to further deepening my understanding of the context of Sweden and EU. The desktop research was used for searching essential information about Nybro municipalities' waste management. This was mainly done to briefly understand the division of the two companies who take care of the waste management in Nybro municipality.

2.2.2 INTERVIEW

In order to find out more information about the waste management and sustainable development of the Municipality of Nybro, interviews are fundamental as a method to collect first-hand information from participants and communicators to gain further information about opinions and perceptions (Hanington et al., 2012, p. 102).

WASTE MANAGEMENT COMPANIES OF NYBRO MUNICIPALITY

Early on in my research phase, I contacted the two companies that take care of the waste management of Nybro Municipality. Both communicators did not have time to meet me in person and I had to send a structured interview via email. According to Fraley (2004), an email interview is an internet-related data collection and is considered an efficient interview method. Furthermore, an email interview is most efficient if it is a structured interview. A structured interview is a settled set of questions asked in an unalterable order that allows the respondent to cover the questions one by one (Fraley, 2004). By sending my structured interview via email, it allowed me to get many specific answers to the different questions I had.

NYBRO MUNICIPALITIES SUSTAINABILITY DEPARTMENT

To broaden my exploratory research, I also contacted Nybro Municipalities’ sustainability department to gain further information and knowledge in the Municipalities work in sustainable development. I conducted a semi-structured in-depth interview with a list of topics to be discussed. To discover unexpected topics and subjects, I wanted to retain the meeting with Nybro Municipalities’ sustainability strategist less conventional. To succeed with this, a semi-structured in-depth interview was conducted. As stated by Cohen et al. (2006), a se-
mi-structured depth interview is based on a guide consisting of a list with questions and topics that are needed to be covered during the discussion with the interviewee. It also allows the interviewer and the interviewee freedom of exploring additional subjects.

2.2.3 SURVEY

Conductive to get a better overview of how the current recycling system works from the view of the citizens’, I decided to include an online survey to get to know the people’s genuine opinions, feelings and insights of recycling in my exploratory research phase of this study. As stated by Hanington et al., (2012, p. 172), a survey is an effective tool for collecting data in a short amount of time and with large enough assortment, the results are possible to be analysed statistically. It was crucial for the participants to be anonymous and the data to ensure confidentiality in their response from an ethics point of view. To get as big assortment of answers from the citizens as possible, it was essential to conduct the survey properly by establish the aims and questions of the survey on previous research and methods e.g., secondary research and insights from the interviews of the communicators of the two waste management companies in the Municipality of Nybro, however, more importantly of my research questions.

The survey I conducted consisted of different types of questions, e.g. closed questions, meaning constrained choices of answers, specific questions focusing on already determined details, judgmental questions to ask for the citizens’ opinions and request for suggestions that invites participants to propose new ideas and opinions (Hanington et al., 2012, p. 172). I use Google Forms to conduct the survey due to its easy accessibility and its usability. In the preparations for publishing the survey online, I tested the survey on family members, consisting of five members (two male and three females) in the age groups of 25-30-and 55-60years, to appreciate the time it took to finish it and to avoid possible mistakes or complications, but also to avoid difficulties and to be uninteresting for the participants to answer. To reach a broad group of participants’, I decided to use social media as the platform for posting my survey on. I posted the survey on the biggest Facebook groups, which means those groups with the most members and various age groups.

By conducting this survey, limitations of this method were admitted. It is important to know that social media is not used by everyone, this limits certain age groups. It is also important to acknowledge that the survey does not interest everyone; this means that the survey is mostly answered by groups who are interested in the topic, in this case, recycling, or who think that this question needs to be reset. It is also important to acknowledge that an online survey is usually grounded on self-selection, which is an action of people selecting themselves into groups, furthermore, the survey can be answered rapidity and therefore some of the answers may be not as genuine as wanted. This is a risk assessment that any researcher is not able to control.

2.2.4 IDEA GENERATION

After conducting and analysing the theoretical and empirical research in this study that was done through different methods, I started working on my design project through the various
tools of idea generation. To gain further understanding and start my design process, I used mapping as a tool to map out the troubles and issues that were discovered through the survey results of the citizens together with the issues that was detected from the interviews. Hannington et al., describes mind mapping in the book Universal Methods of Design as a “visual thinking tool that can help generate ideas and develop concepts when the relationships among many pieces of related information are unclear(...) mind maps reflect how we think through complexities of a given problem” (2012, p. 118). In addition, it is useful in idea generations and the earliest concept development.

2.3 RESEARCH IMPLEMENTATION

Any of the decisions that were taken in the process of my design project, were based on the completed theoretical and empirical studies conducted. Hence, the result of the concept was based on the theoretical framework together with the exploratory research and the contextual analyses, discovered through the methodological framework and the insights from the citizens of Nybro Municipality.
3. Contextual Analyses
This chapter describes the related context, which implicates sustainable development theories that give emphasis to materially reduce the waste generation through recycling and reuse in relation to sustainability but also the involvement of the citizens in relation to recycling, through ecological, economical, socio-political and cultural perspectives.

3. 1 CLOSING THE LOOP

As argued by many scholars, the aims of a circular economy are to preserve the value of products and materials to increase and expand the end of life by productively reusing the resources we already have and not using new raw materials (Ness, 2008, Ellen Macarthur Foundation, 2012, Delbeecke, 2016, Wautelet, 2018). To implement a circular economy, Delbeecke argues that a strong policy is needed to ”close the loop” of the current linear economy-model (2016). A policy of rules and objectives focusing on source collection with methods for calculating recovery rates creates a qualitative recycling. With distinct targets of how to reach the objectives and how the materials will re-enter as a secondary raw material in the “closed loop” of the circular economy, will have a positive attitude on landfills. This means that landfills will nearly be eliminated, and energy recovery will perform as a role concerning the non-reusable and non-recyclable waste (Ellen Macarthur Foundation, 2012, Delbeecke, 2016).

To achieve this paradigm shift, not just revaluations of business models and industrial policy are needed. In addition, consumer behaviours must also be changed (Delbeecke, 2016). The most important part in reaching the proper change of shifting to a circular economy is the purchasers, as they are the users of the products and creators of littering (Askew et al., 2009, Delbeecke, 2016). A circular economy is a solution to change environmental and economic problems in an incorporated framework, to achieve a more sustainable future (Ellen Macarthur Foundation, 2012). Hence, the purchasers must be given the opportunity to make choices that are informed through better information combined with measures and methods to create an eye opener of the environmental impacts different products have that they buy, in addition, the impact they have on the environment when they are not sorted and recycled accordingly to instructions from the waste management’s (Gardner et al., 1996, Ekvall et al., 2012).
3.1.1 RECYCLING CULTURE

Many of the environmental policy commitments are expressed in community-related daily activities such as household waste sorting and active purchases of sustainable products and services (Hage et al., 2009). Psychologists Rachel and Stephen Kaplan (1989) claim that individuals feel satisfied when they become part of a bigger act. This satisfaction can be learned through education campaigns and the prompting of better environmental choices. Satisfaction creates an understanding that greater recycling has a better environmental impact and this satisfaction that the individual is directly involved in meaningful activity increases the individual’s forwardness to engage in such activities (Kaplan et al., 1989).

The use of common extrinsic motivation methods, in the form of reward systems, known as junk for money, has had effect in most countries, especially in Scandinavia. The role of individuals in sustainable development has been encouraged by rules and regulations for the policies and obligations that the government undertakes to conduct. A recycling culture, as an extrinsic motivation related to behaviour driven by external rewards like money (Burn, 1991). This is exemplified by the success of “Pantamera”, which is a champagne for returning empty cans, glasses and bottles to a cash compensation machine (Burn, 1991). Geller (1989) emphasizes that negative reinforcement strategies such as punishment and extrinsic motivations have been discouraged by psychological behaviour, as it is a negative way to continue recycling culture in the long run. Positive reinforcement strategy has been strongly recommended as one of the best methods for building a stronger recycling culture. Thus, the effectiveness of the extrinsic procedure for doubling household recovery activities is doubtful (Burn, 1991, Kaplan et al., 1989, Geller, 1989)

Recycling consists of several different behaviours considering household waste management. The sorting of paper, glass and carton is rarely perceived as a something difficult, but these categories are also the most common ones being recycled in households. The less common waste that is sorted in households is the organic waste, other forms of waste that is difficult to categorize along with plastic, which is also something that is less common sorted, it is perceived as troublesome (Borgstede et al., 2010, Ekvall et al., 2012). To increase the number of returnees, it is simply not enough to just create a new behaviour; it must give an immediate reward to the person who performs it. The individual needs to be motivated, be aware of the negative consequences of neglecting the behaviour, to have a notion of the gains of the new behaviour and its effectiveness. Another important factor when it comes to social norms is if others do it, it is easier to implement on people’s behaviour.
3.2 WASTE MANAGEMENT IN NYBRO

FTI AB (Förpacknings & tidningsinsamlingen) is a recycling company whose mission is to make sure that packaging and newspapers in Sweden are collected and recycled (FTI AB, 2018). The business is based on government regulations on the producers’ responsibility for packaging and newspapers. Their collection system consists of various real estate collection solutions of Sweden’s households and recycling stations together with other gatherings around the country where households can leave their used packaging and newspapers (FTI AB, 2018). The collection system is mainly financed by packaging taxes, as producers, i.e. companies importing goods, packing and selling a product (M, Sandström, personal communication, 2018, March 17). The fees for packaging of paper, plastic and metal are administered by the marketing department; the fees for glass packaging are administered by the material company Svensk Glasåvinning (FTI AB, 2018).

In Nybro Municipality, plastic, metal and paper packaging are being sent to one of FTI AB’s reception facilities. In Nybro Municipality’s cases, it is being sent to a company called Stena Recycling in Kalmar. Here the packages are being pressurized and stored, then transported to the recycling industries (paper mill, e.g., Fiskeby in Norrköping, plastic recycling, e.g., Swerec in Bredaryd and metal recycling, e.g., Trania in Tranås) Newspapers are collected and run to a paper mill, e.g., Holmen paper in Norrköping. The glass packaging is collected by a company called Infinitum, as they are the Swedish Glass Recycling (SGÅ) collection contractor in Kalmar County. The glass is then transhipped or driven directly to the SGÅ plant in Hammar to be melted down and recreated as e.g., glass packaging (M, Sandström, personal communication, 2018, March 17).

In the Municipality of Nybro, there are fourteen recycling stations; eight of the recycling stations are placed in different areas in Nybro city, the urban centre of Nybro Municipality. The six remaining recycling stations are placed in smaller communities in the Municipality, see figure 8 (FTI AB, 2018).
A study by FTI AB was conducted to see the amount of carton, metal and plastic packaging being sorted per kilo in different public recycling stations, meaning, not the real estate collection solutions, around Nybro Municipality (see table 1 in appendix) (M, Sandström, personal communication, 2018, March 17). The study shows that the four recycling stations with the highest amount of sorted waste packaging per kilo is recycling stations near to bigger shops or gas stations. In my interview with Nybro Municipality Sustainability strategist, Emma Adrian, she believed this was due to citizens living in smaller communities, but also people living in the residential areas in Nybro Municipality, bringing their sorted waste with them when purchasing in central Nybro. Therefore, it is partly the reason why the recycling stations of smaller communities e.g., Målerås, Kristvallabrunn, Örsjö, Bäckebo shows a smaller amount of collected waste (E, Adrian, Personal interview, 2018, March 19). The recycling station where there is the least sorted waste is placed in a residential area of Nybro, called Kungshall. This area of Nybro is a multicultural area, where many refugees were placed in the years of 2014-2016 and who has now settled. From own observations, one reason why there is a less sorted waste in the residential area of Kungshall could be of cultural differences in waste sorting, another reason can be that Kungshall consists mostly of apartment complexes which in turn have private real estate collection solutions.
In an email interview with FTI AB Regional head of Kalmar county, Magnus Sandström pointed out that one of the problems they have with their recycling stations is that there are a lot of “non-packaging” waste materials that are being thrown in the different containers of the recycling stations (personal communication, 2018, March 17). He also adds that this problem has been improved in recent years, but there is still a misunderstanding of what is a package and what is not e.g., plastic goods that are not a packaging, are thrown in the container for plastics (M, Sandström, personal communication, 2018, March 17).

The company who takes care of the household waste is KSRR (Kalmarsundsregionens Renhållare), which is a Municipal association. Household waste means waste that cannot be recycled or sorted by package category; this also includes wood waste that is being sorted in super-set container (Hushållsavfall KSRR, 2018). KSRR also takes care of the bulky waste collected at points recycling centres. Bulky waste is defined by the Swedish Environmental Protection Agency (2016) as a “component of household waste which is heavy or bulky or has other properties which render it unsuitable for collecting in bags or containers” (Naturvårdsverket, 2012).

In an interview with KSRR’s Communications manager, U. Bergström, she underlined that KSRR is currently working towards the national environmental goals which has been set up by the Swedish Government, to regulate waste management (personal communication, February 13, 2018). One of the goals is that efforts should be made to ensure that resource management in the food chain should increase by at least 50 percent of food waste from households, shops
and restaurants by 2018 (Miljömål, 2017). In this way, the food waste is returned and become a part of the “closed loop” of the circular economy by becoming Bio-fuel or Bio-fertilizer as a more sustainable choice for the environment, see figure 10. Bergström, also underlines that there is still many of the citizens who do not sort the compostable from the combustibles, this makes it harder to reach the goal and is economical challenging (U. Bergström, personal communication, February 13, 2018). Today, 70 percent of the municipalities in Sweden are collecting food waste (Hushållsavfall KSRR, 2018). In the interview with Bergström, she mentions that one of KSRR’s goals in their Waste Plan (2015-2022) is to increase people’s knowledge of how their own consumption affecting the environment and how people can contribute be more environmentally efficient (personal communication, February 13, 2018).

Figure 10. Collection system of household waste, KSRR
3.3 CITIZENS OF NYBRO MUNICIPALITY INTERFERENCE WITH RECYCLING

The result of the survey that was conducted to get to know the citizens’ genuine opinions, feelings and insights of interfering with recycling, that I used in my exploratory research phase of this study, showed partly recognition of why inhabitants need to recycle but was less recognizable when it came to sustainable development. Almost 96 percent of the answers knew why they need to sort their waste (figure 11) and almost 70 percent thought waste sorting is significant in the work of sustainable development (figure 12).

**Do you know why we need to sort our waste?**

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>95.4%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0.9%</td>
</tr>
<tr>
<td>No</td>
<td>1.9%</td>
</tr>
<tr>
<td>I’m not interested</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Figure 11. Knowledge about why we need to sort our waste (in percentage) February 28- March 8, 2018

**Do you think waste sorting is significant or insignificant in the work of sustainable development?**

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very significant</td>
<td>69.7%</td>
</tr>
<tr>
<td>Fairly significant</td>
<td>25.7%</td>
</tr>
<tr>
<td>Neither</td>
<td>1.8%</td>
</tr>
<tr>
<td>Pretty insignificant</td>
<td>1.8%</td>
</tr>
<tr>
<td>Very insignificant</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Figure 12. Is waste sorting significant in the work of sustainable development? (in percentage) February 28- March 8, 2018
The result of the question: Do you sort your waste? There was a percentage of 16.7 that occasionally sort their waste and 9.3 percent that does not sort any waste (figure 13). This result goes against what Nybro Municipality’s waste management (FTI AB and KSRR) is trying to be active towards the objectives and goals of the Swedish government. A share of 26 percent had sufficient information about how to sort their waste, leaving 74 percent with sufficient to very insufficient information about how to sort their waste. Internet and social media is the leading source of information when it comes to waste sorting followed by information signs and personal contact (figure 14).

Figure 13. Percentage of citizens sorting their waste in Nybro municipality (in percentage) February 28- March 8, 2018

As argued by Hage et al., and Ekvall et al., it is not the lack of information that is the underlying factor for this issue; it is the lack of communication through other measures combined with information to increase the knowledge of waste sorting and sustainable development. The information needs to point out the moral significance of acting environmental friendly, together with activating social and personal norms, to have a greater impact on a person’s behaviour (2009, 2012).

Figure 14. Source of information about waste sorting (in percentage) February 28- March 8, 2018
The most common things citizens are sorting in Nybro Municipality is glass packaging followed by newspapers and papers (figure 15). As argued by Borgstede et al., Ekvall et al., these materials are rarely perceived as something difficult to sort and are the most common categories being sorted in households. It is visually clear materials, meaning, non-hybrid materials composite with other materials (2010, 2012). The less common waste that is being sorted in Nybro Municipality is plastic and metal together with organic waste and medicine. This materials and packages, as argued by Borgstede et al., Ekvall et al., are perceived as difficult to sort (2010, 2012).

### The most common waste citizens of Nybro sort

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicines</td>
<td>70%</td>
</tr>
<tr>
<td>Metal</td>
<td>78%</td>
</tr>
<tr>
<td>Food waste</td>
<td>79%</td>
</tr>
<tr>
<td>Plastic</td>
<td>85%</td>
</tr>
<tr>
<td>Hazardous waste</td>
<td>91%</td>
</tr>
<tr>
<td>Paper</td>
<td>92%</td>
</tr>
<tr>
<td>Newspapers</td>
<td>93%</td>
</tr>
<tr>
<td>Glass</td>
<td>95%</td>
</tr>
</tbody>
</table>

Figure 15. The most common waste citizens of Nybro Municipality sort (in percentage) February 28- March 8, 2018

Is the distance to the nearest recycling station or recycling center crucial for sorting?

![Chart showing distance to recycling station](chart.png)

Figure 16. Distance to the nearest recycling station or recycling center crucial for sorting (in percentage) February 28- March 8, 2018.
3.3.1 BEHAVIOUR AND ATTITUDES OF RECYCLING IN NYBRO MUNICIPALITY

Most respondents on the survey found it quite easy to sort their waste except for certain packages and materials. The uncertainty as to how packages consisting of two materials, such as cardboard and plastic, should be sorted into the various containers located at the recycling station, furthermore, the uncertainty of the difference between a material that should be thrown in the trash for combustibles and a packaging that should be sorted and left at the recycling station e.g., a sheet of paper towel and a paper package. Despite this, most of the citizens in Nybro Municipality’s personal attitudes when it comes to source sorting are positive. A percentage of 59.6 are very positive towards recycling followed by 29.4 percent that is quite positive (figure 17).

![Figure 17. Attitude when it comes to source sorting (in percentage) February 28- March 8, 2018](image)

3.3.2 RECYCLING STATIONS IN NYBRO MUNICIPALITY

Nybro Municipality consists of many small communities. These societies have been underpopulated for many years and therefore did not meet the requirements for source-sorted material that has to be collected to maintain the recycling stations (Adrian, E, Personal interview, 2018, March 19). This has meant that many communities have a long way to the nearest recycling station, and therefore it is harder to actively recycle.

There are shared opinions about whether the distance to the nearest recycling station is crucial for recycling. The share of the agreeing and the agreement in part is 55 percent (figure 16). Because of Nybro city being the urban center of Nybro Municipality and many come to Nybro to purchase in the bigger supermarkets, they take their sorted waste with them. This affects the amount of material sorted in the different recycling stations in the Nybro Municipality (see Table 1 in appendix). Many experience the recycling stations as untidy and badly placed, furthermore, there is a lack of lighting and it is difficult to get there. Because of the many citizens recycling, the recycling stations also get filled and therefore it is difficult to sort
the waste (figure 18).

Are there any factors that make you feel uncomfortable to visit the unmanned recycling stations?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is often full</td>
<td>1.2%</td>
</tr>
<tr>
<td>Untidy</td>
<td>72.9%</td>
</tr>
<tr>
<td>Bad location</td>
<td>7.1%</td>
</tr>
<tr>
<td>Lack of lighting</td>
<td>28.2%</td>
</tr>
<tr>
<td>Hard to get there</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

Figure 18. Uncomfortable factors of visiting recycling stations (in percentage) February 28- March 8, 2018

3.3.3 INCREASING WASTE SORTING IN NYBRO MUNICIPALITY

Clear information, knowledge and purpose of why we need to recycle, seems to be the driving factors for continuing or beginning to sorting and recycling. Another factor is if the source separation took less space in the households. This is a common issue for many households. Many designers have taken this problem area upon them and designed recycling modules and furniture for kitchens and other places in the household e.g., IKEA’s Användbar; it is a collection that encourages to a more sustainable life by having easy access to sors sorting in a practical way, making the furnitures multifunctional.

What would make you start waste sorting or sorting more?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not want source sorting</td>
<td>2.4%</td>
</tr>
<tr>
<td>That people in my area practice source sorting</td>
<td>24.1%</td>
</tr>
<tr>
<td>Source separation takes less space in the household</td>
<td>54.2%</td>
</tr>
<tr>
<td>More knowledge and purpose with source sorting</td>
<td>24.1%</td>
</tr>
<tr>
<td>Shorter distance to recycling stations</td>
<td>39.8%</td>
</tr>
<tr>
<td>Clear information</td>
<td>30.1%</td>
</tr>
</tbody>
</table>

Figure 19. Factors to increase waste sorting (in percentage) February 28- March 8, 2018

1 http://livethemma.ikea.se/wp-content/uploads/2016/04/ikea_ANVANDBAR_inspiration_3-790x593.jpg
3.4 CURRENT PROJECTS

In this section, I will review current projects and contemporary works relate to social design interventions and sustainable development theories. The projects I have chosen, relates to my current findings and perspectives drawn upon my own theoretical, methodological and analytical frameworks, moreover, the projects focus on circular waste management and recycling behaviour.

3.4.1 REMAKING CHRISTMAS

In 2015, “Remaking Christmas” was set up in Copenhagen, Denmark as an intervention towards people’s consumerism that has increased over the last couple of decades. Thomas Dambo thought that Christmas was becoming too materialistic and wanted to show that Christmas presents do not need to be something one buy, it could be something one made. By creating a more personal Christmas gift with other people’s “trash” and leftover materials (Dambo, 2015).

Thomas Dambo created a little village with both the exterior and interiors made of recycled materials from local shops and industries in Copenhagen together with old billboards from around the city (Dambo, 2015). The whole village became a cosy workshop where anyone could make their own gifts for free, by only using trash or recycled materials and their own imagination. A small kitchen was also set up where you could get food that was made from leftovers.

3.4.2 WASTELAND

In 2017, the Lendager Group’s created by the Danish Architecture Centre in Copenhagen (DAC), opened the exhibition “Wasteland - From Waste to Architecture”. The exhibition is based on the need for change when it comes to facing society, namely the changeover to a sustainable approach to design, production and consumption. This exhibition evoke a change of the current use of raw materials and waste process. “It is a transition that requires architects, manufacturers, rivers, urban planners and consultants to draw up the consequences of how we think of products, buildings and cities in the future” (Lendager, 2017).

Due to the global consumption increase, the Lendager Group stresses that the change has become urgent. “With the West European countries at the forefront, a wasted society has evolved, and resource utilization has increased dramatically since the post-war era” (Lendager, 2017). The exhibition is truly an eye-opener towards what industrialization and globalization have created, furthermore, how waste and pollution, generated in huge volumes, causes major environmental, economic and human consequences as a result (Lendager, 2017).
The goal of this study is to propose a Social Design workshop focusing on circular waste management and recycling behaviour, to facilitate recycling of waste for citizens as users in Nybro Municipality. Before focusing on the workshop itself, it is important to know what Social Design is and what can be achieved through such a framework that can open our minds about social issues (Burkett, 2016), in terms of this study, the issue about waste sorting and recycling.

As Burkett (2016) argues, Social Design enables us to challenge the assumptions underlying how we formulated the answers so far and help to create new responses that can be more effective, bring forth greater impact or result in better outcomes for people. As one of the issues that is argued by scholars such as Gardner et al. (1996), Askew et al. (2009), Ekvall et al. (2012), Delbeecke (2016) is that governmental policies and objectives, regarding environmental problems, is being assigned to the people as a regulation to reach the goals and objectives of the EU. For these to be reached, people will play a significant role. This leaves the people with the information that they are assigned this provision of recycling but is being left with the unknowing and uncertainty of why recycling is needed to take place in our everyday life's and how to do it must be addressed in efforts to reduce these problems if the efforts are to succeed.

In the case of Nybro Municipality, the regulations from the government of Sweden has been taken on by the procured waste management’s KSRR and FTI AB, and are in turn dependent on the citizens participation in sorting and recycling waste, so it can be recycled in to new packages, used as Bio-gas, Bio-fertilizers or waste fuel instead of ending up in landfills. As both the representatives of the waste management companies of Nybro Municipality, Bergström (KSRR) and Sandström (FTI AB) stated in the interviews, there is an issue of waste not getting sorted as being instructed (U. Bergström, personal communication, February 13, 2018, M. Sandström, personal communication, 2018, March 17). There will always be citizens not contributing to decreasing environmental problems due to the increased consumption followed by waste as the aftermath and recycling as a solution. But I assume, as I also saw in the answers of the survey I conducted and posted on social media, many citizens are interested and would like to know more about recycling. How can this interest be met? The use of motivational actions combined with education can be an answer. According to Ekvall et al. (2012), information alone often has a slight effect on the behaviour of people and therefore needs to be combined with other measures. How can these be combined to find a way that encourages citizens to recycle waste from products purchased in their daily living?
4. Design Project
4.1 IMPROVEMENT OF RECYCLING AND BEHAVIOUR IN NYBRO MUNICIPALITY

One of the aims of this study was to strengthen the knowledge and the need for continuous recycling of materials in Nybro Municipality. In order to find out the possibilities of how this could be done, issues of the current waste management were needed to be discovered and defined by the use of several methods.

As a first in my research process I contacted the two waste management companies that is procured by the Municipality of Nybro to gain more knowledge of how their management of waste works and the goals and objectives they are working towards, Furthermore, to receive information of current issues they have acknowledged and could be of interest in my study. Many of the issues were assigned to the citizens and recognized by the lack of knowledge along with recycling behaviour.

The goal of this project was to find a way that could encourage citizens to recycle waste from products purchased in their daily living and to provide support for discussion and hopefully act as an inspiration for the future, by the development of projects with participatory citizenship.

Thus, in this design project, a social design workshop focusing on circular waste management and recycling behaviour, was proposed and co-designed together with the municipality’s sustainability department of Nybro municipality.

4.1.2 OBSERVATION

Nybro Municipality, located in Småland’s forests and which is my home Municipality, has let me observe and study the recycling and recycling behaviour for almost six years. This has left me with many questions and in some cases something of an irritation to how the citizens of Nybro Municipality do not follow the instructions on how things are to be recycled. This became my basis for this thesis and is the underlying factor of the questions that I am aiming to research upon.

Living in an apartment with a separate waste room, for the area which I’m living in, gave me a possibility to observe and analyse how the waste was sorted. By taking photographs and notes of what I discovered and questions that arose through the observations, made me wonder how this behaviour was different from people living in houses. I took this observations further, to get more insights of whether it is any difference of living in an apartment or a house. This was done through friends and family living in Nybro Municipality by the observance of how they were handling waste sorting in their houses. From the observations and analyzes that I could make from the two ways of housing; living in an apartment and living in a house, I noticed that the two ways of housing were very much similar to each other. A great amount of the waste, including packages of different sorts and compost, was thrown out in the container of combustibles, meaning, not being sorted correctly. The packages of glass and newspaper as thus, cans for cash compensation were most commonly sorted and stored. However, the space for the opportunity of storing waste was better and more optional by living in a house.
4.1.3 STRUCTURED INTERVIEWS VIA E-MAIL

In the early stage of my research process, I came to the conclusion that I needed to find out more information about the waste management and sustainable development of the municipality of Nybro. I decided to contact the two procured waste management companies of the Municipality of Nybro, in order to obtain knowledge and information about their working methods and processes, goals and objectives that they were working upon, furthermore, to know if there were any current issues they had detected in the area of waste sorting and waste management.

KSRR
After contacting the two companies, I was very pleased to get in touch with KSRR’s Communications manager, Ulrika Bergström. Unfortunately, Bergström did not have time to meet me in person but insisted on me sending her the questions I had via email. I planned a structured interview with a settled set of questions that allowed the respondent, Bergström, to answer the questions one by one, albeit, to be more specific in the answers of the questions I had.

Besides the questions, she also allowed me to take part of a summary of information that was gathered from a recent survey on customer satisfaction that KSRR conducted. I was very satisfied with the rewarding information that I received; it provided me with useful aspects that could be introduced in my research and project of his thesis.

In the email, Bergström gave me an introduction to KSRR’s waste collection system (see figure 10) were she explained the different steps of collecting household waste and the process of the waste that later become bio-products and waste fuel. Bergström could not introduce any specific numbers on how much food waste they collect from Nybro Municipality, however, she explained that this had to do with the amount of food waste not sorted, thus, many farmers feed e.g., their chickens with the leftover food waste, others may have a composts in their backyard, but also the amount of food waste that is not sorted and merged with the combustibles of the household waste, this was also one of the main issues that she introduced me too. Much of the waste KSRR collects is not sorted as informed. There is usually a mixture of combustibles, food waste and packages.

FTI AB
A bit further on in my research phase, I got in touch with FTI AB’s regional head of Kalmar county, Magnus Sandström. Unfortunately, as the situation with KSRR’s Communications manager, Ulrika Bergström, Sandström did not have time to meet me in person but was very interested in helping me with the questions I had. Here I also planned a structured interview with a settled set of questions for Sandström to answer. Because of me being a bit further into my research phase when Sandström got back to me, I had made some progress in my research, making it easier for me to know what types of questions I wanted to get an answer to.

In the structured email interview, I also asked Sandström to explain the different steps in FTI AB’s collection system (see figure 8). Sandström was very specific in his answers and gave me a great amount of information of how the collection system works. He explained the different steps that are made, which companies that were involved, furthermore, where the different packages were transported to be recycled and reshaped into new packages and products.

In the email, Sandström gave me the opportunity to take part of a current compilation of FTI AB’s production responsibility report. This report explained the goals and objectives from the government that FTI AB is currently working and aiming towards and how FTI AB is taking the responsibilities and management of the recycling stations that is a big part of their collection system. Sandström also introduced me to a recent analysis where FTI AB measured the waste packages that had been collected in the different areas of Nybro Municipality during the period of 2017-2018 (see table 1).

In the question of issues encountered, Sandström answered that the problem FTI AB have noticed is that many “non-packages” often end up in the recycling stations. This he believed was the uncertainty of what is packaging and what is not. It had become better in recent years but was still an issue that needed attention.

4.1.4 SURVEY

After the fruitful information and new knowledge I had gained from the answers to the structured interview with KSRR’s Communications manager, Ulrika Bergström and FTI AB’s head of Kalmar county, Magnus Sandström together with the collected information from the secondary research and my own observations, I knew that the perspective of the citizens were crucial to gain further information and knowledge of how the waste management and collecting system worked in Nybro Municipality from the perspective of the Citizens. I choose to do an online survey, as a method of reaching the Citizens of Nybro Municipality. The structured interviews, my own analyses and the secondary research helped me to limit the questions of the survey. Genuine opinions, feelings and insights of recycling and interfering with the collection system of waste management, were the aim of this survey, but also to determine and limit my design project.

I use Google Forms to conduct the survey, due to its easy accessibility and its usability and posted it on the biggest Facebook groups, which means those groups with the most members and various age groups. I wanted to know the family circumstances and form of housing of the participants, as well as if they lived in central Nybro or area outside Nybro central location, but within Nybro Municipality and if they sort their waste, as to obtain appropriate and
relevant quantitative data. The questions of the survey particularly focused on waste sorting and recycling, were to determent the participant’s knowledge of waste sorting, the purpose of recycling, as well as if they recycled their household waste and what waste they were sorting. The survey consisted of 22 questions, whereof six questions were about personal information, 15 questions about feelings and attitudes towards recycling and waste sorting, the source of information and knowledge, hence a last question that was an optional open-ended question, were participants improvements and facilitation ideas of the current ability to recycle, were welcome.

As to receive an overview of the issues and challenges the participants felt about waste sorting and if they considered waste sorting as something easy or difficult, I provided each question of the survey with the option of an alternative comment. This open-ended comment possibility gave me the opportunity to gain as many viewpoints as possible. All the questions I asked were based on my research findings, structured interviews, hence, of my own assumptions from my analyses of my own observations.

I posted the survey in two of the biggest local Facebook groups in Nybro Municipality, which means those groups with the most members and various age groups. I kept the survey open for one week and was gladly surprised of the number of answers I received. In only one day I received approximately 65 answers and wit in a week I got in total 109 participants. I was very pleased and surprised to notice that the sample of participants that were participating in the survey, were rather diverse as shown in the result section (3.3). I received 32 open-ended answers to the question of improvements and facilitation ideas and approximately 7-25 comments beyond the answers to the other questions. However, the survey had its restriction as presented in the result section (3.3 and figure 20), e.g., the largest parts of the answering participants were women or living in residential areas in Nybro municipality.

It was intriguing to discover the strong attitudes and feelings the citizens had about waste sorting and recycling. Many had a positive feeling towards it and described it as "lovely to be able to help", others were more reserved and described the confusion of how to actually waste sort. This lack of information and knowledge were a common comment to many of the questions. Some of the participants pointed out the absence of information in other languages than Swedish; other pointed out that recycling and waste sorting should be in the school’s education plan, to educate students on how to recycle properly. When it came to the accessibility of recycling stations, many advocated an increase of stations, another comment to this was that each house should have different recycling containers to sort their waste locally instead of having to take their waste to a recycling station. In this way, they would be able to have the same opportunity as people living in an apartment. Albeit, several participants attitude about recycling and waste sorting were rather positive, they were not against improvements and facilitation ideas.

An online survey was a successful method in this study, due to the data quality and the large and varied selection of local participants. The results did not only give an overview of the current situation of waste sorting in Nybro Municipality, it also gave valuable information about the needs for improvements and facilitation, and furthermore, the feelings and attitudes about waste sorting recycling. Because the data was already calculated and sorted in the
Google Forms program that I used for this survey, it was easy for me to map the issues and to define the focus points of my design proposal.

Figure 21. Recycling station
4.1.5 MAP OF ISSUES

To map out and get an overview of the issues and challenges, I used mind mapping technique based on the structured interviews with KSRR and FTI AB and the results of the survey. This technique helped me connect the main problems (see figure 22).

Figure 22. Map of issues
4.1.6 INTERVIEW WITH NYBRO MUNICIPALITIES SUSTAINABILITY DEPARTMENT

To broaden my exploratory research, I also contacted Nybro Municipalities Sustainability Department to gain further information and knowledge in the Municipalities work about sustainable development, hence to have an open conversation about what could be done within the main issues that I had mapped out in the previous section (4.1.5). I conducted a semi-structured in-depth interview with a list of topics to be followed, hence also topics to explore additional subjects for the conversation to be more casual. I got in contact with Nybro Municipality Sustainability strategist, Emma Adrian and she was very optimistic and keen on me meeting with her.

Before our meeting, I assembled all my previous gained information from my secondary research and interviews as well as the result of the survey, to have as a background for some of my topics that I wanted to discuss, furthermore, to share my own research. My list of topics included current work in the area of recycling and waste sorting, Nybro Municipality as a multilingual and multicultural Municipality- how to work with information to reach a broader range of citizens and the Municipalities future goals for recycling of waste.

During the meeting, Adrian gave me a brief overview of the Municipalities Sustainability Departments current work. I was surprised to hear that no actual work was made in the area of waste sorting but happy to hear that they were currently working with informing citizens through seminars of how to be “climate-smart” and make better choices in the everyday living. This was then only informed in Swedish. For the future work, Adrian clarified that sustainable development is an ongoing work. Nybro Municipality has been working strategically with environmental issues since the beginning of the 1990s and is constantly working towards the goals and objectives of Agenda 21. Adrian explained Agenda 21, as a way for the Municipality to actively, with the knowledge they have today, interact and influence how the Municipality will be like in the future of sustainable development.

Before finishing the convention, Adrian mentioned she was curious about what I had in mind when it came to my design project. We had an open conversation about my findings and problem areas that had been shown during my process. I mentioned that a workshop with a learning outcome could be of suggestion. Adrian mentioned that a group of young males inquired about cooking food together at Mejeriet, which is a youth recreation centre, where many young adults come to socialize and gave me the idea of a recycling and waste sorting workshop. Adrian also suggested to setting up a meeting with the whole group of Nybro Municipality Sustainability Department, to plan and brainstorm ideas for this workshop.

MEETING WITH NYBRO MUNICIPALITY SUSTAINABILITY DEPARTMENT

I meet up with Nybro Municipality Sustainability strategist Emma Adrian and Erika Gülich, Nybro Municipality Energy and climate coordinator. Unfortunately, no one else from the department could attend the meeting. Both Adrian and Gülich were very keen to the idea of brainstorming ideas. The idea of cooking food, to create household waste as a starting point, which will then be sorted, was developed. We discussed how to incorporate “climate-smart”
decisions such as how to decrease carbon footprints, meaning the total emissions caused by preparing- and cooking food. Anders Svensson, who is a youth recreation leader at Mejeriet, were contacted to find out if there were any interest in such a workshop as this.

Figure 23. Brainstorming with Nybro Sustainability Department
4.1.7 WORK BREAKDOWN STRUCTURE

I used Work Breakdown Structure as a method of structuring the total work of the ideas that came into my mind after brainstorming with Adrian and Gülich from Nybro Municipality Sustainability Department. I began to structure the design of the workshop with various ways of thinking, both in the way of "climate-smart" decision-making and how information together with other means for a better learning experience can be used. This gave me an overview of the different steps that could be included in my social design workshop.

With this method, many of the current challenges of waste sorting and recycling from my empirical work together with my research findings could be linked and structured into a process and plan of the workshop I was planning.
4.1.8 FIRST IDEA

The first idea of the workshop was much more focused on how to be "climate-smart" in the way of realising one's own carbon footprint by planning and cooking a dinner. The workshop included ways of measuring the carbon dioxide emissions (CO2) of the vehicle, the energy consumption (kWh) of the refrigerator and usage of the stove, furthermore the amount of water used to clean the ingredients, boiling the food and wash up the dishes (Figure 25).

I soon came to the realisation that this was not the workshop that I intended to do. My initial idea of the workshop was to propose a recycling and waste sorting workshop based upon the issues that I mapped out (Figure 22), the structured interviews and the results of the survey. To design a workshop which should be understood by others, we need the comprehension about the understanding of others. In sense of this, a second order understanding is fundamental. Knowing that the group of participants from Mejeriet, consists of young adults, as well as the lack of knowledge about the ability of the participants, I decided to simplify the process and work method of the workshop.

Figure 25. The first idea of the workshop
4.2 PROPOSING A SOCIAL DESIGN WORKSHOP

The finished structure and design concept of my workshop proposal, aims to facilitate the recycling of waste for the citizens as the users. Moreover, to emphasize the need and importance of recycling of our everyday waste materials. I chose to visualise the concept in a process description with accompanying text to describe it even further and more detailed. This finished structure and design is not solution-based, but more widely to provide a basis for discussion and inspire.

AN OVERVIEW OF THE DIFFERENT STEPS OF THE WORKSHOP

The workshop will focus on the planning and cooking a dinner. The participants will together plan the dinner of their own choice by following a recipe. A shopping list will be put together to facilitate the purchase. After the shopping, the number of purchased goods will be counted, this is to compare the number of goods contra the number packages.

The ingredients will all be weighed, this is due to the fact that later in the process, the participants will compare the weight of the ingredients, with the weight of the household waste. All the packages and food waste in this phase of the process, will be saved for later. The workshop will carry on by cooking food and enjoying a nice dinner.

After dinner, participants will clean up and wash up. If any leftovers, they will be weighed. All the waste, including packages, food waste and other is categorised in three main categories of; packaging, compost and combustibles. Here the packages will be counted and compared to the earlier sum of goods purchased.

The three categories of packages, compost and combustibles will be separate weight and subtracted with the earlier weight of the ingredients. In this way, a notion of how much food, contra how much waste we get out of a single dinner, will be made.

By already separating the three categories of household waste, a small review will be made of how to sort the waste and were to leave it. Here the two collection systems of both KSRR (figure 10) and FTI AB (figure 8), will come in handy as educational materials for the participant to visually get an overview of where the waste they purchase ends up and recreates as something else.
PLANNING
The participants are planning themselves the dish, with a recipe, they want to cook and how many portions, as well as writing a shopping list of which ingredients are needed.

PURCHASING
The participants buy the ingredients listed on the shopping list.

Count the number of goods.
• How many?

Weigh the ingredients.
• How much did they weigh in total?

PREPARATION
Unpack, rinse, clean and peel the ingredients if needed.
Save all the packaging and waste which has been sorted out.

COOKING
Make the food by following the recipe.

DINNER
Lay the table and serve the food.

CLEANING
Clean up and wash the dishes after cooking.

Weigh the leftovers.
• How much did the leftovers weigh?

Sort the waste in the categories below:
- Packaging
- Compost
- Combustibles

• How much weighs each category?

Then take the total weight of the garbage and subtract it by the total weight of the goods.
• How much was it?
Figure 27. The structure of the workshop.
4.2.1 COLLECT VALUABLE INFORMATION

Throughout the workshop, it is important to carefully observe the actions. Thus, keeping a logbook of the process the participants go through. This will help to develop the workshop further, but also in the sense of future research of new knowledge that can be gained across various of tastings. Furthermore, stakeholders, companies which are the producers of the goods and therefore also responsible for the amount of waste, as the third party, can be contacted with valuable information.

Figure 28. To create valuable information, Logbook
4.2.2 PROTOTYPING THE WORKSHOP

The planning and structuring inspired me to broadly test parts of the workshop. I invited friends over to cook food and to see how they interfered with waste sorting. The participants were four male in the age group 25-30 years. I introduced the participants to the background and context of my research and design project; moreover, I introduced the food we were cooking and the different steps of the session. This helped the participants understand in general about what would happen.

I had chosen a slightly easy meal, for everyone to be involved, that I knew from own experiences created large amounts of waste of different categories. I observed the participants while they prepared the different steps of this dish.

After finished cooking, the participants sorted the waste that had been created from preparing the food, the waste included packaging, combustibles and compost, into different categories of the participants choice. The categories were plastic, paper, food waste and household waste.

We ended the session by going through the different categories of waste to see if something would be sorted differently. The participants were surprised by the amount of waste one meal achieved, moreover, the amount of plastic packaging which was created.

Figure 29. Testing parts of the workshop
4.2.3 EVALUATION AND CONCLUSION

Unfortunately, I was not able to test the Social Design Workshop well and truly, due to my late stage of development. However, I managed to broadly test parts of the workshop together with a few friends, which led to a brief discussion of the broadly introduced stages and outcomes of the following results. The receptions of the participants’ were very positive about the concept of a Social Design Workshop, additionally, learn and gain knowledge and understanding of waste sorting and recycling by doing. Here it must be mentioned that the first time of testing this Social Design Workshop, is a Pilot. It must be tested several times to make it successful.

To summarise, I was very pleased with the outcome of the project. It was satisfying to note that people were interested in both helping and co-operating, moreover, that they were keen about the context of the project- waste sorting and recycling. These positive attitudes towards my project gave me the confidence of continuing by testing the social design workshop after this thesis. Indeed, I believe the end of this phase is the beginning of this project.
5. Summary & Discussion
5.1 LEARNING OUTCOMES

This whole semester of writing my thesis has been a learning lesson for me. I became disappointed in myself more than a few times during the process of this project. These times were most times of time management problems and the challenges of framing the project. In fact, this was my first experience of writing a master’s thesis, which meant that I had to be realistic about my own capacity and the set up of the aims and goals of this project. I had to learn how to listen to myself. I was many times questioning my choice of topic and research methods. In fact, I also questioned the applicability of my chosen research methods and often felt that they should have been more approached towards participation. Due to the short amount of time left, I did not test my Social Design Workshop properly. I do not see this as a loss, but a way to continue and improve in the future.

To summarise, many of the things through this project could have been done differently, albeit more executable. I see this as a great potential for expanding my research and explore many other directions and paths that were crossed in this project. I learned many things along the way of this process, furthermore, I learned to “tie” together many of the things I have learned during these two years of my master’s studies.

5.2 FUTURE POTENTIALITY

The project was not a solution based project, but much more to provide support for a discussion and hopefully to act as an inspiration for the future, by the development of projects with participatory citizenship in Nybro Municipality. This study aimed to strengthen the knowledge about the need of continuing waste sorting and recycling of materials in Nybro Municipality. Therefore, it is more than logical to test this concept of a Social Design Workshop together with citizens of Nybro Municipality.

Hopefully, the development of this concept can lead to many more workshops of practical ideas for citizen-led developments, to achieve such a sustainable development as social sustainability and thus, economical sustainability.
REFERENCES

BOOKS


ARTICLES


INTERVIEWS

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Bergström, U (2018, February 13). E-mail interview

Sandström, M (2018, March 17). E-mail interview

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Table 1

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<thead>
<tr>
<th>Recycling Stations in Nybro Municipality</th>
<th>Carton Collected weight (kg)</th>
<th>Metal Collected weight (kg)</th>
<th>Plastic Collected weight (kg)</th>
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<td>48 231</td>
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<td>13 732</td>
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<td>Nybro Återvinningscentral (ÄVC), Recycling Centre</td>
<td>43 904</td>
<td>0</td>
<td>79 548</td>
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<td>33 272</td>
<td>2 363</td>
<td>12 200</td>
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<td>11 456</td>
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<td>7 226</td>
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<td>6 187</td>
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</table>
Google Form

Link to online survey:
https://goo.gl/forms/qw7imX45dMQWcnwU2

ENKÄT OM KÄLLSORTERING I NYBRO KOMMUN

Mitt namn är Albertina Ravn och studerar sista året på Mastersprogrammet i Design med inriktning hållbar utveckling på Linnéuniversitetet i Växjö. Jag skriver just nu mitt examensarbete med fokus på källsortering i Nybro kommun.

Jag är intresserad av dina genuina åsikter, känslor och insikter om källsortering och skulle vara mycket tacksam om du skulle vilja svara på denna enkät som innehåller 15 frågor. Dina svar kommer att vara helt anonyma.

Tack för din medverkan, det är mycket uppskattat!

Frågor och kontakter: ar222ix@student.lnu.se

Albertina Ravn
Mastersprogrammet i Design
Linnéuniversitetet

Kön:
• Kvinna
• Man
Annat

Ange gärna din ålder: ........

Familjeförhållanden:
• Singel
• Gift/ Sambo
• Ensamstående med barn
Annat

Vilken sysselsättning har du?
• Studerande
• Yrkesarbetande
• Arbetslös
• Långtidssjukskriven
• Pensionär
Annat

Vilken boendeform har du?
• Lägenhet
• Villa
• Radhus
• Gruppboende
• Äldreboende
Annat
Bor du i:
• Nybro centralort
• Område utanför Nybro centralort, men inom Nybro kommun
Annan plats

1. Källsorterar du ditt avfall?
• Ja
• Ibland
• Nej
• Jag har aldrig källsorterat
Kommentera gärna dit svar:

• Pappersförpackningar
• Tidningar
• Plastförpackningar
• Metallförpackningar
• Glasförpackningar
• Farligt avfall (batterier, elektronik och liknande)
• Matavfall
• Mediciner
Annan: 

3. Skulle du vilja källsortera mer eller mindre än vad du gör?
• Källsortera mer
• Källsortera mindre
• Inget av dem
Kommentera gärna dit svar:

4. Vet du varför man källsorterar?
• Ja
• Nej
• Vet ej
• Är inte intresserad
Beskriv gärna varför du källsorterar?

5. Skulle du vilja ha mer information om varför man källsorterar?
• Mer information
• Lite mer information
• Har redan tillräcklig kunskap
• Nej
Kommentera gärna dit svar:

• Internet
• Tidning
• Informations skyftar
• Informationsblad i brevlådan
• Läser inte sådan information
Tar del av information på annat sätt, vilket:

68
7. Anser du det är lätt eller svårt med källsortering?
   • Mycket lätt
   • Ganska lätt
   • Ganska svårt
   • Mycket svårt
   • Inget av dem
Varför anser du att det är lätt eller svårt? ........................................................................

8. Tycker du att du har tillräckligt med information om hur du ska källsortera?
   • Mycket bra
   • Ganska bra
   • Ganska dålig
   • Mycket dålig
   • Inget av dem
Kommentera gärna dit svar: ........................................................................................................

9. Hur är din inställning till att källsortera?
   • Mycket positiv inställning
   • Ganska positiv inställning
   • Ganska negativ inställning
   • Mycket negativ inställning
   • Inget av dem
Kommentera gärna dit svar: ........................................................................................................

10. Tycker du att källsorteringen tar upp mycket eller lite plats i ditt hem?
    • Mycket plats
    • Liten plats
    • Tar ingen betydande plats
    • Har ingen källsortering
Kommentera gärna dit svar: ........................................................................................................

11. Vet du var din närmaste återvinningsstation finns? (De gröna obemannade container/ behållare som finns utplacerade runtom i kommunen.)
    • Ja
    • Nej
    • Inte aktuellt
Kommentera gärna dit svar: ........................................................................................................

12. Tycker du att avståndet till närmaste återvinningsstation eller återvinningscentral är avgörande för att du ska sortera ditt avfall?
    • Instämmer helt
    • Instämmer delvis
    • Instämmer inte alls
    • Inget av dem
Kommentera gärna dit svar: ........................................................................................................

13. Finns det faktorer som gör att du känner dig obekväm inför att besöka återvinningsstationerna? (De gröna obemannade container/ behållare som finns utplacerade runtom i kommunen.) Kryssa i en eller flera alternativ.
    • Det är svårt att ta sig dit
    • Dålig placering
    • Dålig belysning
    • Skräpigt
• Jag källsorterar inte
• Annat
Kommentera gärna dit svar: .................................................................

• Att det finns tydlig information om hur jag ska sortera
• Att avståndet till återvinningsstationen/centralen är kort
• Att jag har tillräcklig kunskap om syftet med källsortering
• Att källsorteringen inte tar så mycket plats i hemmet
• Att personer i min omgivning källsorterar
• Vill inte börja källsortera
Finns det annan anledning: ........................................................................

15. Vilken roll tycker du att källsortering spelar i arbetet med hållbar utveckling?
• Mycket betydlig
• Ganska betydlig
• Ganska obetydlig
• Mycket obetydlig
• Inget av dem
Kommentera gärna dit svar: ........................................................................

Har du egna förslag på hur du skulle vilja förbättra eller underlätta de nuvarande möjligheterna att källsortera? ........................................................................................................

ONLINE SURVEY RESULTS, FEBRUARY 28- MARCH 8, 2018

Google Form, 109 participants

Kön:

Ange din ålder:
Fråga 1. Källsorterar du ditt avfall?

Kommentar gärna ditt svar på Fråga 1:

- Vi har kompletta sorteringsmöjligheter i vårt soprum (hyreshus).
- Bränslet är halm i pannan och pet-flaskor panta.
- Mångavfall, paper, metall, batterier, glödlampor ånglas sorteras.
- Mångavfall tidningar papper glas metall bärer glödlampor ljushållare alla tyger och kläder hårdplast men inte mjukplast, yogi och mjölkkartonger eller kompost av någon märklig anledning...
- kommentera*
- Har ej källsortering här.
- Det har blivit en stark van, omöjligt att "slarva"
- skulle vilja sortera mera men hyresvärdens anser att det jag sortera ska jag själv frakta bort!
- Det mest...
- Det behövs
  
  Jag källsorterade innan men har gett upp, ingenting i våra sovrum ligger som det ska. Jag har sett många invandrare bara skita i var de kastar det + att jag ser folk / företag kommer till området och kastar sina saker.

  saknar utrymme i lägenheten för att göra det.

  Ja, då detta är lagstigad sedan 1980.

- Källsorterar oftast allt men inte alltid.
- Vi har sopsortering i gemensamt soprum så vi sortera papper, kartong, plast, glas (färgat och ofärgat), metall och såklart batterier och dyl.
- Började på 1980 - talet
- Ingen möjlighet
- Det mest sortar vi, men inte alltid.
- Men vissa hushåll kan inte källsortera för nycklar till miljöhuset delas inte ut
Fråga 2. Vad källsorterar du? Kryssa i samtliga material som du källsorterar.

- Papper: 92 (92 %)
- Plast: 85 (85 %)
- Glas: 95 (95 %)
- Metall: 78 (78 %)
- Tidningar: 93 (93 %)
- Farligt avfall: 91 (91 %)
- Matavfall: 79 (79 %)
- Mediciner: 70 (70 %)

Fråga 3. Skulle du vilja källsortera mer eller mindre än vad du gör i dag?

- Källsortera mer: 54,5%
- Källsortera mindre: 39,6%
- Varken mer eller mindre: 5,9%

Kommentar till ditt svar:

Fortsätta som nu
Vi har precis ökat vår källsortering
Ser inte vad mer vi skulle kunna sortera ut
Torr vi sortera så mycket det går/hinner
Om man hade haft mer plats eller andra sopkärl.
varför
Maxat sortering
Minska brännbart och deponi, återanvänd!
Vill gärna ha sorteringen hemma i soptunnan.
Gör så gätt jag kan
Jag källsorterar allt.
Fuskar ibland
Det händer att jag är lat och slänger förpackningar som är svåra att rengöra i de vanliga soporna.
Har ingen möjlighet att lämna sorterat avfall där jag bor. Det vore enklare att slänga allt i sophuset på gården, där man bara kan sortera bort tidningar och matavfall.
Göra vardagen lättare
Jag orkar inte hålla ordning på allt. Man får ju nästan spöstraff om man sortar fel. Bättre att bara slänga i soppor liksom.
Räcker som det är
Hade nu avfallshanteringen varit bättre i slutskedet så hade jag sroterar mer.
Det är viktigt för ett hållbart samhälle
Det tar för mycket plats.
Man vill ju bidra...

Fråga 4. Känner du till varför man källsorterar?

Varför källsorterar du?

| Miljön (4)                                      |
| För miljön (4)                                   |
| För en hållbar framtid (3)                       |
| För miljön (2)                                   |
| Bra för miljön och soptunnan väger mindre.       |
| För att bl.a. återvinna så mycket som möjligt av materialen. |
| Miljö och återvinning                            |
| Så att saker kan förnyas, t.ex. plast o glas. Brännbart till värmeverket. För att hjälpa till med miljön. |
| Bland annat för att vi inte ska få en massa tungmetall i naturen |
| För att vissa material går återbruka, vissa bränna och få ut värme och vissa är farliga och detta är svårare om allt är blandat |
| måste ha något att tända pannan med |
| Återanvändning-Miljön                            |
| Uppväxt med det                                 |
| Gillar att göra min del i samhället.            |
Minska miljöpåverkan
hyfsat självklart
Återvinna saker och miljö blandannat
För att ta mitt ansvar. För att jag bryr mig om miljön.
För mina barnbarn och alla barn, som ska fortsätta leva i en renare värld.
det blir mindre ”vanliga” sopor
För att hushålla med resurser.
Återvinning, miljön
Det behövs ju
För att spara på naturresurserna
Återvinna, återanvända
bra för miljön
För miljön och mitt samvetes skull.
Mitt strå
Har källsorterat sen bamsben fram tills nu
Se svar fråga 1.
För miljön!
För att vi konsumerar så mycket så det kan få bli nytt.
Bra för miljön
Miljön, återvinning
Bättre miljö, renare vatten, spara pengar, spara naturresurser
Så att vi kan återanvända materialet och spara på våra resurser
För att det är bra för miljön
Återvinning, resurser är inte oändliga men kan/ska användas igen
Antar att det är bra.
För att kunna återvinna det som kan
Det tas omhand på olika sätt vid återvinningen.
För att vi behöver tänka på en hållbar utveckling och att jorden ärvs av våra barn.
Det blir fullt i soptunnan om källsortering ej genomförs.
För att värna om miljön
För att jag måste. Vi har ett bra hus på gården där allt enkelt förklaras.
För att det ska kunna återbrukas och för att spara på miljön
Bättre för miljön,
Miljö, återanvända plast, glas osv.
Känns bra
För miljön skull
Fråga 5. Skulle du önska dig mer information om varför man källsorterar?

Kommentar till ditt svar:

Alltid bra med mer kunskap
Vissa tror att allt läggs i samma hög sedan i alla fall och det är en motivering till varför de inte sorterar. Viktigt att vi ALLA hjälps åt.

Inte så mycket för egen del men kunskap verkar dåligt generellt om sortering. vet redan

Andra behöver mer info, 100/100 ska källsortera

Har tillräckligt kunskap eller motivering att göra det

Fakta och siffror motiverar desto mer. Resultatet av källsortering. Inte bara generellt sätt

Information på flera språk är önskvärt. Har belyst problemet med KSRR, utan resultat.
Jag vet varför, men jag tror ändå att det är bra att påminnas om det så fler är mer noggranna med sin sortering
Jag har en lista från kommunen där det står var allt ska.
Det bör upplysas mer till allmänheten.
Ännu mer information från kommunen kring deras miljötänk. En folder i brevlådan.
Med största sannolikhet handlar det om mer än att inte fylla soptunnan.
Nytikenhet, man blir aldrig fulländ.
Torr det är mycket okunskap till varför folk ej sorterar
Torr dom flesta bövelen men är låta tror mer på att lära barnen som i sin tur tjatar på föräldrarna
Många vet inte varför det är viktigt att källsortera
Man kan alltid bli bättre.
Information skadar aldrig
Jag tror jag har ganska bra kunskap redan.


<table>
<thead>
<tr>
<th>Informationssursprung</th>
<th>Antal responder</th>
<th>Procent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet</td>
<td>59 (59 %)</td>
<td></td>
</tr>
<tr>
<td>Tidning</td>
<td>32 (32 %)</td>
<td></td>
</tr>
<tr>
<td>Informationsbyggare</td>
<td>49 (49 %)</td>
<td></td>
</tr>
<tr>
<td>Informationsblad i brevlådan</td>
<td>35 (35 %)</td>
<td></td>
</tr>
<tr>
<td>Personer i min omgivning</td>
<td>44 (44 %)</td>
<td></td>
</tr>
<tr>
<td>Läser inte sådan information</td>
<td>0 (5 %)</td>
<td></td>
</tr>
</tbody>
</table>

Jag tar del av information på annat sätt, vilket?

Tv (3)
Ksr hemside
Sociala medier, ex att man ska dela väremljusen från aluminium och plåt.
Informationsskytar*
Inte mycket informeras om detta! Man måste söka info, borde trummas in hos alla, som reklam.
Ksrns hemside och broschyrer också
Bli även upplyst av personalen på stationerna
Genom att min man jobbat på återvinning
Här källsorterar sedan slutet av 1990-talet då det blev obligatoriskt i Helsingborg
Läromedel NO/50
Skola
Aven tv, när de gör reklam för den gröna påsen odyl.
Fråga 7. Tycker du det är enkelt eller svårt med källsortering?

<table>
<thead>
<tr>
<th>Prosent</th>
<th>Mycket enkelt</th>
<th>Ganska enkelt</th>
<th>Varken</th>
<th>Ganska svårt</th>
<th>Mycket svårt</th>
</tr>
</thead>
<tbody>
<tr>
<td>57.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Varför anser du det som enkelt eller svårt?

- Hushållsavfallet är väldigt tydligt medan jag kan känna mig mer osäker på sortergården
- Lite svårare om förpackningarna består av både papp och plast.
- Sunt förnuft
- Varit aktuellt i många år så man har lärt sig
- Innan man lärt sig vad allt ska sorteras som är det lite klart.
- Tar bara ett par timmar vecka
- Rutin i hemmet
- Vissa avfall är jag osäker på hur de ska sorteras
- Fick bra info från ksrr på posten med ett sorteringsschema
- Fullt på sopstationerna. För små hår att kasta ner ex plast. Hinkar å sånt
- bara göra
- Ganska självklart hur man gör
- Hur svårt kan det vara? Olika kärl lämna på återvinningen!
- Tar mycket plats, rördigt.
- Om det är svårt att veta hur vissa saker ska källsorteras kollar jag upp det på ksrr:s hemsida. Smidigt!
- Att frakta är jobbigt...och en del förpackningar är obestämt material i, svårt om det inte står info på förpackningen
Att frakta är jobbigt...och en del förpackningar är obestämt material i, svårt om det inte står info på förpackningen

Det är bara att dela upp det från början

Finns skyftar med info

Det svåra i så fall är väl vart man ska ha alla olika påsar i hemmet.

T.ex om man har ett spann så får man inte lägga det bland plasten. Det känns inte rätt.

Jag är van och det finns tydliga skyftar i soprummen

Transport av möbler o.dyl är svårt, då jag saknar bil.

Vi har bra återvinningsstationer

en del förpackningar är krångliga att dela på när det är nödvändigt (olika material)

Det finns bilder och listor

Uppväxt med det så går naturligt

Ibland vet man inte exakt vad hur man ska sortera vissa förpackningar men det går oftast att utläsa på dem isåfall

Är det plast eller plåt eller ... Bättre märkning på förpackningar.

Har bra kärl att sortera i både hemma och i soprummet

Bra information både på förpackningar och sopkärl i sophuset.


Det finns alltid någon som talar om för mig vart det ska slängas eller så finns det skyftar som talar om det

Planera hur det blir enkelt i ditt hushåll och skaffa bra grejer som passar i ditt hem

Det tar sån plats under diskbänken.

Det är enkelt o smidigt på tex KSRR, mini åvc, bra info

Kuvert vilka ska dom vara i med eller utan fönster

Svårt att åka till återvinningen.

Så många olika kärl att lägga korkar/kapsyler/lock osv i

Det är logiskt

Du kan höra så mycket du vill/kan.

Jag sorteras min man sköter logistiken :)

Svårt, då man inte har plats eller utrymme för att sortera allt som bör sorteras.

Det är ganska rättfram men i några fall kan det vara svårt att avgöra hur man ska sortera och lämna in.

Det kan vara svårt med vissa saker ex spannar, krukor mm
Fråga 8. Anser du att du har tillräckligt med information om hur du ska källsortera?

![Pie chart showing percentages](chart.png)

Kommentar till ditt svar:

<table>
<thead>
<tr>
<th>Svar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag har växt upp med att källsortera</td>
</tr>
<tr>
<td>Är intresserad och läser när info dyker upp info ex om det är svårt att få itu ett emballage som består av både plast o papper så ska man lägga i den hög vilket den består mest av.</td>
</tr>
<tr>
<td>står på många produkter vad dom ska sorteras som</td>
</tr>
<tr>
<td>Sltid bra med mer</td>
</tr>
<tr>
<td>mycket bra</td>
</tr>
<tr>
<td>Värmejus har de informerat dåligt om ändringen, men nu vet jag.</td>
</tr>
<tr>
<td>Kommer nya saker som ska sorteras</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bristfällig information från KSRR.</td>
</tr>
<tr>
<td>Vissa saker undrar man ibland vad de går som. Tex om en tepåse ska slängas i matavfall eller vanliga sopor.</td>
</tr>
<tr>
<td>En folder hade varit bra.</td>
</tr>
<tr>
<td>Ja det tycker jag</td>
</tr>
<tr>
<td>Googlar på det jag inte vet</td>
</tr>
<tr>
<td>Nära nog ingen information finns och ingen kan svara på vart sakerna hamnar</td>
</tr>
</tbody>
</table>

80
Fråga 9. Vad har du för personlig inställning till att källsortera?

![Pie chart showing the distribution of attitudes towards sorting.]

<table>
<thead>
<tr>
<th>Inställning</th>
<th>Procent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycket positiv inställning</td>
<td>29,4%</td>
</tr>
<tr>
<td>Ganska positiv inställning</td>
<td>8,3%</td>
</tr>
<tr>
<td>Varken positiv eller negativ inställning</td>
<td>4,5%</td>
</tr>
<tr>
<td>Ganska negativ inställning</td>
<td>59,6%</td>
</tr>
<tr>
<td>Mycket negativ inställning</td>
<td></td>
</tr>
</tbody>
</table>

Kommentar till ditt svar:

- Det är allt lite tråkigt att diska och torka
- Känns härligt att kunna hjälpa till
- Man måste göra vad man kan
- Jag tror inte det går att få invandrarna i mitt område att sortera rätt.
- Ibland när något är kladdigt oså är det inte jättekul att göra iordning för att kunna sortera
- Det finns egentligen ingen anledning att inte göra det, förutom lathet isåfall
- Ibland tänker man inte på vad man gör och räkar slänga fel och då är det försent
- Jag gör det jag måste. Är rätt inte intresserad.
- Med ett fungerande system från början till slut så hade jag sorterat allt.

Fråga 10. Tar källsortering upp mycket eller lite plats i ditt hem?

![Pie chart showing the distribution of space for sorting.]

<table>
<thead>
<tr>
<th>Plats</th>
<th>Procent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycket plats</td>
<td>30,6%</td>
</tr>
<tr>
<td>Litet plats</td>
<td>20,4%</td>
</tr>
<tr>
<td>Tar ingen betydande plats</td>
<td></td>
</tr>
<tr>
<td>Har ingen källsortering</td>
<td>45,4%</td>
</tr>
</tbody>
</table>

Kommentar till ditt svar:
Fråga 11. Vet du var din närmaste återvinningsstation finns? (De gröna ombemannade behållarna, placerade runt om i kommunen)

97,2% Ja

Kommentar till ditt svar:
Nästan alltid fulla tyvärr, särskilt förpackningar papper och så får man äka till nästa o nästa o vet ofta fullt

Men önskar att det fanns på fler ställen för ex plast som det blir väldigt mycket av.

Kör till stora återvinningsstationen

Typ 4 minuter härifrån

Har lite väl långt att gå 900 m o inte alltid åt det hållet. Sparar på mig och kör istället till ÅVC ca 1 gång/ månad. Det känns inte bra.

Född och uppväxt i samma by så kan den nästan helt utantill

Åkrahällskolan sen ica

Men många miljöstugor är lästa även för boende i vissa områden.

Fråga 12. Är avståndet till närmaste återvinningsstation eller återvinningscentral avgörande för att du ska sortera?

![Pie Chart]

**Kommentar till ditt svar:**

- Använder mitt sophus köllsortering
- Kan sortera i samband med handling
- Skulle sortera mindre om det inte fanns i närheten.
- såklart
- Vore som sagt bättre med sortering i tunnan.
- Svårt utan bil
- Har sortering i anslutning till lägenheten
- Station nej. Typ 4 min inte alls långt. Centralen ligger ca 1.5 mil härifrån. Det gör att vi inte är där mer än när vi måste
- Eftersom vi har sortering i soprummet behöver vi sällan äka till återvinnningen, om vi inte ska slänga elektronik och så, eller rensar ut mycket saker.
- Den finns där jag behöver den
- Hade jag inte haft det fantastiska gårdhuset hade jag nog inte sorterat så mycket jag ändå gör.
- Det blir ganska mycket extrakörning.

<table>
<thead>
<tr>
<th>Faktor</th>
<th>Antal (Procent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Svårt att ta sig dit</td>
<td>6 (7,1 %)</td>
</tr>
<tr>
<td>Bristande belysning</td>
<td>24 (28,2 %)</td>
</tr>
<tr>
<td>Dålig placering</td>
<td>6 (7,1 %)</td>
</tr>
<tr>
<td>Skräpigt</td>
<td>62 (72,9 %)</td>
</tr>
<tr>
<td>Jag källsorterar inte</td>
<td>3 (3,5 %)</td>
</tr>
<tr>
<td>Nej</td>
<td>1 (1,2 %)</td>
</tr>
<tr>
<td>De är oftast fulla</td>
<td>1 (1,2 %)</td>
</tr>
</tbody>
</table>

Kommentar till ditt svar:

- Nej (2)
  - Nej inga faktorer som påverkar mig (2)
  - Nej.
  - Synd att en del slänger vad dom runt omkring containrarna. Göra ibland att man inte kommer fram
  - Inte direkt obehag men tråkigt och hopplöst när det är otömt vilket orsakar nerskräpning.
  - Känner inget obehag.
  - nå
  - Känner inget obehag
  - ofta fullt
  - Inte direkt obehag, men det är rätt skräpigt.
  - Valjigt skräpigt och gkassplitter på marken och liknande
  - Valjigt skräpigt och gkassplitter på marken och liknande
  - Nej
  - Svårt att trängas med bilister o smalt tex vid Bangatan Kvantum.
  - Vintertid är det snudd på omöjligt utan bil.
  - Sorgligt att vissa ser centralema som stoppar. Bättre belysning hade varit en fördel.
  - Det finns inga faktorer till att jag ska känna obehag
  - Igentligen inte svårt mer lat
  - Mycket skräp på golvet.
  - Många platser används som dumpingområde av näringsidkare i Nybro kommun
  - Nej det är ganska tätt mellan dom och som bra ut, mycket folk som passerar dem så de som lämnar sopor måste sköta sig.
  - Jag sorterat för tillfället bara tidningar och glas. Eventuellt platburkar och retroaktivt avfall t.ex batterier, lampor osv.

Att det finns tydlig information
Kortare avstånd till återvinningsstationen
Mer kunskap och syfte med källsortering
Att källsorteringen tar mindre plats i hemmet
Att personer i min omgivning källsorterar
Vill inte börja källsortera

Annan anledning:
Tycker inte vi behöver göra det mer.
Att soprummet vi har hade haft fler olika kär.
nä
Källsorterar redan
att det jag sorterar hämtas!
Hushållsnära hämtning av sorterat avfall.
Ofta ligger det rätt öde. Vill ej gå dit på kvällstid själv
Sopkärl med sortering som i jönköping
Jag källsorterar redan.
Nöjd med den källsortering jag gör idag
Att man ska få gummivantar och olika soteringspåsar typ som matfalls påsen den gröna
Kanske få betalt hade lockat mig
Jag vill att det ska vara renare i sophuset, och det ska finnas krav på att alla ska få info nere i sophuset. Inga barn ska skickas med sopor för de kastar hur som helst. Kameror i sophusen.

Fråga 15. Anser du att källsortering spelar en betydlig eller obetydlig roll i arbetet med hållbar utveckling?

Kommentar till ditt svar:
Har du egna förslag på hur du skulle vilja förbättra eller underlätta de nuvarande möjligheterna att källsortera?

Sortera redan vid husen, olika kärl så slipper ha det hemma. (2)

I Jönköping källsorterar man redan i sopkärl. Sopkärlet hade 4 mindre kärl i tunnan så det sorterades direkt. Det vore bra

Info o tömma på stationerna oftare

Kärl för Lampor och textiler i stationerna.

Bovärder kunde fixa bättre sopkärl i lägenheterna

Dela upp sopkärllet som töms varannan vecka. Tänker på de äldre som inte orkar eller har möjlighet att ta sig.

nä

Mer central åvc, slippa Kalmar vägen

Tänka förpackning redan i affären, minska plast och förpackningshysterin!

Ex fler färgar på soppåsarerna. Nu har vi bara grönt till matsopor.

Mindre behållare för ex plast och plastförpackningar på fler platser.

Utöka med annan färg på påsar för ex. plast och kunna lägga i befintligt sopkärl

Se tidigare svar 😊

Skytta på fler språk al erbjuda detta på sfi kurser

Att man fick kasta all plast i plast osv. (Vi har det inte så i sophuset)

Jag skulle vilja att hushållspapper kunde källsorteras i matavfall.

Information! Information och åter information!

Fler kärl utomhus som hämtas upp likt hushållssopor. Ex kärl för pappersförpackningar, glas etc. som tar mycket plats.

Nej, tycker vi har det bra. Men jag tänker att det kanske skulle kunna underlätta för de som bor i hus om de kunde dela på soptunnor för olika material i kvarteret. Iaktaga de vanligaste som papper glas och metall så skulle nog ännu fler sortera.

Möjlighet att skilja på mer än "grön påse" o övrigt i soptunnan

Att informationen finns på flera språk och eventuellt en videofil på fler språk som visar hur man gö. Ät

Att alla hushåll villor lägenheter etc ska få en stor fräcsh anläggning i närheten där de kan sortera där det ska soteras

Böte till dom som skräpar ner, mer info.
<table>
<thead>
<tr>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Att man får kasta sitt skräp på den återvinningsstation man har närmast till. Att det skulle vara enklare att kasta in plast och tidningar.</td>
</tr>
<tr>
<td>Mer alternativ i behållaren hemma, istället för bara lägga kompost i gröna påsar och övriga brännbara direkt i tunnan kunde det finnas fler fack för tex. Glas, batteri, tidningar, plast mm.</td>
</tr>
<tr>
<td>Det saknas tillgänglig källsortering för TRÅ och för halvstora saker. Det borde finnas ett lättare alternativ än Börseryd för oss som inte har bil. Skal man slänga sådant så blir det bara att man ställer det mot en vägg i sophuset, för inte vill man väl ha det liggandes hemma?</td>
</tr>
<tr>
<td>En an an typ av tunna där man blir av med mer direkt det är min US att behöva köra iväg och lämna inte för vår del men för miljön.</td>
</tr>
<tr>
<td>Information o utbildning i skolorna även för dem som är nyanlända. Det kan vara svårt att förstå viss information.</td>
</tr>
<tr>
<td>Trist med plastpåsar till insamling av matavfall - mkt bättre m papper!</td>
</tr>
<tr>
<td>Jag tycker det skulle vara roligare att sortera om sophusen sköttes riktigt, för det är faktiskt äckligt där. Skulle önska mig fler kärl, t.ex. plast som det alltid är full.</td>
</tr>
</tbody>
</table>
Hej,

Mitt namn är Albertina Ravn och studerar sista året på Mastersprogrammet i Design med inriktning hållbarutveckling på Linnéuniversitetet i Växjö. Jag skriver just nu mitt examensarbete som fokuserar på materialåtervinning och återvinningsbeteendet av invånarna i Nybro kommun.

Jag kontaktar er i förhoppning om att komma i kontakt med någon på KSRR för att ställa några frågor angående återvinning i Nybro kommun och hur vidare ni ser på återvinningsbeteendet hos användarna avera tjänster.

Tack på förhand

Albertina Ravn
Masters student in Design,
Linnéuniversitetet, Växjö

INTERVIEW QUESTIONS

• En viktig och avgörande förutsättning till att sortera sitt avfall är att det finns information om hur kunderna ska sortera sitt avfall. Anser ni på KSRR att ni informerar era kunder om hur de ska sortera deras avfall? Hur ser avfallet ut, utöver de gröna påsarna med matavfall som ni hämtar? Är det mycket som egentligen bör sorteras i andra kärl? Hur stora volym av matavfall samt annat avfall slängs i månaden/ år? Finns möjlig grön statistik på detta?

• Faktorer som påverkar attityder och beteendet när det gäller återvinning och avfalls hanteing är av skiftande karaktär, till exempel möjlighet att sortera, tillgång eller brist på utrymme för sortering av avfall. Anser ni på KSRR att det är ett problem för er verksamhet? Hur tycker ni att Nybro kommun sorterar sitt avfall i hushållen enligt era anvisningar?

• KSRR samlar in sorterat matavfall hos privatpersoner och verksamheter som sedan blir till biogas och biogödsel. Hur ser processen ut från att ni hämtar avfallet till färdiga biopro dukter?
Hej Magnus.

Mitt namn är Albertina Ravn och studerar sista året på Mastersprogrammet i Design med inriktning hållbarutveckling på Linnéuniversitetet i Växjö. Jag skriver just nu mitt examensarbete som fokuserar på materialåtervinning och återvinningsbeteendet av invånarna i Nybro kommun.

Kontaktar dig eftersom du är regionchef för Kalmar län på FTI ab. Jag skulle vilja ställ några frågor till dig angående återvinning i Nybro kommun och hur vidare du ser på återvinningsbeteendet hos användarna av era återvinningsstationer.

Finns det möjlighet att träffas för en intervju eller att ställa några frågor via e-mail?

Tack på förhand

Albertina Ravn
Masters student in Design,
Linnéuniversitetet, Växjö

INTERVIEW QUESTIONS

- Som jag har förstått så tar FTI AB hand om alla återvinningsstationer i Nybro kommun (förutom återvinningscentralen). Finns det någon information eller statistik på hur bra/ dåligt de olika områdena i Nybro kommun är på att återvinna (sortera rätt i rätt kärl)?

- Lämnas det mer/ mindre på vissa av era återvinningsstationer i Nybro och i så fall vilket/ vilka område/områden?

- Har ni på FTI AB möjligen någon information eller statistik på återvinningen av förpackningar/ tidningar i Nybro kommun?

- Hur går processen till efter att FTI AB har samlat ihop förpackningar och tidningar på de olika stationerna? Kan du förklara lite?

- Ser ni på FTI AB något/ några problem med sorteringen av förpackningar/ tidningar i era kärl?
INTERVIEW QUESTIONS

NYBRO MUNICIPALITIES’ SUSTAINABILITY

2018, March 19
Emma Adrian Hållbarhetsstrateg, Nybro kommun

- Hur ser ert nuvarande arbete ut med sopsortering och källsortering (hushållssopor och förpackningar)
- Vad är era framtida mål när det gäller återvinning av sopor?
- Nybro är en mångspråkigt och mångkulturell kommun, hur jobbas det på att informera för att nå ut till så många invånare som möjligt?
- Jobbar ni själva med att informera invånarna om sopsortering och källsortering? eller är det KSRR och FTI AB uppdrag?
- Finns det någon annan organisation som är delaktiga i arbetet med återvinning?
- En enkät om källsortering, de flesta vet varför vi måste källsortera, men siffrorna visar att inte alla gör det. Vad tror du att detta grundar sig i?
- Områden utanför nybro eller människor som bor i nybro, inte möjlighet att lämna avfall (kanske ingen bil) har kommunen någon hjälp att erbjuda?
- Ser ni något hinder när det kommer till invånarna i Nybro och sopsortering /källsortering?
Social Design Workshop

Figure 25. Illustration. Albertina Ravn (the writer). 2018.
An overview of the different steps of the workshop. P. 53.
**PLANNING**
The participants are planning themselves the dish, with a recipe, they want to cook and how many portions, as well as writing a shopping list of which ingredients are needed.

**PURCHASING**
The participants buy the ingredients listed on the shopping list.

Count the number of goods.
*How many?*

Weigh the ingredients.
*How much did they weigh in total?*

**PREPARATION**
Unpack, rinse, clean and peel the ingredients if needed.
Save all the packaging and waste which has been sorted out.

**COOKING**
Make the food by following the recipe.

**DINNER**
Lay the table and serve the food.

**CLEANING**
Clean up and wash the ditches after cooking.

Weigh the leftovers.
*How much did the leftovers weigh?*

Sort the waste in the categories below:
-Packaging
-Compost
-Combustibles

*How much weighs each category?*

Then take the total weight of the garbage and subtract it by the total weight of the goods.
*How much was it?
Figure 27. Illustration. Albertina Ravn (the writer). 2018. To create voluble information, Logbook. P 55
The background to my process of transforming my final project into an exhibition presentation:

My process began with a discussion and consultation with Martin and Terje. Just days before, I found out that I did not achieve the criteria needed to be approved for my design project, that was included in my master’s thesis. I had to discuss what could be done in this course to achieve some of the criteria that could then help me in the completion of my design project and thesis when sending in my re-examination.

In my master’s thesis, I wrote about recycling behaviour and waste management, focusing on Nybro municipality and the citizens of Nybro municipality. I choose to work with recycling because it is an already existing system that has been running for many years. Drawn from my own experiences and observations, I have noticed that there are problems with how the individual person does not sort their waste. I have also noticed several times that many of the things, people in the area where I live throw out, is not sorted in the correct way that is being instructed. I see everything in one bag and thrown in the container for disposal.

It was shown in my literature review of my thesis, that citizens one of the biggest parts when it comes to Sustainable Development. Many of the environmental regulations and objectives are manly depending on how we as citizens handle our waste. A conclusion that was drawn from my research was; that there is a lack of information regarding how to waste sort and the insecurity of what to sort.

As my design project, I came up with a Social Design Workshop designed to raise the awareness of the need for recycling and how to recycle, to increase Sustainable Development. The workshop, is a social come together, revolving around waste that is being created by cooking a dinner, where trash is of an equal part of the dinner, as the food is.

To make this into an exhibition and at the same time reaching some of the criteria that were needed, I had to make three things happening.

The three things were:

• A social experiment- Collecting waste from the building of the exhibition at Konsthallen (Wednesday, 16 may, 10.00- Saturday, 19 may, 12.00), to examine the recycling behaviour and the amount of waste collected.

• A manual- Describing Why we need to recycle, Who is responsible and What and How to sort our waste. It also described how to perform the workshop, step by step, to get an idea of how much food, vs. how much waste a single dinner creates.

• A workshop-Testing the social design workshop and document it.
THE USAGE OF MY SPACE AT THE EXHIBITION

I got a wall space at the exhibition hall and choose to work with the panels that the installation group gave me. By not using all of the panels on the wall, I decided to just use the middle ones so I could leave more room for the waste that I was about to collect.

My first idea was to have a small poster with information on, a shelf for my manual and postcard and then mount all the waste that was collected on the panels (hanging).

The panels I could choose from.

The panels I chose to use.

My first idea of exhibiting at konsthallen.

The waste being mounted on the panels.
**MANUAL**

The manual contained more text to describe and facilitate. What was written in the manual was information that I learned from my thesis, but more easy-to-understand and easy to follow with the headings of Why, Who, What. This also contained how to perform my workshop. The visual and graphical material that was used in the manual was from my thesis and a previous testing of my workshop. I choose to write in both English and Swedish to broaden the target audience.

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**A SOCIAL EXPERIMENT**

On Wednesday of the installation week (May 16), I put up various waste sorting paper bags with decals on the different materials that were to be sorted in the lab hall of Konsthallen. I informed both verbally and digitally that it was important to use these sorting vessels, and that this was for my project to exhibit.

On Friday (the day before the opening of the exhibition) I moved the paper bags with the waste I collected for my exhibition space. I decided to keep it as it was (by not mounting it on the wall). This gave more meaning and the visitors could see how the waste was sorted into the categories and also to see the amount of waste as a whole. I was still inviting people to throw their waste at the new location. At this point, I let the people working in the exhibition hall shape and create my space and exhibit.

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Paper bags with decals on the different materials that were to be sorted in the lab hall of Konsthallen. Wednesday, May 16.
Friday 10.00, May 18.

Moving everything to my exhibition space.

The shelf.

Saturday, 11.00, May 19.
INTERPRETATION OF THE FINAL RESULT

The result of my project to exhibit became the problem I had advocated in my master’s thesis. The process of sorting worked well until a certain level. This level became visible and exhibited. The purpose of this exhibit was to show the amount of waste created, but also to show the recycling behaviour and lack of knowledge about how to sort the waste.

The similarity that can be drawn from this, is the resemblance to the existing recycling system that we have. We have a recycling system, but it does not work properly.

THE WORKSHOP

The workshop that I had planned, happed May 24 on campus as a co-operation with ”No Waste Day!”. We had rescued food from different supermarkets around Växjö and had a table with second hand-goods. With the food that we rescued, I practised my workshop with a group of people. I set up different waste sorting categories where we sorted our waste in from making the dinner.
This manual is a part of my Master’s thesis about Waste sorting- A proposed Social Design Workshop to improve behaviour and management of recycling.

My study showed that citizens have the biggest part of the responsibility when it comes to Sustainable Development. Many of the environmental regulations and objectives are mainly depending on how we as citizens, handle our waste. Waste sorting is not easy and our lack of knowledge about how to recycle properly does not make it easier.

In this manual, the Why we need to recycle, Who is responsible and What and How to sort our waste is explained. It also describes how you can perform a workshop on your own, step by step, to get an idea of how much food, vs how much waste a single dinner creates.

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Den här handboken är en del av mitt examensarete om Avfallssortering-En Socialt Design Workshop för att förbättra beteende och hantering av återvinning.

Min studie visade att medborgarna har den största delen av ansvaret när det gäller hållbar utveckling. Många av miljöföreskrifterna och målen är i huvudsak beroende av hur vi som medborgare hanterar vårt avfall. Avfallssortering är inte lätt och vår brist på kunskap om hur vi ska återvinna, gör det inte lättare.

WHY DO WE NEED TO RECYCLE?

Garbage, Trash, Junk, Rubbish, Refuse-
Waste has a lot of names and everyone is involved in creating them.

Our garbage can contain both of dangerous and valuable substances. By waste sorting our trash, we can protect ourselves from this, at the same time we can save a lot of natural resources by using the materials several times. By sorting our waste, hazardous substances can be safely addressed, so that both people and the environment can be protected. Thru sorting the garbage, it also reduces waste that is likely to end up in a landfill.

Waste sorting is part of the EU’s plan for how we deal with our waste to reach a better and more sustainable future so that the environment and people do not get hurt. In fact, it is against the law not to sort your waste. Trash that is wasted both in nature and in cities, risks leaking hazardous substances. It also takes a very long time to break down.

The material used to produce goods is taken from nature. Some resources are finite, others take a very long time to form, such as oil, coal and trees. When you waste sort, you recycle materials that can become new goods, instead of using new raw materials.

Processing recycled materials are not as energy consuming as processing new raw materials. By recycling aluminum, you save 95% of the energy that otherwise would be used when using virgin raw materials.

If we do not waste sort, there will be a large amount of residual waste that has to be treated, such as combustion or landfill. The treatment is more expensive and taxed higher than if you recycle the waste.
VARFÖR MÅSTE VI ÅTERVINNA?

Skräp, Bräte, Avfall, Restprodukter, Hushållsavfall-
Sopor har många namn och alla deltar i att skapa dem.


Avfallssortering är en del av EU:s plan för hur vi hanterar vårt avfall för att nå en bättre och mer hållbar framtid så att miljön och människorna inte blir skadade. Det är i faktiskt mot lagen att inte sortera ditt avfall. Skräp som slängs både i naturen och i städer riskerar att läcka farliga ämnen samtidigt som det tar mycket lång tid att bryta ner.


Bearbetningen av återvunnet material är inte lika energiförbrukande som att bearbeta nya råvaror. Genom att återvinna aluminium sparar du 95% av den energi som annars skulle användas vid användning av jungfruvaror.

Om vi inte källsorterar vårt avfall, kommer det att finnas en stor mängd restavfall som måste behandlas samt som förbränns eller hamnar på deponi. Behandlingen är dyrare och beskattas högre än om du återvinner avfallet.
WHO HAS THE RESPONSIBILITY?

Consumers, Municipalities and Producers -
We must work together to achieve Sustainable Development.

In Sweden, consumers have an obligation to waste sort the garbage in the right way and hand it into the collection systems available. This includes the sorting of waste paper, packaging, electrical waste, batteries and anything else that does not belong in the garbage bin of combustibles.

The municipalities are responsible for the collection and treatment of household waste. Each municipality decides whether to handle the waste collection itself or outsource it. They are also responsible to inform the citizens about how to waste sort.

Some things are the responsibility of the producer. This means that the manufacturer, seller or importer of a product is also responsible for collecting and recycling. We as consumers pay for the recycling of the product. The price of each producer’s product includes a recovery fee, which corresponds to the cost of collection and recycling of the goods.

So, why throw something with producer responsibility, that you already paid a recovery fee for, in the garbage bag and then pay again to burn it? In this way, you are wasting money and valuable resources!
VEM HAR ANSVARET?

Konsumenter, kommuner och producenter-
Vi måste alla samarbeta för att uppnå Hållbar Utveckling.

I Sverige har konsumenterna skyldighet att källsortera soporna på rätt sätt och lämna in det till det insamlingssystem som finns tillgängligt. Detta inkluderar sortering av papper, förpackningar, elavfall, batterier och allt annat som inte hör hemma i soppåsen för brännbart.

Kommunerna ansvarar för insamlingen och behandlingen av hushållsavfall. Varje kommun bestämmer huruvida själva avfallshanteringen ska hanteras. De har också ansvaret för att informera medborgarna om hur de ska sortera deras hushållssopor på rätt sätt.

Vissa saker är producentens ansvar. Det innebär att tillverkaren, säljaren eller importören av en produkt också ansvarar för insamlingen och återvinningen av deras produkter. Vi som konsumenter betalar för återvinningen av produkten genom en återbetalningsavgift som tillkommer i priset på varje producents produkt, vilket motsvarar kostnaden för insamlingen och återvinningen av varorna.

Så, varför kasta något med producentansvar, som du redan betalat en återbetalningsavgift för, i soporna och sedan betala igen för att bränna det? På detta sätt slöser du bar pengar och värdefulla resurser!
WHAT SHOULD BE SORTED?

What is waste and how do we sort it properly?
Trash can be explained as- Everything we do not need or want anymore.

In terms of sorting, there are three main categories that we must consider. These categories are: Food waste, Packaging and Combustible.

WHAT IS FOOD WASTE?
This category is what it sounds like. Food waste mainly contains waste that has been created from food or residues, such as vegetables, root vegetables and fruits; bread, rice, flour and pasta; smaller legs from chicken, fish and meat etc.

What can also be sorted in this category are coffee and coffee filters, tea bags and some flowers and leaves from indoor plants, but not soil. The collected food waste become Bio-gas and is then used as a fuel for e.g., the bus.

WHAT IS PACKAGING?
Packaging is everything that your purchased items are packed in, e.g., milk cartons, plastic, glass and metal cans, glass or plastic bottles, corrugated cardboard, capsules; plastic for bread, fruit, clothes and more. This should be sorted at the recycling station.

At the recycling station, there are different compartments to leave the different packages in. Follow the indicated decals on the different containers to find the right one. It is important to remember that the category of Packaging is only meant for packaging and nothing else. This has to do with the producer responsibility, described earlier, and that the packaging may become a new packaging or a new product when it’s recycled.
VAD SKA SORTERAS?

Vad är skräp och hur sorterar vi det på rätt sätt?

Skräp kan förklaras som - All vi inte behöver eller vill ha längre.

När det gäller sopsortering finns det tre huvudkategorier som vi måste tänka på. Dessa kategorier är: Matavfall, Förpackningar och Brännbart.

VAD ÄR MATAVFALL?

Denna kategori är vad det låter som. Livsmedelsavfall innehåller huvudsakligen avfall som har skapats av mat eller rester, såsom grönsaker, rotfrukter och frukter; bröd, ris, mjöl och pasta; mindre ben från kyckling, fisk och kött etc.

Vad som också kan sorteras i denna kategori är kaffe- och kaffefilter, tepåsar och några blommor och lämnar från inomhusväxter, men inte jord. Det uppsamlade matavfallet blir biogas och användes sedan som ett bränsle för t.ex. bussen.

VAD ÄR FÖRPACKNING?

Förpackning är allt som dina inköpta föremål är förpackade i, t.ex. mjölkar- tonger, plast-, glas- och metallburkar, glas eller plastflaskor, wellpapp, kapslar, plast för bröd, frukt, kläder och mer. Detta bör lämnas vid återvinningsstationen.


Vad?
WHAT SHOULD GO IN THE BIN FOR COMBUSTIBLE?

Once you have sorted the food waste and packaging, there is not much left to waste in the bin for combustible. Chewing gum, tobacco, diapers, binders and tampons; disc brushes, rags and textiles; Toothbrushes, razors, toys and other plastic products that are broken (with removed batteries) and porcelain parts are some examples of what should be disposed of in the bin for combustible. What is sorted as combustible, is burned and becomes new energy.

THE DIFFERENT SORTING CATEGORIES:
VAD SKA SLÅNGAS I SOPPÅSEN?

När du redan har sorterat matavfallet och förpackningarna, finns det inte mycket kvar att kasta i soptunnan för brännbart. Tuggummi, tobak, blöjor, bindor och tamponger; diskborstar, trasor och textilier; tandborstar, rakhyvlar, leksaker och andra plastprodukter som är trasiga (med borttagna batterier) och porslinelar är några exempel på vad som ska slängas i soptunnan för brännbart. Det som sorteras som brännbart, förbrännas och blir till ny energi.

DE OLIKA SORTERINGSKATEGORIER:

- **Paper packaging**
  - Pappersförpackningar

- **Metal packaging**
  - Metallförpackningar

- **Coloured Glass**
  - Färgat Glas

- **Clear Glass**
  - Ofärgat Glas
Let’s talk trash!

A Social Design Workshop-
To improve behaviour and management of recycling.

En Social Design Workshop-
Att förbättra beteende och hantering av återvinning.
THE WORKSHOP

Let’s talk trash! is a Social Design Workshop, designed to raise the awareness of the need for recycling and how to recycle, to increase Sustainable Development.

The workshop is a social come together where trash is of equal part of the dinner, as the food is. The workshop revolves around waste that is being created from cooking.

The performance of the workshop will be described in different steps with a description of what to do.

The equipment needed to perform this workshop is:
A household scale, paper and pen and a functional kitchen.

WORKSHOPEN

Let’s talk trash! är en Social Design Workshop, utformad för att öka medvetenheten och behovet av återvinning och hur vi ska återvinna, för att öka den hållbara utvecklingen.

Workshop är en social sammankomst där skräp har lika stor del av middagen, som maten har. Workshopen handlar om avfallet som skapas från matlagning.

Utförandet av workshopen kommer att beskrivas i olika steg med en beskrivning om vad som ska göras.

Utrustningen som behövs för att utföra denna workshop är:
En hushållsvåg, papper och penna och ett funktionellt kök.
STEP 1. PLANNING

The participants are planning themselves the dish, with a recipe, they want to cook and how many portions, as well as writing a shopping list of which ingredients are needed.

Plan the dinner of your choice by following a recipe. Make a shopping list to facilitate the purchasing. After the shopping, count the number of purchased goods. This is to compare the number of goods contra the number of packages that are being created later on in the process.

STEG 1. PLANERING

Deltagarna planerar själva matrännen, med ett recept, de vill laga mat och hur många portioner, samt skriva en inköpslista över vilka ingredienser som behövs.

STEP 2. PURCHASING

The participants buy the ingredients listed on the shopping list.

Count the number of goods.
How many?

Weigh the ingredients
How much did it weigh in total?

The ingredients will all be weighed, this is due to the fact that later in the process, the you will compare the weight of the ingredients, with the weight of the household waste.

STEG 2. HANDLA

Deltagarna köper de ingredienser som finns listade på shoppinglistan.

Räkna antalet varor.
Hur många?

Väg ingredienser.
Vad är den totala vikten?

Ingredienser kommer alla att vägas. Det beror på det faktum att du senare kommer att jämföra ingrediensernas vikt, med hushållsavfallets vikt.
STEP 3. PREPARATION & COOKING

Unpack, rinse, clean and peel the ingredients if needed. Save all the packaging and waste that has been sorted out.

All the packages and food waste in this phase of the process will be saved for later. Cooking the food and enjoying a nice dinner.

STEG 3. FÖRBEREDELSER & MATLAGNING

Packa upp, skölj, rengör och skala ingredienserna om det behövs. Spara alla förpackningar och avfall som har sorterats bort.

Alla förpackningar och matavfall kommer att sparas för att användas senare i processen. Workshopen fortsätter genom att laga maten och njuta av en trevlig middag.
STEP 4. CLEANING & COUNTING

Clean up and wash the dishes. Save the leftovers together with the food waste. Sort the waste, that has been collected throughout the whole process of this workshop, in the categories of:
- Packaging, Food waste, Combustibles

How much weighs each category?
How much is the total weight of the three categories?

Take the total weight of the three categories and subtract it from the total weight of the goods.

How much was it?

All the waste of packaging, food waste and other, is categorized into the three main categories; packaging, compost and combustible materials. Count the packages, compare with the previous amount of purchased goods. Weigh the three categories of packaging, compost and combustibles separately and subtract the sum with the ingredients weight of the purchased goods.

In this way, you get an idea of how much food, kontra how much waste, a single dinner creates.
STEG 4. STÄDA & RÄKNA

Rengör och tvätta disken efter tillagning, spara rester tillsammans med matavfallet. Sortera avfallet, som har samlats in under hela processen i denna verkstad, i kategorierna:
- Förpackning, Matavfall, Combustibla

Hur mycket väger varje kategori?
Hur mycket är den totala vikten av de tre kategorierna?

Ta den totala vikten av de tre kategorierna och dra av den med den totala vikten av varorna.

Hur mycket var det?

Allt avfall, inklusive förpackningar, matavfall och annat, kategoriseras i de tre huvudkategorier; förpackningar, kompost och brännbara ämnen. Räkna förpackningarna, jämför med den tidigare summan av inköpta varor. Väg de tre kategorierna av förpackningar, kompost och brännbara ämnen separat och subtrahera sedan summan med ingrediensernas tidigare vikt.

På detta sätt fås en uppfattning om hur mycket mat, kontra hur mycket avfall en enda middag skapar.