



# THERE IS NOTHING WRONG WITH THE KITCHEN

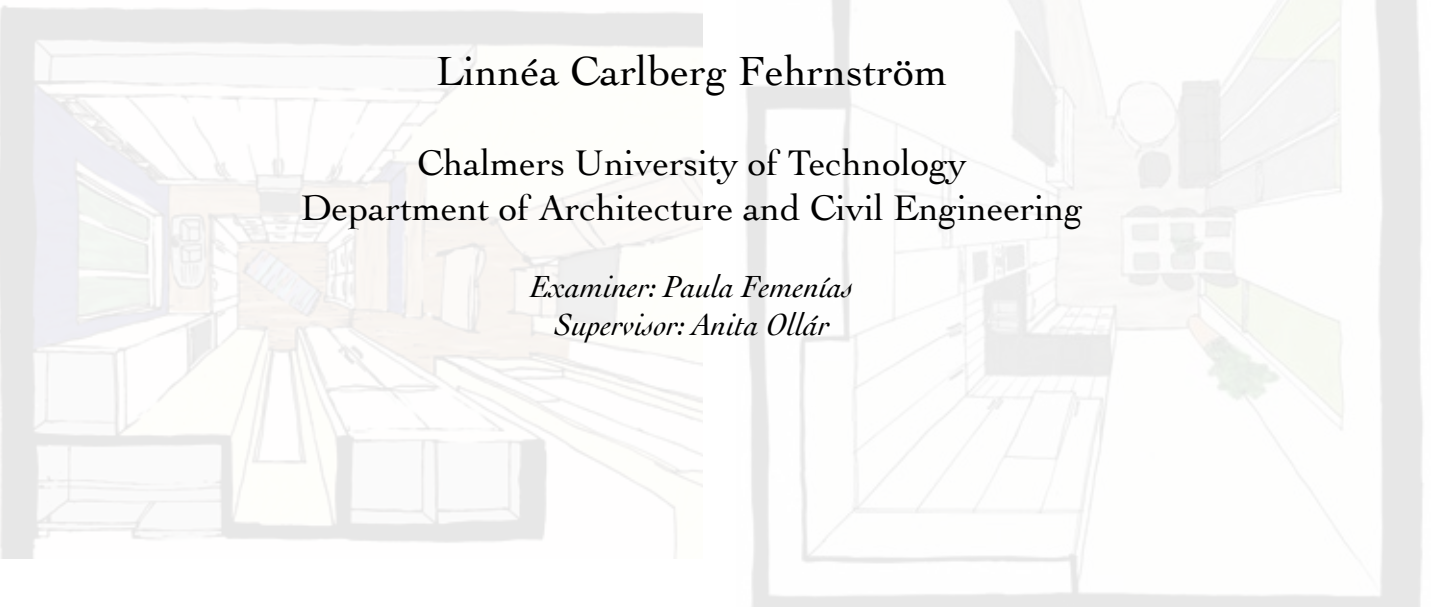
- how to see the value of what is there



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# Abstract

Swedes are getting more aware of the issues derived from global warming, and the impact humans have on it. For example, organic food has been on the upswing the last decade in Sweden (Statistiska Centralbyrån, 2018c). So why have this sustainable mentality not reached the renovations that are done in homes? Research shows that renovations and rebuilds in condominiums in Sweden are having a bigger impact on the environment than expected (Femenías, Holmström, Jonsdotter, & Thuvander, 2016). Kitchen renovations stand out within this report, which means that focus needs to be put on this subject.

The idea behind this thesis came through discussions on sustainability and renovations and how these seem to be detached from each other in the eyes of non-architects in Sweden today. It was understood that a lot of homeowners have a sustainable mindset and approach, but there is a lack of information on what a sustainable renovation process entails, as well as how to conduct sustainable renovations. Especially when it comes to kitchens.

This thesis is a way to communicate to homeowners how one can see the values of a kitchen as it is, as well as showing how renovations can be conducted in a more sustainable way. This is done in the form of a book, where the reader can get an understanding of kitchen history, renovations and sustainability. Firstly the history of Swedish kitchens from 1940-2019 is described and shown. This aims to give an understanding on what characterises the different decades, as well as showing what values these kitchens can have. This is followed by a description of sustainability in connection with kitchen renovations, as well as showing how these ideas can be implemented in some examples.

The aim of this thesis is to show that a sustainable renovation of a kitchen is possible, as well as how to go about it.

Keywords: sustainability, kitchen renovations

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# This is Me

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AnnaMaria and Lysander Brouwer for letting me get the opportunity to use your kitchen as an example of how one can renovate a 70s kitchen sustainably.

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Booklet  
**Part 1**

Introduction

## Reading Instructions

While discussing the ownership of housing, privately owned is used as the overall term. In the Swedish context as well as the framework of this thesis, this terminology covers all houses and flats as well as all condominium flats (bostadsrätter), owned by those who also live there. When these people are discussed in this thesis, the term homeowners is used. This does not entail rental flats or houses, and not privately owned rental buildings.

The book that is the design project of this thesis is shortly described in the chapter “Contents of the Book”. This book can be seen and read in full as its own publication.

The word renovation can have different meanings, why this is, is described more in depth on page 32. To enable readers of this thesis to comprehend the contents of this report, the two main definitions of the word renovation will be distinguished like this:

Renovation as in fixing and updating the existing, is described as Renovation

Renovation as in exchanging everything, is described as rebuilding.

Sustainability can have several different meanings depending on what is discussed. Within this thesis sustainability is both discussed in combination with production method and the environment, as well as the aspect of materials and details having a long lifespan, and therefore being sustainable. These aspects has its starting point in the definition of sustainable development that is widely considered to be the official one, from the report “Our common future” (World Commission on Environment and Development, 1987), as well as in the definitions of sustainability established within the Agenda 2030 report (United Nations, 2015). Lastly, for something to be sustainable, it also has to have aesthetic values and spatial qualities for the current and future users.

## Problem statement

According to research collected in Köksrapporten (IKEA, 2011), the kitchens have become the social heart of the homes of Swedes, and more time is spent in the kitchen now, than for the most part of the 20th century. This does not mean that more time is spent on actually cooking. Instead the kitchens have become the main room for entertaining in the home. This change of function, mean that homeowners are eager to showcase their own personality and style in this room.

This represents a problem when most homeowners want to showcase their own style, it is decided that a kitchen renovation or rebuild is the way to do it (Bratt, 2017). There is a lack of information regarding how to renovate a kitchen without taking the whole kitchen out and replacing with a whole new set of kitchen furnitures. Companies who sell kitchens like IKEA, Elgiganten and Marbodol, have the whole solution ready for the buyers, including everything from the handles to the appliances. This concept makes it easier to just buy the

whole kitchen exactly as one wants it, when the alternative requires hours on the internet and reading several books on the subject of cautious renovation, before homeowners can even start looking into what changes they want.

These unsustainable practices can be seen in condominiums in Sweden, where the owner changes quite often. A study and report done by Femenías et al. (2016) shows that the environmental impact of the material flows from rebuilds of condominiums in Sweden, is much bigger than anticipated. The supply of materials that can be used in building, rebuilding and renovation is not endless, and if the use of materials continue in this tendency, there is a possibility that future generations will not have any new material to build with later on. It has to become easier to renovate a kitchen using more sustainable methods and reuse materials to a bigger extent than the contemporary practice.

## Aim and Objectives

The main aim of this thesis work has been to research what values can be found in kitchens built during the decades between 1940s and 2010s, and then researching how these values can be used as a starting point in creating a method for a more sustainable kitchen renovation.

This was all then put together into a book for homeowners in Sweden to use as a support while considering renovating their kitchens. The book is a way to enable homeowners to see the values that can be found in their kitchens as they are now, and also a way to show that there are several different ways to conduct a kitchen renovation than what is maybe the most apparent one.

The result of this thesis is for homeowners who wish to renovate their kitchens, and at the same time have the impact on the environment in mind. The result brings up the issues with how kitchens are being renovated today, and shows an alternative path where the impact of the renovation process can be reduced. This book is a way to plant the sustainability seed in peoples minds, and open them up to the mindset of considering what values can be found and kept in the kitchen instead of what can be taken away.

The aim is to create a Book for homeowners, where values of kitchens from different times are described and shown as well as sustainable kitchen renovation process. This book aims to be both a concrete help when conducting a sustainable kitchen renovation, as well as a part of the discussion regarding environmental and economical sustainability and the lifestyles Swedes live today. The expected user of this book, is then foremost homeowners. Specifically homeowners who already have a sustainable mindset when it comes to most parts of their lives would benefit mostly from this book, because it can show them how this mindset can be incorporated into the renovations of their kitchens.

## Research Questions

What values can be found in kitchens from  
1940s-2010s?

How can a method for sustainable kitchen  
renovations be described using these values, and  
then serve as a support for homeowners?

# Methods

Several methods have been used to be able to create this thesis; literature studies, statistics, case studies, inventory of kitchens built between 1940s-2010s, visits to a building preservation centre, and finally developing a method for sustainable and careful kitchen renovations. This method was then tested and evaluated in a renovation scenario.

This thesis project started with deciding on the limitations of what can be shown within the main design proposal of this thesis, which is the Book. The proposed design was to entail a historical recollection of kitchens, as well as going into detail of what sustainability and sustainable renovations mean, and then showing how these two can be combined in examples of several kitchens. The Book was to end with showing how kitchens from these time eras could be renovated in a sustainable way. It was decided that the time period that was going to be researched would be from 1940s up until today.

## Literature study for historical chapter

When a main framework of what the Book should entail was established, the historical part was started. To be able to gain the knowledge needed to show what values can be found within these kitchens, as well as to be able to show how these kitchens can be renovated, it was crucial that the historical research was conducted first. This part of the research has been done using several different media. The main source of information regarding society and the building of kitchens during the different decades have been gathered from "Byggnadsvård för Lägenheter" (Ridderstrand & Wenander, 2018), as well as Stockholms Stadsmuseum's website (Stockholms Stadsmuseum, 2017b). Facts have also been collected by looking at historical tv shows, where the lives of people in Sweden have been discussed, for example "Historieätarna" (af Klintberg, 2012, 2014b, 2014a, 2016).

## Case studies

The information gathered in this literature research have been put to use with case studies. These studies have been visited throughout the process of writing the book. Each kitchen visited represents different values that are common for the different decades, so that photographs could be taken of these values as well as discussing with the owners, to understand their view of their kitchen. A more indepth description of each case study can be found on page 16. The case studies were found by discussing the project with, family, friends, coworkers and neighbours, and asking everyone if they had a kitchen from these times, or if they knew someone who had. The kitchens found in the end have been situated in Gothenburg, Stockholm and Umeå.

## Processing the information gathered

By looking at the literature and homes from the different decades, an understanding of how the planning of the different kitchens have been established. This knowledge has then been used to create plans of these kitchens that each represent the specific time periods. Drawings of typical kitchens from these different times have been done to show the differences between them.

A summary have been conducted for each decade, where a characteristics for each decade have been established (with the help of the literature) and then a collection of what values can be found in kitchens from each decade, as well as potential problems. These values and potential problems have been established through literature studies as well as during the visits to the different kitchens, where the owners described what they appreciated and did not appreciate with their kitchen.

### Visit to building preservation centre

Slöjd och Byggnadsvård at Nääs, outside of Gothenburg have been visited to discuss kitchen renovations in general, and careful renovations, with one of the architectural curators there. A lot of knowledge on how to conduct more sustainable renovations, as well as more in-depth knowledge on specifically 1970s kitchens was gained during this visit.

### Starting point in sustainable development

A deeper study into sustainability and sustainable renovations has also been done, this information have been gathered from sources discussing mainly renovations as a whole, for example the report conducted by Femenías et al.(2016), as well as the books “Varsamt & Sparsamt”(Blomberg, 2003) and “Dags att renovera: Var rädd om detaljerna”(Sjöström Larsson & Wergeni-Wasberg, 2007). The information on the impact of renovations and how to conduct more careful and sustainable renovations as a whole have been processed and applied to a kitchen setting, to enable the readers of the Book to get an understanding of what sustainable renovations entail.

### Example kitchens

Next step was to find examples of kitchens where sustainability had been considered, either while building the kitchen in the first place or while renovating. These examples have been visited and documented with photographs. The renovations and the backgrounds to them have been discussed with the owners, to get an understanding of why the renovations were conducted in this way, and also how easy it was to get access to information regarding renovations or practices like this. These examples were found in the same ways as the case studies: through discussions with family, friends, coworkers, and neighbours. A more in depth description of each example case study can be found on page 20.

### Proposal of sustainable renovation

To go deeper into sustainable kitchen renovations, and to be able to show the readers of the Book how this can be done, a small proposal for a kitchen has been made as well. To be able to chose what decade one should show an example renovation for, it had to be established what decade was the most common building decade for homes in Sweden today. This has been calculated using

statistics from Statistiska Centralbyrån (2018b, 2018a). Two types of statistics have been used to be able to establish what the most common building decade is, among privately owned homes in Sweden. The result of these calculations was then used to look into what extent kitchens from this time period have been renovated already. This has been done by looking at homes from this decade for sale at Hemnet (Hemnet Service HNS AB, 2019), using the knowledge gathered of the typical aspects of kitchens from this time period, and decide whether the kitchen have been renovated/rebuilt or not. The results of this investigation gives an indication on how many of these kitchens are still intact.

A kitchen built during this time era was then chosen as the renovation example. A measuring of the kitchen as it is was conducted, and at the same time it was investigated how much was actually intact and fully working. A summary of the needs of the family who lives there was also done, so that these aspects could be combined into a renovation proposal. This led into one example proposal that combines the wishes of the family with sustainable renovation ideas.

### Collections of materials for further reading

Since everything can not be covered in a book, the last chapter of the Book is a collection of materials for further reading. This collection has been made by noting down websites, books and contact details when they are mentioned anywhere. The information for each post on this list is gathered through their own descriptions as well as personal experience.

Throughout the process, investigations of ads for second hand kitchens found on Blocket.se (Blocket AB, 2019) has been conducted. This has been to gain an understanding of how many kitchens are being replaced, as well as what kinds of kitchens are replaced. These ads have also been used to gain more knowledge on how words, such as renovation, are used by homeowners today.

Lastly, sustainability have been the key aspect in the working process as well. Emphasise has been put on meticulous planning of the thesis work, and organisation of facts, literature, drawings, photographs, etc throughout the thesis work.

## Case studies

Several kitchens have been visited throughout this thesis process, mostly to get an overview of how kitchens from different decades can look and be planned, as well as discussing any problems the owners have with their kitchen. This list shows the kitchens visited and shown in the historical chapter of the Book.

### 1940s

1. Two bedroom flat in a building from 1945, in central Gothenburg. The kitchen is almost fully original, except for the appliances that have been exchanged more recently.
2. Kitchen in a building from 1951, in central Gothenburg. This kitchen has slanting overhead cupboards, which was mostly common during the 40s, but do occur in the 50s as well.

### 1950s

3. One bedroom flat in a building from 1954 in Kortedala, Gothenburg. This is a museum flat showing how a family lived in the newly developed suburb Kortedala during the 1950s. The kitchen is fully original including old milk cartons in the fridge. Kortedala Museum
4. Kitchen built in the 1950s, in a house from the 1920s on Björkö, outside Gothenburg. The house has been divided into two flats, one on each floor. The original 1920s kitchen was fully renovated during the 50s, but the old iron stove was left. This kitchen accommodated both floors at first, when the house was for just one family.

### 1960s

5. Two bedroom flat in a building from 1969 in Tensta, Stockholm. This is also a museum flat showing how a family lived in the newly developed Miljonprogram suburb Tensta during the end of the 60s. Stockholms Stadsmuseum
6. Three bedroom flat in a building from 1967 at Ålidhem, Umeå. The kitchen has been updated during the years since it was built: a kitchen fan was installed during the 1990s and all other appliances have been exchanged during the years.

### 1970s

7. Villa in Floda, Lerum built in 1975. The kitchen have been fitted with a new stove/oven, otherwise it is all original.
8. Villa in Västra Frölunda built in 1978. Mostly original kitchen, some parts have been exchanged during later years.
9. Kitchen built in 1970s in a villa from 1920s, at Björkö, outside Gothenburg. This kitchen was added to the upper floor of the house, when it was divided into two flats.





Figure 1. Case study 3, larder.



Figure 2. Case study 8, wooden kitchen.



Figure 3. Case study 1, Reda-drawers.

## 1980s

10. Two bedroom flat in a building from 1949 in Torp, Gothenburg. The kitchen was fully renovated during the 1980s, when everything was replaced.

11. Plan from semidetached house built in 1989 in Brottbys, north of Stockholm. An area with semi detached houses from the same villa developer was built here during 1989. There are a few different kinds of houses in this area, depending on the terrain and landscape, but the kitchen plans are almost identical in all of the houses.

## 1990s

12. Row house at Ersboda, Umeå, built in 1990. Mostly original kitchen, although the countertop has been exchanged during the last several years.

13. Kitchen furnitures from the 90s, put into a newly built house at Björkö, outside Gothenburg. Another house close by was rebuilding their kitchen from the 90s. This family bought it, and used the furnitures for the small rental flat in their new house.

14. Villa in Sävar, outside Umeå, built in 1986. This kitchen was renovated during the 90s, some appliances have since then been replaced.

15. Two bedroom flat in a building from 1993 at Nydalahöjd, Umeå. This kitchen have had appliances replaced during later years, but is otherwise completely original.

## 2000s

16. Semidetached house built in 2001 in Vallentuna, Stockholm. This kitchen has had the stovetop exchanged, but is otherwise fully original from when it was built in the beginning of the 00s.

## 2010s

17. Two bedroom flat in a building built in 2018 in Åby, Mölndal. The residents moved into the flats in the end of 2018. The kitchen have not been changed at all since then.

18. Two bedroom flat in a building from 1990s, kitchen renovated 2019. Teg, Umeå. The 1990s kitchen was taken out in the beginning of 2019, and a completely new one has been put in after that.



Figure 4. Case study 10.



Figure 5. Case study 16, sink.



Figure 6. Case study 17, kitchen



Figure 7. Case Study 18. Sink and cupboards



## Sustainable case studies (shortened SCS)

The cases in this list are the examples shown in the example renovations chapter in the Book.

1. Two bedroom flat in a building from 1954 in Kortedala, Gothenburg. This kitchen was completely renovated in 2012 by previous owners. Current owners have made smaller changes.
2. Villa from 2008/2009 in Almunge, Uppsala. The original kitchen have been updated during 2018, to enable a better workflow.
3. Villa from 2012 in Bergsboda, Umeå. Original kitchen, which was place built along with the house. Several parts have been reused from other houses.
4. Villa from 1924 in Skara. Kitchen built in the 1970s. This kitchen is used as an example to show how it can be renovated in a sustainable way.



Figure 8. SCS5, open shelves to show trinkets.



Figure 9. SCS2, washing up with a view.



Figure 11. SCS2, shelves instead of overhead cabinets.



Figure 12. SCS1. Repainted handles.



Figure 10. SCS2, granite countertop.

# Delimitations

The kitchen has today become the main room for entertaining in our homes. The renovation and rebuilding of this heart is in Sweden mostly based on a need for change among the homeowners, and also a will to show off personality (Bratt, 2017). The starting point of this thesis is that the renovation process of kitchens in Sweden will happen regardless, and this book is a tool to enable the process to become more sustainable in comparison to a process with no focus on sustainability.

The proposed design of this thesis is a book, instead of a well developed traditional architectural design proposal. The focus is to show homeowners how kitchens can be renovated more sustainably than what is praxis today. Homeowners is defined as those who in some way or another own the home and kitchen themselves. Within the framework of this thesis the aspects of rental housing and renovations is then not considered, instead it focuses on kitchens in homes such as villas, flats, and condominiums owned by the users.

Within the housing stock in Sweden kitchens from all the way back to the beginning of the 19th century can be found. Since many functions within our kitchens have changed during the last century, this thesis focuses on kitchens from 1940 and onwards, although a brief history of kitchen design is described as background on page 19. There are several reasons for this; standards on how to design kitchens have been in place since the beginning of 1930. After the second world war (1945 and onwards), were these standard broadly used in kitchen design and planning in Sweden. This means that common aspects for kitchens can more easily be found each decade. The main functions that are considered necessary today in kitchens started to become standard in newly built homes from the beginning of 1940 (Åkerman et al., 1983). This means that it is more likely that kitchens from 1940 and onwards can be found within the housing stock in Sweden, as compared to kitchens from earlier time periods.

Within the research on kitchens and kitchen renovations, focus has been put on the kitchen furnitures and the surfaces. This means that the aspect of electrical appliances is not researched in depth and discussed in the framework of this thesis. This also applies to pipes and other internal infrastructures of kitchens. One aspect of legislations in Sweden, that could be a factor behind renovations is the so called ROT tax deduction that has been in place for around a decade in Sweden. This deduction is not discussed throughly within this thesis, since the main aim is to enable homeowners to make more sustainable choices, not try to influence politicians.

The literature that has been the basis of the research of Swedish kitchen standards, has in some examples been second hand references, like "Kök: planering och utforming, handbok för projektörer och tillverkare" (Thiberg,

2000). This has been a choice to be able to get an overview of kitchen standards and the history behind them, and not dive deep into the numbers and figures.

The designed proposal for this thesis is a book for homeowners in Sweden (not architects), this means that the visualisation of the different kitchens and the renovation processes is shown in ways that are easier to take in by readers without architectural education or experience.

Since this is a topic connected to a Swedish context and the expected users of the book are homeowners in Sweden, the book is written in Swedish.





Booklet  
**Part 2**

## Background

Short descriptions of the history of Swedish kitchens up until 1940, to gain knowledge on the background of kitchen design before the decades covered in the Book. Swedish standards in regards to kitchens and the so called “work triangle” is also shown and described. It ends with a deep dive into the history of kitchen renovations in Sweden as well as the sustainability problems that stem from kitchen renovations and rebuilds.

## Swedish kitchens before 1940

Kitchens have served different purposes for Swedes during the last two centuries. In many poorer households have the kitchen been the only room where families could afford to have the fire going all day, meaning it was the only warm room during the cold months. The whole family spent the winters mostly in this room, cooking, eating and sleeping. In the more wealthier households the kitchens were a big room as well. So that the staff would have a place to eat their food, as well as to be able to cook for a lot of dinner guests. During the 18th century, it was in mansions and bigger country houses, common to have this kitchen in a separate building, next to the main house, as to separate the workers from the family. During the 19th century the kitchens more often moved into the main house (Ulväng, 2004, p125-129).

The same principals were used for kitchens in areas for poorer people in the towns, it was cheaper to only have one fire going in the home, and since cooking was a necessity the fire on the kitchen was going, most of the family could then sleep in there during the colder months (Björk, Kallstenius, & Reppen, 1984). In bigger flats or suites the kitchen was separated from the main rooms of the home with a serving corridor. This corridor had cabinets where all china, glasses and cutlery that was not regularly used in the kitchen was stored. These kitchens were often placed towards the courtyard, next to staircases, so that there would be a separate entrance for the servants, and they were also big to be able to fit a table where the servants could eat, and sometimes the children would have breakfast (Ridderstrand & Wenander, 2018, p. 102, 127, 73-74).

Kitchens did not usually have many fixed furnitures until around 1920s, there was usually just the stove, and a sink on top of some cabinets. The sink was only used for pouring out used water, and the dishes were done in a bucket on top of the countertop (Stockholms Stadsmuseum, 2017a). During the 1920s, overhead cabinets became more common, and this feature increased during the following decades (Stockholms Stadsmuseum, 2017c). Drains from kitchens was common in houses from the middle of the 19th century. Running cold water was commonplace in more prominent households from around 1890s, but complete indoor plumbing with running cold and hot water was not common in buildings around Sweden until as late as the 1930s (Ridderstrand & Wenander, 2018, p.73,151,195-196).

The style of the 1930s in Sweden was functionalistic. It was based in the modern ideas found in the rest of the world at that time, and it became widely spread in Sweden. Form was supposed to follow function, and every part of a home had to be as functional as possible. This included the kitchen, and they were designed to be as small as possible while still being a fully functional kitchen (as seen in figure 13). Everything is supposed to be in reach, and these kitchens generally have a lot of storage compared to their sizes. Hygiene was a big part

of the design of these kitchens, where the kitchens should be separated from the rest of the rooms to minimise smoke and grease from the cooking (Åkerman, 1984, p.204-207). During the 1930s the small flat was the most common one, it was considered standard to have a one bedroom flat for a family of four (Ridderstrand & Wenander, 2018, p.159-196). For many reasons a lot of the kitchens from before 1930s have been replaced by now, since the functions that are considered necessary today, was not common in kitchens older than this. 1930s kitchen can be found to a bigger extent than earlier kitchens, but many of them have been replaced when the owners wanted to change the small Laboratory kitchens to bigger, more social kitchens fitting the lifestyles of today (Ridderstrand & Wenander, 2018, p.336-337). Kitchens from 1940 and onwards can be found more often in homes in Sweden. The sizes and functions of the kitchens have changed during these decades, as well as the constructions and materials used.

## Swedish kitchen standards

Studies and reports on how to design a good kitchen for the inhabitants have been done several times since 1920. Kommittén angående bostadssociala minimifodringar, presented the results of their investigations in 1921. This report was called "Praktiska och hygieniska bostäder" (Practical and hygienic homes). This report was used as a handbook while building houses during 1920-1930. The conclusions made in this study was that small and area-efficient flats were preferred. This meant that kitchens should be made smaller as well (Ridderstrand & Wenander, 2018, p135). The standard for kitchens was developed with the thoughts that a kitchen should only be used for cooking and doing the dishes and not for the family to spend time in, instead the inhabitants should spend their everyday life in the former formal dining room, that was renamed to Vardagsrum (living room).

These ideas were not embraced by the people living in these new homes, and Svenska Slöjdföreningen (Swedish handicraft organisation) together with Sveriges Arkitekters Riksförbund (Swedish architecture association) started in 1939 a big housing-investigation in Sweden. One part of this report was done by Lena Larsson, where she investigated housing habits. Housewives were interviewed on how their homes were used during the first parts of 1940s. The ideas of a small kitchen and a bigger living room had not been embraced by the people actually living in these homes, instead the kitchens were still used as the main area for the family to spend time (Riksarkivet, 2010).

This report was the basis of investigations conducted by Hemmens forskningsinstitut (now a part of Konsumentverket) during 1940s. Kitchens should be planned and built to accommodate the needs of the ones who should be working there, and not based on what architects and politicians thought they should have. Studies on how much the women walked during the day in the kitchens, and what parts of the household duties demanded the most energy were conducted in laboratory kitchens. These studies resulted in a kitchen design standard that was established in 1947. Kitchens that were designed according to these standards have good and efficient workflows, and comfortable countertop heights (for a woman of normal height in 1950).

The next standard for kitchens in Sweden was established during the late 60s. The basis of this standardisation was investigations made by Konsumentinstitutet and Byggforskningsinstitutet. They had looked at the workstations and equipment, as well as the static and dynamic measurements of women and men. The idea behind this standard was to create flexibility and adaption to the different chores that should be done in kitchens. This meant that the kitchen furnitures should have pre decided sizes, that the homeowners could build up themselves to create the kitchen they thought they needed (Thiberg, 2000).

As Sweden became a part of the EU, a new standard for kitchens was established in 1997, to accommodate a more continental market, and to have more common standards among the countries in the EU. The measurements of kitchen cabinets was standardised with the basis of the measurements the EU had established. The measurements should be customised for the appliances in kitchens, to enable the practice of taking these appliances with you when you move, which is common outside of Sweden. These measurements and standards are basically the same ones used today in kitchens (Snidare, 2004; Thiberg, 2000).

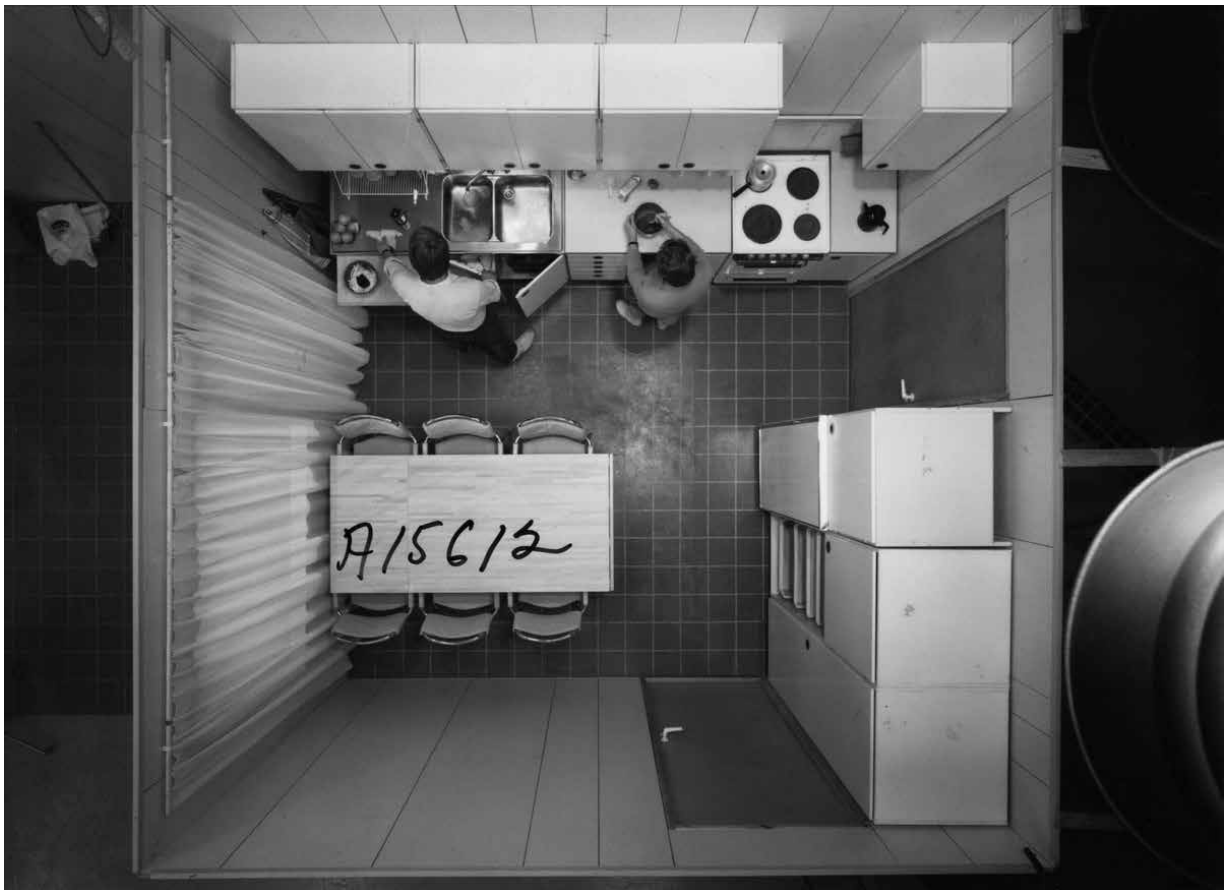


Figure 14. Konsumentinstitutet. Två personer i provköksedda ovanifrån. Råkopia (Studio Granath/Nordiska Museet, 1971) CC BY-NC-ND

## The Work-triangle in kitchens

Hemmens forskningsinstitut did several investigations into kitchens and kitchen work during the 1940s. In 1947 the book *Kost och kök 1, Stadsköket* (Hemmens Forskningsinstitut, 1947) was published. Figure 16 shows a chart that HFI developed showing the connections between the different functions within a kitchen, and the frequency of movement between the different functions. This chart along with other studies was the basis of the Work-triangle (Figure 17) that HFI established during this time. There are three parts in kitchens that make up the corners of this work-triangle; stove, sink and storage (today, storage means mostly fridge, as well as larder). Between these three places in kitchens one moves the most while cooking and cleaning up, and they therefore make up the work-triangle in kitchens. The main idea behind having this triangle as a background while designing kitchens is to create something that will be efficient and make the kitchen work as easy as possible. By placing these functions close to each other in a kitchen, one can create a well functioning kitchen. Still, these functions need to have some space between them. A good sized preparation area between the stove and the sink is necessary for a good cooking experience, but make it too big and it creates a worse working environment instead.

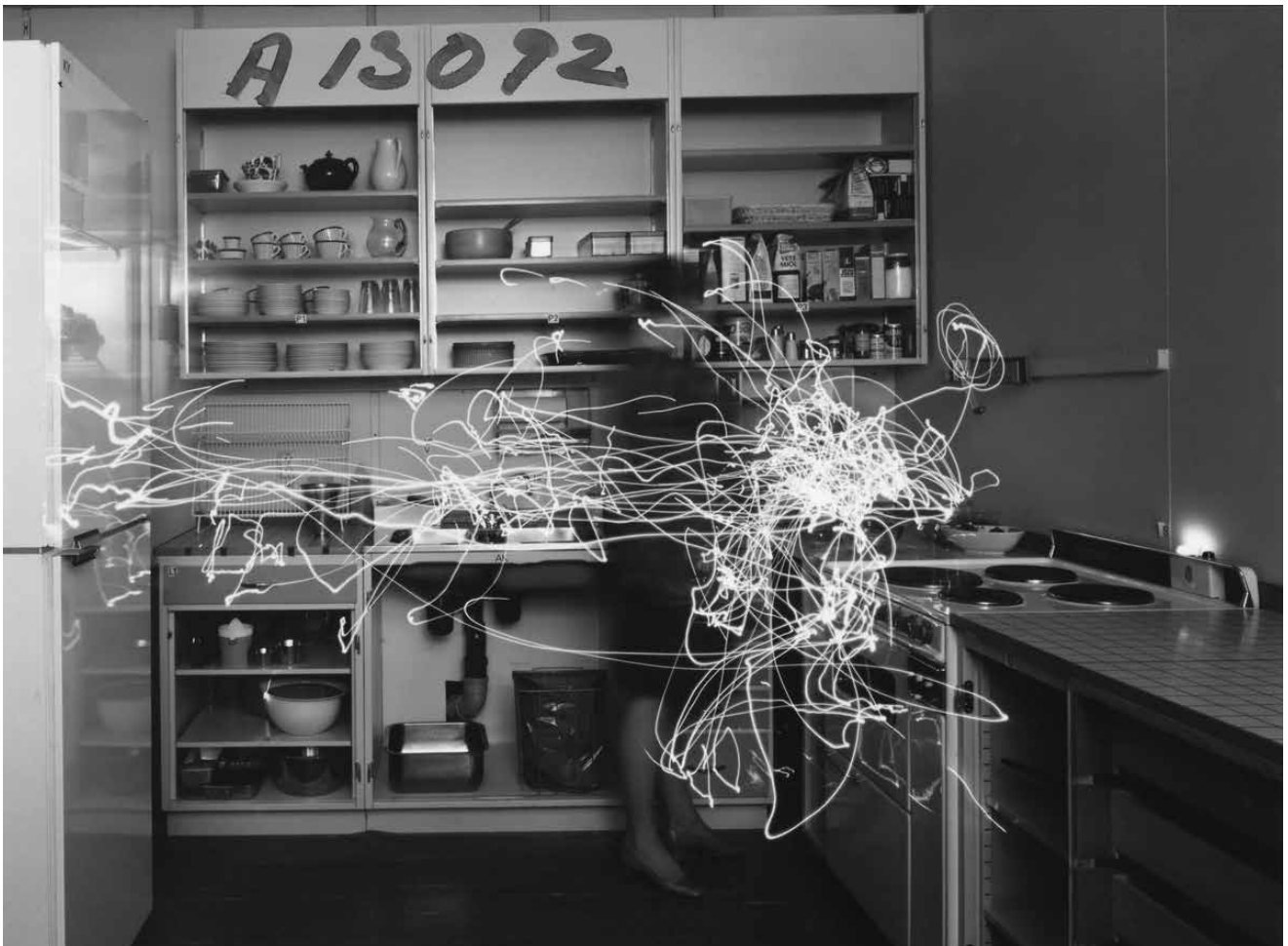


Figure 15. Kvinnaviðisbänk. Bildtagen med långslutartid för att åskådliggöra rörelseschema i kök (Studio Granath/Nordiska Museet, 1969) CCBY-NC-ND

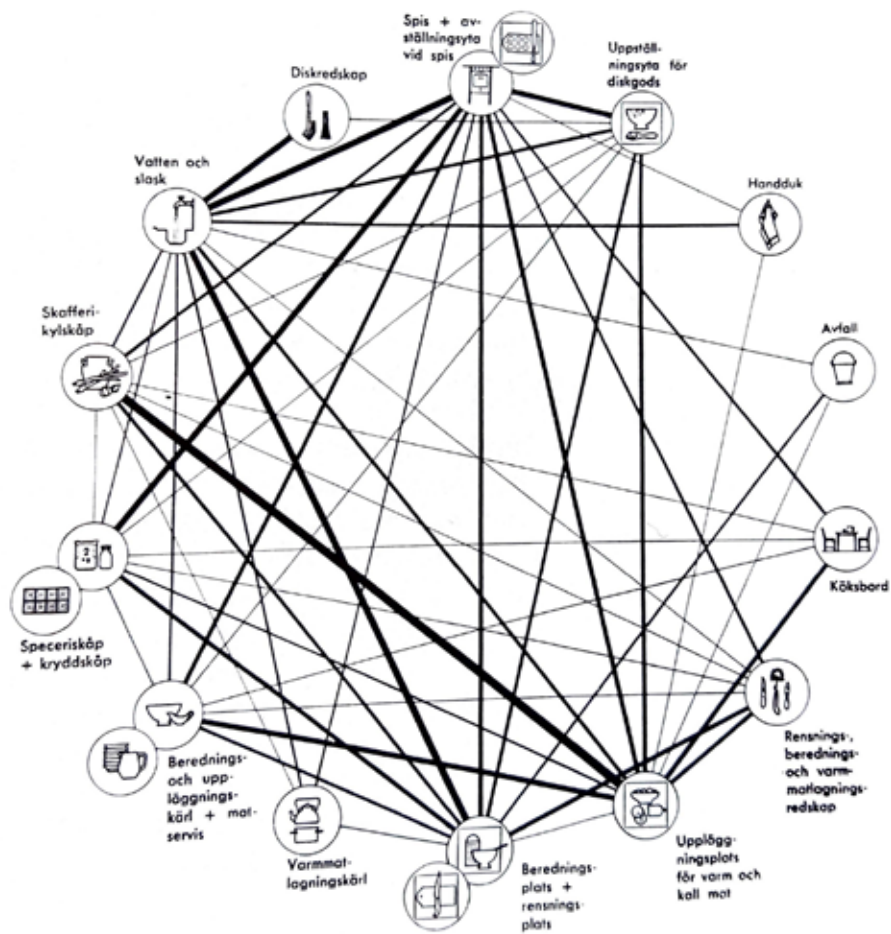


Figure 16. Funktionsstudie över hur hemmafrun rör sig i köket. (Hemmens forskningsinstitut, 1947)

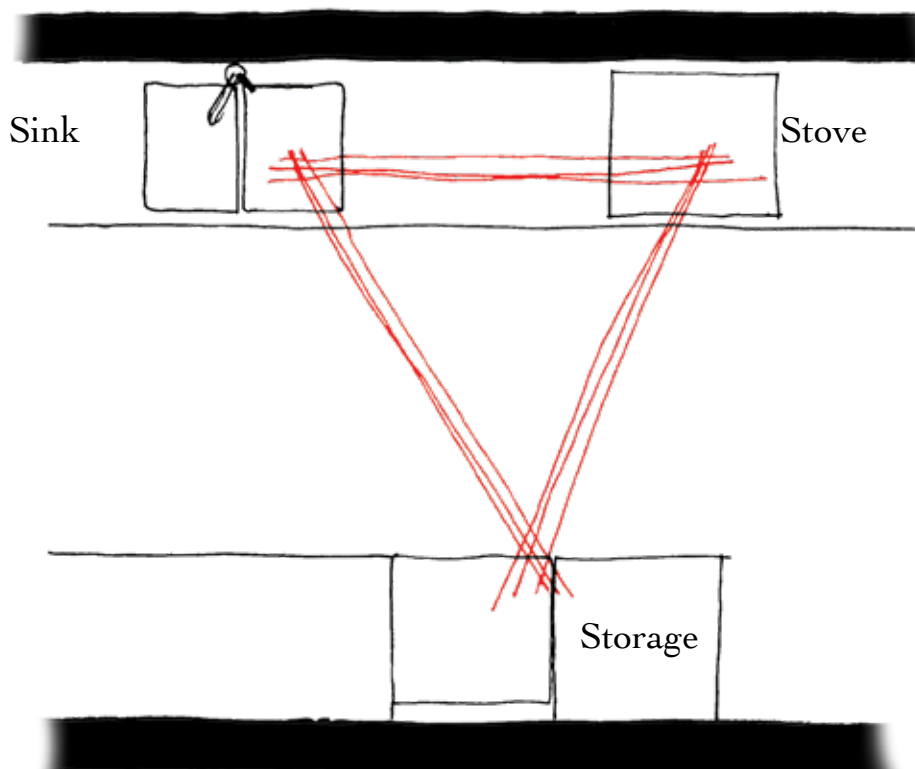


Figure 17. Work triangle.

# Kitchen renovations in Sweden

Today, Swedes are rebuilding and renovating more than ever, and the ultimate part of a home to renovate is the kitchen (Bratt, 2017). All homes are required by law to have one, and everyone wishes to create the ultimate kitchen working perfectly for them. But when did this mania actually start?

Firstly, the word renovation can mean different things for different people today. The definition of the word is, according to Nationalencyklopedin, (n.d.) “restoration of a building, painting etc. to a technical condition corresponding to new condition” (återställande av en byggnad, tavla etc. i ett tekniskt skick som motsvarar nyskick). This is a wide definition, and when it comes to kitchens it used to mean to fix and update the existing to a standard equivalent to newly produced.

Figures 18-19 shows a selection of ads for second hand kitchens from the buy and sell website Blocket.se. The words chosen by the sellers, when placing ads on whole second hand kitchens are almost exclusively “...selling because of renovation”. The wording shows that there has been a change in the definition of the words kitchen renovations, it is now more connected with removing everything and replacing with new. This is defined as rebuilding within this thesis report, to be able to separate the different meanings of renovations.

Before the Miljonprogram era, kitchens were built to last to a bigger extent than today; materials and constructions used in kitchens were built to withstand being used in a kitchen for a long period of time (Blomberg, 2003, p.48-52). Homeowners also did not consider rebuilding older kitchens a necessity before the Miljonprogram era (Bratt, 2017). Kitchens was mostly renovated when it was necessary because it was broken och damaged in some way. During the 1960s and the Miljonprogram era, quality of kitchen furnitures decreased with chipboard and plastic becoming more common as opposed to solid wood. These homes and kitchens were supposed to be built quickly to accommodate the big housing shortage, and the newer materials was quicker to work with (Reppen & Vidén, 2006, p.110-111).

IKEA was established during the beginning of 1940s, and they started to sell furnitures designed by themselves in 1955. This company lay down the groundworks for a new era within interior design in peoples homes. The so called “Wear and tear” (Slit och släng) functions, the furnitures were not made to have a lifespan of more than a few years, because people would want to change the interior of their homes before that. These ideas was implemented in IKEAs kitchen design when they first appeared in the late 60s as well (Snidare, 2004, p.54-55). During the 70s a lot of other kitchen building companies had also started working towards a more “wear and tear” approach to kitchen furnitures, with the cabinets often made in materials such as chipboard or masonite, with a thicker plastic foil as a top layer (Sveriges trä- och byggvaruhandlars centralförbund, 1975). Rebuilding kitchens started to become more frequent in Swedish households from the 1970s, when homeowners would start to take down walls to adjoining servant’s rooms and older larders to create a bigger kitchen than before (Snidare, 2004).



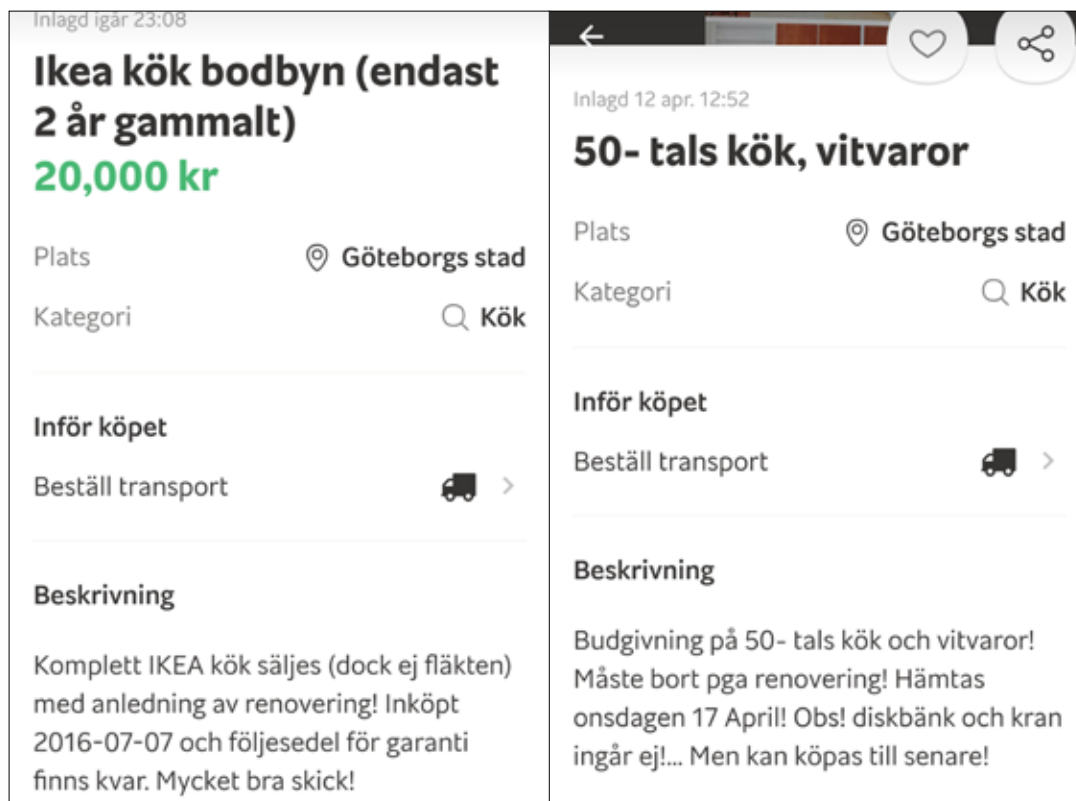


Figure 18. Screenshot of second hand kitchen ad.

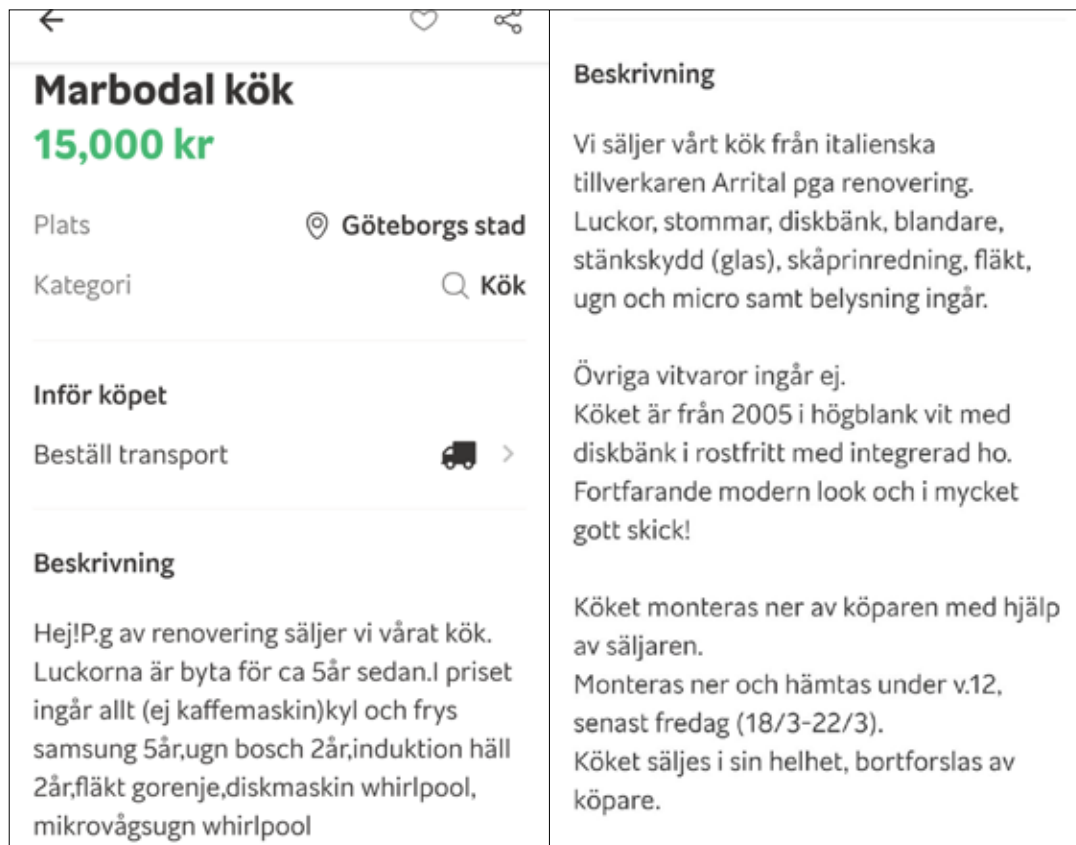


Figure 19. Screenshot of second hand kitchen ad. Author's own copyright



Booklet  
**Part 3**

# Theory

Theoretical background to sustainability in general, as well as sustainability in combination with kitchens and kitchen renovations. This is the theory behind the proposed method for sustainable kitchen renovations, and the main design of this thesis.

# Starting point in Sustainable Development



Figure 20. SDGs (United Nations, 2018)

The sustainable development goals that were decided upon in the document Agenda 2030 (United Nations 2015), covers different areas of sustainable development that is considered necessary for our planets survival. There are 17 goals, and within these goals 169 targets, discussing what the UN want to have achieved by 2030. The goals can be found in figure 20.

Goal number 12 stands out while discussing kitchens and kitchen rebuilds: “Responsible consumption and production.” Responsible consumption can be defined by not using resources unless it is needed, and not using too much of some resources. A kitchen rebuild where everything is exchanged even though most of the parts are still whole and fully working can not be considered responsible consumption. Especially considering the amount of emissions that are caused by a complete kitchen rebuild.

There are several targets connected to this goal, which should be discussed in connection to a sustainable kitchen renovation. For example 12.2 “By 2030, achieve the sustainable management and efficient use of natural resources”, efficient use of natural resources would then mean to not overuse natural materials throughout the lifetime of a building and kitchen. Also target 12.5 “By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse”, would mean to reuse existing parts of an intact kitchen and recycle parts from other kitchens to reduce waste. These targets show a basis for what a sustainable kitchen renovation could entail. Other target that should also be considered in connection to sustainable kitchen renovations are the following

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.B Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

These targets show what a sustainable kitchen renovation should entail in regards of material flows and material production. Sustainable production of materials takes the SDGs into account and specifically these targets. A major part of Sustainable development is to enable all parts of the world to thrive, this includes Sweden as well. By using locally produced materials and local craftsmen one can help contribute to a more sustainable future, as is described in target 12.B.

Target 12.8, is a target that the main design proposal for this thesis could be of help to achieve. By creating a method and a tool for homeowners where the necessity of a sustainable kitchen renovation as well as ho to go about it, people in Sweden can attain relevant information for sustainable development and lifestyles in harmony with nature.

By taking the SDGs and the targets into account when talking about kitchen renovations. It can be understood that to enable a sustainable kitchen renovation from this point of view, several things has to be taken into account; By reusing what is already there, the waste from kitchen renovations and rebuilds can be greatly reduced, as well as using natural resources in a more efficient way. If something needs to be exchanged, the environmental impact of the newly produced materials should be considered. While exchanging parts in a kitchen, the locality of the materials and the workers should be considered a benefit, which means that sustainable development is ensured in that area.

If companies adopt a more sustainable practice and markets this locally, homeowners will then get a greater understanding of how to conduct sustainable kitchen renovations, and also see that it is in fact possible to find these materials and craftsmen where they live.

## Sustainability and the rebuilding of kitchens

The commonly accepted definition of Sustainable development is as follows:

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Our common future, (World Commission on Environment and Development, 1987)

Global Sustainable development is usually divided into three subcategories; Economical, social and environmental. When it comes to this thesis, the focus is put on the environmental aspects of sustainability. An environmentally sustainable development means that work is needed to reduce environmental impacts caused by the lifestyles of people today. It is also necessary to decide on actions to take to ensue a liveable future for coming generations.

The Paris agreement that was decided upon by UNFCCC, (2016), and entered into force on the 4 November 2016, declares that the global temperature rise cannot be higher than 2°C, and the aim is to not allow it to rise more than 1.5°C. According to Vetenskapliga Rådet för klimatfrågor, (2007) this means that the CO<sub>2</sub> emissions that each person on earth can cause each year cannot exceed 2000kg by the year 2050. By 2100 the emissions needs to be down to 1000kg CO<sub>2</sub>-e per capita and year.

In 2017, Swedish government voted yes for a new climate bill (SFS 2017:720, 2018), that entered into force on 1 January 2018. This law dictates that all governments have the responsibility to work towards reaching climate goals that were decided upon. These goals cover for example to lower emissions created by national transport. Transportation of materials and goods throughout Sweden will have to be lowered significantly for this goal to be met, meaning that materials for kitchens can not be transported vast distances around Sweden as they are today.

The study made by Femenías, et al (2016), shows that rebuilds and renovations within condominiums in Sweden is much higher than anticipated, and these practices result in large CO<sub>2</sub> emissions. Calculations done within this study show that the anticipated CO<sub>2</sub> emission from producing a new standard kitchen is 188kg CO<sub>2</sub>-e, and for the appliances this number is 480kg CO<sub>2</sub>-e (dishwasher, fridge/freezer and stove/oven). In comparison the same numbers for repainting is only 0.3kg CO<sub>2</sub>-e, and putting up new tiles in kitchens and bathrooms are 3.4kg CO<sub>2</sub>-e.

The average Swede today causes around 8100kg CO<sub>2</sub>-e per year (Vetenskapliga Rådet för klimatfrågor, 2007), a number exceeding the goal by a lot. To reach the goals of eventually 1000kg CO<sub>2</sub>-e per person per year, the population in Sweden need to really reconsider our lifestyles, and choices. Here, the praxis of kitchen rebuilds play a role, and this needs to be considered more deeply.

A sustainable kitchen renovation would then entail to not create CO<sub>2</sub>-e emissions that are unnecessary (Femenías et al., 2016), as well as keeping in mind the 12th

SDG is a good basis for a sustainable kitchen renovation. By only exchanging the parts of a kitchen that are broken, and cannot be fixed, the emissions from producing whole kitchens can be lowered and the main aspects of the targets connected to the 12th SDG are considered (Femenías et al., 2016; United Nations, 2015). In general this would mean that before a kitchen renovation is begun, the owners need to consider what can actually be reused within the kitchen, and how as much as possible of the materials can be reused. This thesis has its starting point in these ideas, and is a part of enabling target 12.8 of the Agenda 2030 (United Nations, 2015) to be met. In extension these ideas will have to be considered by companies as well, to be able to meet the goals connected to Klimatlagen (SFS 2017:720, 2018).

## Careful renovation

A careful renovation demands more of a building preservation approach. This would mean that research has to be done into what time era the kitchen was built in, as well as what was commonly used during this era, regarding materials, constructions etc (Ridderstrand & Wenander, 2018). By researching the history of the kitchen, when certain things were replaced or renovated, an understanding of what values and potential problems can occur in this specific kitchen. A careful renovation has its starting point in the history of the kitchen, and then the responsibility of what should be done is put on the one renovating. Several aspects has to be taken into account then when it comes to what should be done in the kitchen. These decisions should then be based on the history of the kitchen and the changes that has been done. What the owner wants in the end, and how to combine these different aspects. A careful renovation always takes into account the historical aspects of the kitchen, and how the general character of the kitchen can be preserved. The book "Byggnadsvård för lägenheter" (Ridderstrand & Wenander, 2018, p.293-295) describes a staircase where the actions that should and could be taken into account while dealing with a careful renovation is placed on the different steps. The steps move from simple solutions that has a low impact on the flat in general to bigger impacts. These steps are described in connection to smaller details or surface areas, but the main ideas and aspects could be transferred to bigger items such as a kitchen.

## Other aspects that impacts a kitchen renovation

The wishes and needs of families, and the qualities of materials in kitchens are not the only aspects found in connection to kitchen renovations. In general hazardous materials is not commonly found in kitchens, the only material that should be kept in mind is Asbestos, that can occur in some places in kitchens from before 1980. A big reason for kitchen rebuilds are plumbing changes in specifically flat buildings. These two aspects are described more in depth below.

### Asbestos in kitchens

Asbestos is a material that was widely used in Swedish buildings up until the middle of the 1970s (Riksantikvarieämbetet, 2013, p.64-78). The characteristics of this materials was for example that it was extremely fire resistant, insulating as well as sound proof. Asbestos was for example used in a mixture with cement as a facade cladding, especially in the western parts of Sweden.

It has been used in kitchens to some extent; for example in the adhesives for the tiles behind the sink, as well as on the bottom of the plastic floor mats that have been put into kitchens from around the beginning of the 50s. Asbestos was used here to be able to glue the plastic mats directly onto the concrete floor. (Nationalencyklopedin, n.d.-a) Health issues connected to asbestos has been known since the beginning of the 20th century, and the connection between asbestos and lung cancer was established in the 50s (Riksantikvarieämbetet, 2013). The material was still used in different parts of the building sector until it was completely banished in 1982.

If a kitchen is from the 50s-70s, and has a plastic mat flooring or tiles above the sink, it should be investigated wether asbestos can be found here, before work is started on removing these parts. If there is asbestos in a kitchen, untrained people are not allowed to remove it themselves, instead a professional have to deal with it. Flooring and tiling is often best to leave as it is if it has asbestos in it. A new floor can be put in on top of the other, and the tiling can be painted to get another look to it (Riksantikvarieämbetet, 2013). This practice could not be considered sustainable in the long run, since the problem is just left to the next owner to deal with.



## Plumbing and rebuilds

Bigger changes in water pipes and sewage pipes in homes is widely discussed in both villas and condominiums in Sweden. The pipes need to be updated or changed at regular intervals to accommodate the pressures they are put under (Evertson, 2019). Often, this means that big changes will be made to the original kitchens. The plumbers need to be able to get to the pipes, that usually have been drawn inside walls. The kitchen furnitures needs to be removed, and are most often replaced by new furnitures. What is not discussed here today is the possibility to reuse the original kitchen furnitures, after the work is done. It is widely accepted that re plumbing means that all old kitchen furnitures end up being thrown away, and new furnitures put in instead. The question is, is it possible to do these necessary changes without getting a whole new kitchen?

There are ways to keep the original kitchen. Firstly, by removing the furnitures carefully, and storing them in maybe another room, while the work is done in the kitchen. They can afterwards be put back in the same places, this also opens up the opportunities to raise the countertop if necessary (Blomberg, 2003, p.48-52).

Other solutions can also be to create a new shaft for all the piping and then having horizontal pipes from the shaft to the sink and dishwasher. This solution means that the living area of the flats might be reduced, which might be seen as a problem. On the other hand though this solution means that the piping is easily accessible for inspections or repairs, as well as making the plumbing process easier next time the big changes has to be done (Blomberg, 2003, p.48-52). By enabling the homeowners to keep the original kitchens while doing these necessary interventions, the CO<sub>2</sub>-e emissions can be greatly reduced (Femenías et al., 2016).



Booklet  
**Part 4**

## Results

The result of this thesis work is a Book, this book can be found as a separate publication in Swedish “Det är inget fel på köket – att se värdet i det man har”.

In this part of this report a short summary is made of the contents of the Book. Results from the investigations of the most common building decade among homes, as well as the results from the investigation into how many of these kitchens had been renovated is also shown here.

# Most common housing and kitchens Sweden

## Houses (Småhus)

(Statistiska Centralbyrån, 2018b)

Time period	Houses	Houses %
Before 1940	558725	27%
1940s	144855	7%
1950s	165548	8%
1960s	289709	14%
1970s	<b>434564</b>	21%
1980s	206935	10%
1990s	103468	5%
2000s	103468	5%
2010s	62081	3%
<b>Total</b>	<b>2069353</b>	

Privately owned (Homes owned by those who live there)

536376	
139061	
158926	
278121	
<b>417182</b>	
198658	
99329	
99329	
59597	
<b>1986579</b>	<b>96%</b> (Statistiska Centralbyrån, 2018a)

## Flats (Lägenheter i flerbostadshus)

(Statistiska Centralbyrån, 2018b)

Time period	Flats	Flats %
Before 1940	544816	14%
1940s	246297	10%
1950s	394076	16%
1960s	<b>591113</b>	24%
1970s	295557	12%
1980s	197038	8%
1990s	123149	5%
2000s	123149	5%
2010s	147778	6%
<b>Total</b>	<b>2462972</b>	

Privately owned (Homes owned by those who live there)

158615	
113297	
181275	
<b>271912</b>	
135956	
90637	
56648	
56648	
67978	
<b>1132967</b>	<b>46%</b> (Statistiska Centralbyrån, 2018a)

## Other (Övriga)

(Statistiska Centralbyrån, 2018b)

Time period	Other	Other %
Before 1940	51064	59%
1940s	3983	5%
1950s	8762	11%
1960s	<b>11151</b>	14%
1970s	7169	9%
1980s	6372	8%
1990s	3186	4%
2000s	5576	7%
2010s	2390	3%
<b>Total</b>	<b>79650</b>	

Privately owned (Homes owned by those who live there)

9519	
1195	
2628	
<b>3345</b>	
2151	
1912	
956	
1673	
717	
<b>23895</b>	<b>30%</b> (Statistiska Centralbyrån, 2018a)

## Total

(Statistiska Centralbyrån, 2018b)

Time period	Homes	Homes %
Before 1940	954605	22%
1940s	395134	8%
1950s	568385	12%
1960s	<b>891974</b>	19%
1970s	737289	16%
1980s	410345	9%
1990s	229802	5%
2000s	232192	5%
2010s	212248	4%
<b>Total</b>	<b>4611975</b>	

Privately owned (Homes owned by those who live there)

704511	22%
253552	8%
342829	11%
553378	18%
<b>555288</b>	18%
291207	9%
156933	5%
157650	5%
128292	4%
<b>3143441</b>	

Among the privately owned homes in Sweden is 1970s the most common building decade.

Table 21. Most common housing in Sweden.

According to (Statistiska Centralbyrån, 2018b), the most common housing today in Sweden was built between 1960 and 1970, this is followed closely by housing built between 1970 and 1979.

When it comes to ownership of the housing stock (Statistiska Centralbyrån, 2018a) it can be calculated that most housing that is owned by the ones who live there is from the 1970s, this is why this thesis focuses on this time period while diving deeper into the renovation process. These are both kitchens in the housing project Miljonprogrammet, as well as other housing built during the 70s. This can be seen in Table 21.

Secondly it had to be established that there actually are kitchens intact from the building of these homes. Hemnet (Hemnet Service HNS AB, 2019) is the biggest collection website for properties for sale, and is used by almost all real estate agents in Sweden. (Fastighetsmäklarförbundet, 2018) Hemnet has been checked once a week for a 7 week period to see how many kitchens in the homes from the 1970s that are for sale have been renovated. To get a variety of kitchens from both a big city as well as smaller towns and in rural areas, the hemnet search have been confined to the Västra Götalands region.

Date	Decade	Area	Total	Renovated kitchens	%	Unrenovated kitchen	%	
190214	70-tal	Västra Götaland	232	117	50%	115	50%	All types of privately owned housing
190221	70-tal	Västra Götaland	66	36	55%	30	45%	All types of privately owned housing, last 7 days
190228	70-tal	Västra Götaland	67	34	51%	33	49%	All types of privately owned housing, last 7 days
190307	70-tal	Västra Götaland	66	23	35%	43	65%	All types of privately owned housing, last 7 days
190314	70-tal	Västra Götaland	70	42	60%	28	40%	All types of privately owned housing, last 7 days
190329	70-tal	Västra Götaland	121	54	45%	67	55%	All types of privately owned housing, last 14 days
<b>Total</b>	<b>70-tal</b>	<b>Västra Götaland</b>	<b>501</b>	<b>252</b>	<b>50%</b>	<b>249</b>	<b>50%</b>	<b>All types of privately owned housing for sale at hemnet.se 190214-190329</b>

Table 22. How much of the 70s stock that is renovated.

Table 22 shows the data collected from his investigation, and gives an indication of the extent of unrenovated 1970s kitchen in Sweden. The table shows that among the housing stock from the 70s that are up for sale there are around 50% intact kitchens from when it was built. This study was conducted by going through the houses and flats that was put up for sale, once a week. The knowledge gathered on the characteristics of 70s kitchens was used as a basis to establish whether the kitchen was renovated/rebuilt or not.



Figure 25. Proposed thesis design. Authors own copyright

# The Book

The design proposal for this thesis is the book “Det är inget fel på köket”. This chapter of the report describes what this book is, and what information can be found in the different chapters.

There are five chapters in this book describing different aspects of kitchens and kitchen renovations. The book starts with a historical description of kitchens and kitchen design from 1940s to 2010s. The sustainability aspect is then described and discussed when it comes to kitchen renovations in Chapter 2. Chapter 3 shows example kitchens where sustainability has been taken into account. Chapter 4, shows how to take the ideas of chapter 2, and combine it with the needs and wishes of a real family and their kitchen. The book ends with a collection of sources for the reader to dig deeper into the different aspects of sustainable kitchen renovations, as well as a collection of places to find sustainable materials.

By starting with the historical descriptions, the readers can get a better understanding as to what the values of these different kitchens are, and how to keep them while going forward. The sustainability aspect is important when it comes to this thesis, and it is therefore describe next to enable the readers to see why this is important to bring up these issues in connection to kitchen renovations. Then it is shown how the sustainability aspect can be combined with the values of a kitchen to create something new.

## Chapter 1 - Decades

This part works to create an understanding of how kitchens have been designed, as well as establishing what the homeowner already have in their kitchen that can be used.

It is divided into decades to enable a simple understanding of what was common and trending during different times. This chapter describes kitchens from 1940s to 2010s. Each decade have five different sub categories:

**Samhället & tankar (Society and thoughts)**, How the lifestyle of the people living in Sweden was by this time, how the overall society was working and thinking. Also discussing the overall design principles and materials used during the decade.

**Konstruktion & material (Construction and materials)**, This is more detail, how kitchens were constructed and what materials were used for different parts of a kitchen.

**Planlösning (Plans)** These show how a typical plan from the decade can be drawn. Mostly they are taken from the flats and houses visited for the photographs, as well as from the literature.

**Detaljer (Details)**. This shows details that are typical for the different decades, like handles, hinges, colours and other inventions that was common during the time period.

**Utmärkande detaljer i ett kök från detta årtionde (Characteristics for kitchens from this decade)**. This is a collection of the different typical aspects that can be found in kitchens from the decades, like common handles or how the fronts were designed. There is also a collection of what values can mostly be found in kitchens from this time as well as what issues mostly occurs in them.



## Chapter 2 - Method for sustainable kitchen renovation process

This chapter dives into the meaning of sustainability as well as how these ideas can be combined with kitchen renovations. By combining the staircase of actions for a careful renovation found in “Byggnadsvård för lägenheter” (Ridderstrand & Wenander, 2018) with the main aspects of the targets connected to the Sustainable Development Goal number 12 that can be found in Agenda 2030 (United Nations, 2015), a list of actions is created. This list is a method for homeowners to use to be able to conduct a Sustainable kitchen renovation.

### 1. Analyse the kitchen

Go through what is already in the kitchen, and what one wants to keep.

### 2. Find the issues

Localise the issues with the kitchen as it is. Go deep down into them.

### 3. Small solutions

Try to find simple and small solutions for these issues

### 4. How to reuse

Look into how parts of the kitchen can be reused in several different ways.

### 5. Second hand additions

If new things needs to be added, look into finding this second hand

### 6. Sustainably and locally produced new additions

If what needs to be added can not be found second hand, it has to be new additions, try to find sustainably and locally produced additions.

## Chapter 3 - Example kitchens

This chapter shows four examples of kitchens where different unconventional solutions have been executed. This is to create an understanding for the reader of what can be done to a kitchen one is not fully happy with.

1. *Små förändringar (Small changes, figures 24 and 25)*: A kitchen where the owners were complaining about the lack of storage in the kitchen, as well as the look on the handles for the fronts. A new cabinet that would be used as a larder was added to the opposing side from where the original kitchen was. The handles were repainted with a matte black paint, and the decorative plinth have been replaced with a new one in black instead of stainless steel.



Figure 24. Example 1, small changes, before.



Figure 25. Example 1, small changes, after.

2. *Återanvändning (Reusing)*: This kitchen was moved from one house to another. The kitchen in the new house was supposed to be smaller than in the old one, meaning that the cabinets that were left over could be used in the laundry room as well.

3. *Förbättring av arbetsflöde (Improving the work flow, figures 26 and 27)*: There were some issues in this kitchen when it came to the workflow, the sink was placed too close to the corner of the counter, which meant that one would bump into each other when more than one person was cooking. The counter was also in solid wood, a material that was not taken care of as it should be, meaning it had become water damaged closest to the sink.

A new cabinet was put in, in between the corner cabinet and the dishwasher, where a new sink could be installed, this made the workflow better when it comes to this corner. This new cabinet was fitted with a drawer, that enabled recycling to a bigger extent than before. The corner cabinet was fitted with a revolving shelf so it could be used to a greater extent. The wood counter was replaced with a counter made out of granite, which means water could be left on it for a longer period of time, without damaging the surface.



Figure 26. Example 3, change of work flow, before.



Figure 27. Example 3, change of work flow, after.

4. *Enhetlighet med variation (Unity in the difference, figures 28 and 29)*: This kitchen was placebuilt when the house was built. The villa had sustainability as one of the cornerstones in the building process. In the house there are several parts that are reused from older houses, such as the upstairs flooring and all interior doors. The kitchen have several reused parts as well, like for example the white larder that was taken from the same house as all the doors. This kitchen shows that even though all parts do not have the same surfaces and colours, a unity can still be achieved in the kitchen. This example is to show readers that the results can be great, even though all parts are not from the same producer or built in the same way.



Figure 28. Example 4, reused larder.



Figure 29. Example 4, different fronts together.

## Chapter 4 – Proposal for renovation process

This chapter shows how a kitchen built during the 70s in a villa from the 20s can be sustainably renovated to accommodate the family that is living there today, using the method described in the former chapter. This chapter is in the book divided into seven parts, discussing different aspects of the kitchen itself as well as how to implement sustainable renovation aspects in this specific case. The villa is situated in Skara, a small town in the middle of Västra Götaland.

An analysis based on the first chapter of the book is conducted to establish when this kitchen could have been built. The family who lives there now could not attain the information on when it was renovated from the last owners when they bought it. The kitchen has several different aspects that can be traced back to kitchens from the 70s, like the oak fronts with matching handles, as well as the “Cork and Plastic” flooring. The splashback has tiling coherent with a 70s kitchen as well. The stove and kitchen fan are 70cm wide, which is not common today, but was very common during the 70s.

A collection of the wishes and needs of the family is shown. These are then combined with the method for sustainable kitchen renovations that is procured in chapter 2 of the Book. In the end a list with guidelines for how to renovate this kitchen is shown. These guidelines are combined using the wishes of the family, the sustainable renovation method and an analysis of the kitchen from the architect's point of view.

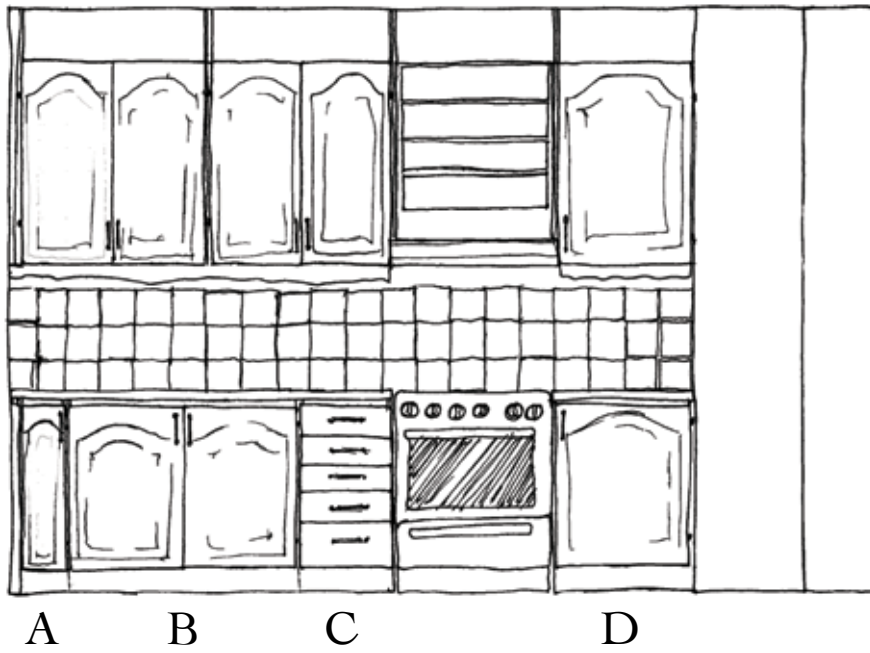


Figure 30. Original, wall 1.

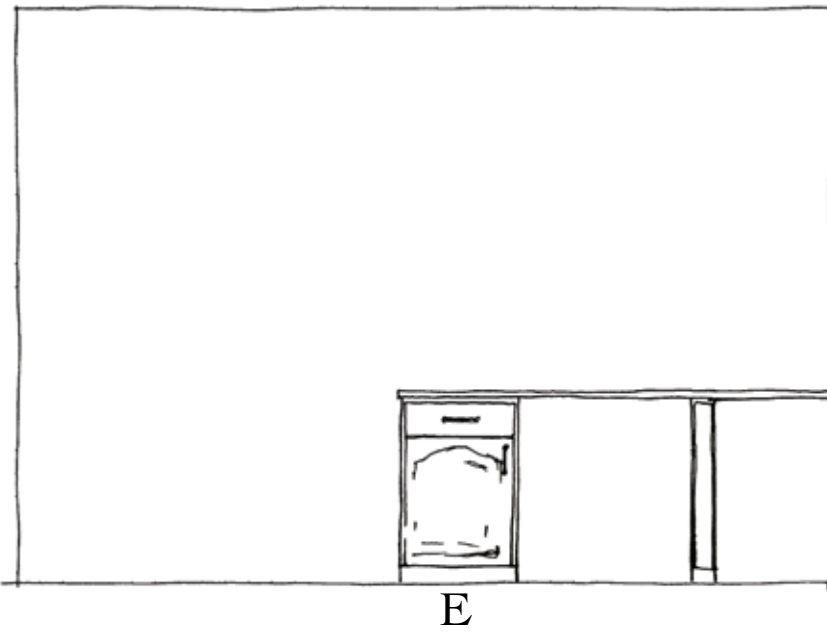


Figure 31. Original, wall 2.



Figure 32. Original, wall 3.



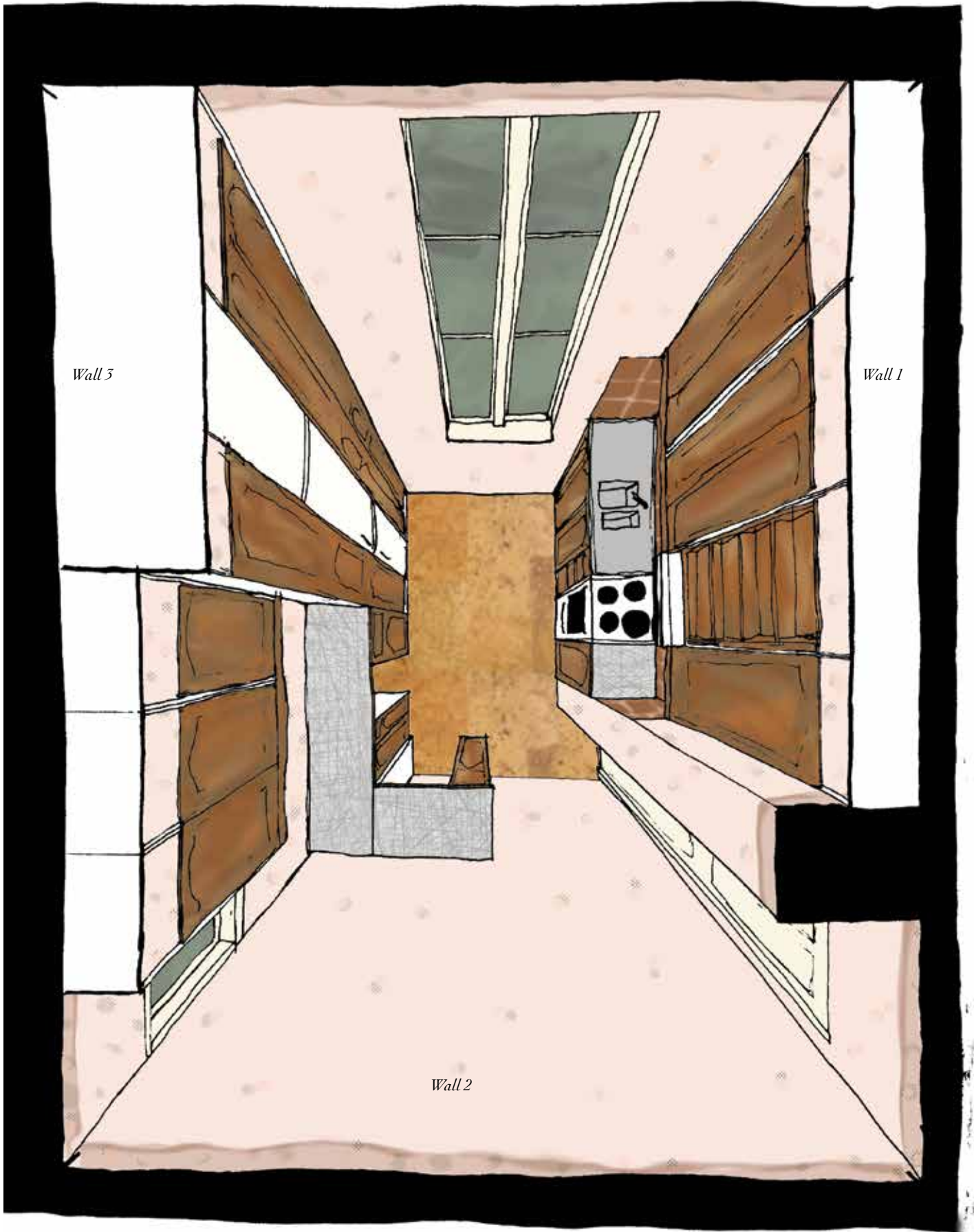


Figure 53. Original kitchen, example renovation.

## Using the sustainable kitchen renovation method on this kitchen

The method for sustainable kitchen renovations from chapter 2 of the book is combined with the needs and wishes of the family. This is how this combination is shown in the Book:

### *1. Analyse what is already there in the kitchen, and what one wants to keep*

Since the family is happy with the cabinets functions as they are, and all of them are intact and fully functioning. The kitchen fan is also working perfectly. The countertop with the traditional Virr-Varr pattern is to be kept as much as possible. The family does not mind if the stainless steel sink needs to be taken away or be kept. If it is to be removed it can be reused somewhere else in the garden or the garage.

### *2. Localise the issues with the kitchen as it is*

Add a dishwasher, change the stove/oven, more modern and personalised surface areas

### *3. Find small solutions to the issues*

Floor: It is probably for the best to leave the floor as it is, it can be waxed so that it looks and feel as new again. If the floor is to be exchanged a new one should be put in on top of the old one, since the underside of the plastic is probably laced with asbestos. In this house a floor that can expand and shrink is the most optional. The current owners have put in tiles in the hallway before, and the groundwork for this was very extensive, since the house has a wooden frame and moves a lot throughout the year. A wooden floor or linoleum would be best

Cabinet fronts: These are solid and intact, without any issues to the function of them, the issues with them are only superficial. That means that they can be repainted in a colour that works better with what the family wants to have. The handles are also made out of wood, and can be repainted as well.

The tiling: The same issues can occur here as in the flooring. It is probable that there is asbestos in the tile adhesives. It is better to leave the tiles as they are since they are not broken or damaged. They can instead either be kept fully as is, or be repainted with tile pain.

### *4. If the plan needs to be change, look into how this can be done using and moving the existing cabinets and appliances*

Dishwasher and stove/oven: These issues require bigger changes in the kitchen. Since the stove is broader than stoves today, a 10cm gap will occur if a new stove is put in into the same space. Now the family wants to add a dishwasher as well, which should be placed close to the sink to take advantage of the already established piping.



*5. If it needs to be complemented: Try to find second hand additions nearby*

If there would be something that needs to be exchanged in this kitchen, it would be the sink, to enable the dishwasher to be put in a good place from a workflow point of view. This could also mean that the old sink could be replaced with a bigger one to be able to wash bigger items. A new stovetop can also be put into a new countertop. Since there will be water in contact with a new countertop, it is best to consider a material that can withstand this. A countertop made out of stone or stone composite is preferable.

Countertops like this can be found at second hand shops.

*6. If new parts are needed, find sustainably and/or locally produced materials*

The family would like to find a countertop made out of Kinnekullekalksten. A locally produced limestone, that has a reddish tone to it. If it is not possible to find this second hand somewhere, it is a material that is locally cut, by a company based in Hällekis (Thorsbergs Stenhuggeri, n.d.), about 20km north of Skara.

## Programme for sustainably renovating this kitchen

The guidelines that then were outlined are these:

A new dishwasher that uses the already established pipes. This should not be placed between the sink and the stovetop though.

Change the stove to an induction stovetop and built in oven. The stovetop should be placed in the same place as the stove now, to be able to use the original kitchen fan

The cupboards are kept, but moved around to enable the new appliances

Repainting the fronts and cupboards in a colour more suitable for the family

Keep the tiling, but repaint in a lighter colour

Keep the flooring and wax it to make it look new again

Keep the countertops as much as possible

Keep the fridge/freezer

Repaint the walls in a colour more suitable for the family.

## Proposal

The guidelines are used as a basis for this proposed scenario. As much as possible of the original kitchen is kept, but some parts are updated. A new countertop made out of locally produced limestone from Kinnekulle replaces the old sink and counter on wall 1. The submerged stovetop is placed underneath the original fan, to be able to reuse it, and not having to move around the overhead cupboards. The cupboard and counter at Wall 2 is removed to enable a better entrance into the kitchen. The cupboard can be used in the new layout of the cupboards, while the countertop can be reused somewhere else in the house along with the old sink and counter from wall 1. Cupboards are moved around to be able to get a kitchen that has a good work flow, and to fit in the new appliances.

The floor is kept as it is, and can be waxed so that it looks new again. The walls and ceiling are painted with a light grey colour, and the cupboards and fronts get a light retro green. The tiles are painted with a white tile paint so the structure and tactility of the tiles can be perceived more clearly.

## Analysis of proposal

This scenario shows how the method for sustainable kitchen renovations can be applied to a 1970s kitchen. This proposed scenario shows how to take into account the ideas and thoughts procured in the Sustainable kitchen renovations chapter and combine it with the needs and wishes of the family who is going to use it.

Some priorities have had to be made, for example it can be argued that if the fronts are painted, there will be a need for more maintenance in regards of the chosen paint. Here, the wishes of the family have been prioritised above the main sustainable aspect. Although here it can also be argued that the family would want to have more modern fronts, and the choice was not made between keeping the fronts as they are or repainting them. Rather the choice was between repainting the fronts or buying new ones, then the sustainable choice is repainting.

Another priority that has been made is to keep the cupboards as they are. Exchanging the cupboards underneath the countertops, to drawers could have made it easier to access the items in the cupboard. Here, sustainability is prioritised, since the cupboards work as they are they are kept to minimize the production of new materials.

The fridge/freezer in this kitchen will also need to be changed some time in the near future, something that could pose a problem for a sustainable kitchen renovation. This kitchen is planned in a way that makes this task easy to perform, the width of the gap between the cupboards that the fridge/freezer is placed now, is the standardised width of appliances today. There is empty space above the current fridge/freezer which means that when this appliance needs to be replaced, the height of the new one does not need to be exactly the same as the current one. The depth of a future appliance could be larger than the current one, this is an issue that unfortunately has to be accepted, the changes in measurements of appliances cannot be anticipated within this thesis.



Figure 34. Proposed scenario. Authors own copyright

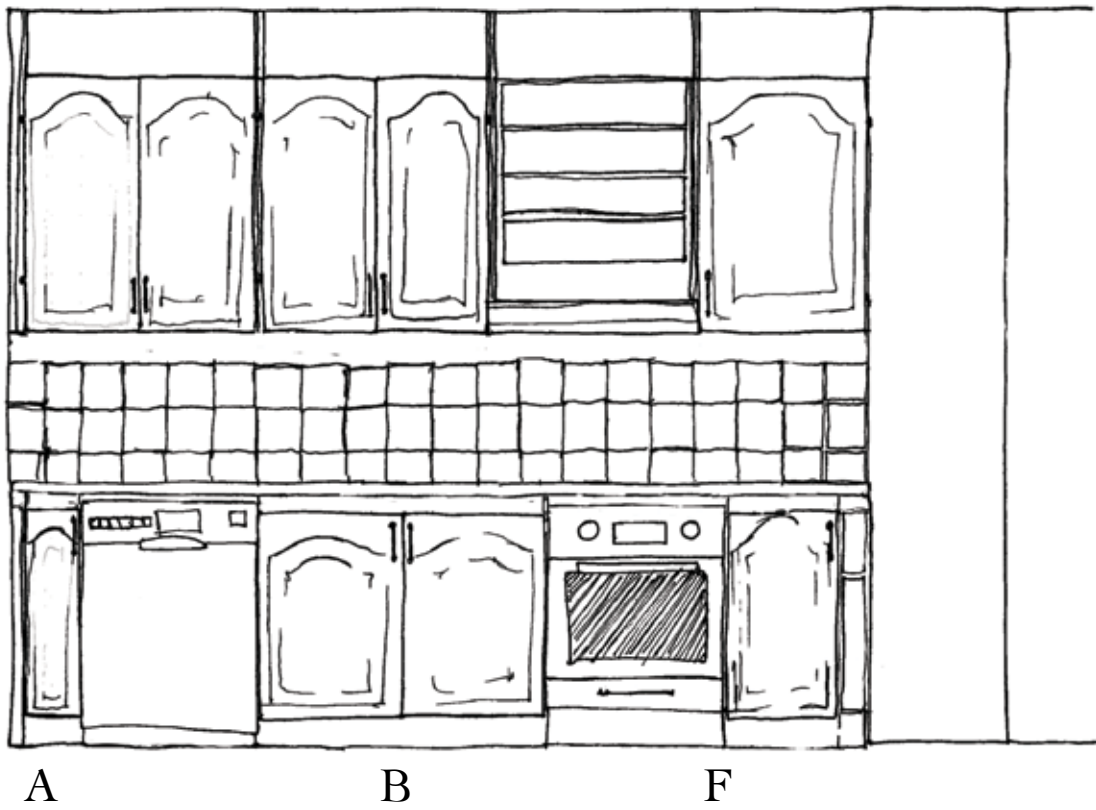


Figure 56. Proposed scenario, wall 1.



Figure 55. Proposed scenario, wall 5. Authors own copyright

## Chapter 5 - Shops and other good things

The book ends with this chapter, which is a collection of websites, shops etc that have second hand parts for kitchens, as well as contact detail for craftsmen, who are aware of and know how to work with careful and sustainable renovation, that can help with the renovation process.



Booklet  
**Part 5**

## Conclusions

Discussions and conclusions regarding this thesis in general as well as the how this thesis can play a part of the architectural discussion on renovation today.  
The research questions of this thesis are answered and discussed.

# Discussion

The main idea behind this thesis is to create a Book that a non architect in Sweden can use to get a greater understanding as to how the kitchen rebuilding practices in use today are harming our planet and inspire more sustainable kitchen renovations. The aim with this Book is to enable the consumers of kitchens to see another way of going about changing their kitchens, and for them to start questioning how kitchens and kitchen renovations/rebuilds are conducted today.

With this being said, it is also important to point out that every kitchen is different. There is never a clear line where the designs and trends of kitchens changed into the next decade. The transition is always more blurred than that, where some things hang on longer into the new decade, while other things are gone much faster. Trends also hang on into the next trend, and there can always be found 1950s kitchens built in the 60s, as well as 90s kitchens built in the 00s.

By showing readers what values can be found in kitchens from different times, a greater understanding for these values can be created. When the readers have gained this knowledge, the book shows how these values can be used as a starting point for a renovation, where the values are combined with the need these homeowners have for change. The method that is created and shown in Chapter 2 of the Book has its basis in both the SDG nb 12 from Agenda 2030 (United Nations, 2015), as well as the main aspects of a careful renovation that is described in "Byggnadsvård för Lägenheter" (Ridderstrand & Wenander, 2018). This method is described in general terms to be able to fit different kinds of kitchens from different time periods. A lot of responsibility is still put on the owners to use this method as a starting point and then having to look into what materials are considered sustainable. This method could be developed further so that it can become more specific to be able to help homeowners further than what it can do now.

The way renovations and rebuilds are conducted today presents a problem in itself, and the examples shown on page 33 (Figures 18 and 19) are used as a kind of horror example, where whole and intact kitchens are sold every day, but this can also be seen in another way. Yes, whole and intact kitchens are being taken away left and right, but at least those who places adds for them have some idea of it being able to be used again and not thrown in a landfill, which is a step forward sustainability wise.

The work behind this Book also shows how the quality of kitchens have changed during the decades. One would assume at first glance that it would be easier to find kitchens from the more recent decades than from the earlier decades covered within this thesis. This has not been the case though and it can have several different reasons. As described on page 32, the quality of the materials used in kitchens have decreased from around the 60s and onwards. The easiest kitchen to find have been kitchens from the 50s, and the 70s. While the most difficult kitchen to find and visit has been kitchens from the 90s, which can both be explained by the fact that, because of the financial crisis in the beginning of the 90s resulted in less homes being built. This could not be the only reason though. The same issue have been occurring while trying to find kitchens built



in the 80s, and the amount of homes being built during this decade was much higher than in the 90s. The owners of the different kitchens from the 80s and the 90s have all shown and described several issues with the materials and quality of these kitchens.

Newer kitchens from 2000s and 2010s have also been quite difficult to find, and the examples that have been found have a lot of the time done several changes already. This could be traced back to the fact that the quality of kitchens have decreased. The study “Arkitektur, materialflöden och klimatpåverkan I bostäder” (Femenías et al., 2016), also shows that a lot of renovations and rebuilds are being done in newer kitchens as well.

The studies conducted to show the most common building decade as well as the study of how many of these kitchens have been renovated gives a good indication of the status of homes and kitchens. However, the calculations that have been done are a combination of two different collections of statistics, which means it is less viable than if this data had existed on its own. The investigations of how many of these kitchens had been renovated was done once a week for a few weeks, which means that homes put up for sale and then sold between these checks have not been registered. The depth of knowledge from these studies have been enough to be able to conduct this thesis, but if more emphasis was to be put on the results of these studies, they would have to be more thoroughly done.

Electrical appliances is also something that could be discussed while talking about sustainable kitchen and kitchen renovations. This is something that is not discussed in depth within this thesis and the Book, but it is something that should also be taken into account while discussing kitchen renovations in general. The lifespan of appliances are shorter than the kitchen furnitures themselves, this could also be seen as a reason for renovations and rebuilds being conducted earlier than what would be necessary. Other factors that can be reasons behind these renovations and rebuilds are when the piping needs to be exchanged, it is common practice to rebuild the kitchens. Also the ROT-grant, that makes it easier and cheaper for homeowners to hire craftsmen to do works in their homes. This is something that could be done as an extension to this thesis and the Book at a later stage to expand the discussion further.

Some priorities that have been made in the proposed sustainable kitchen renovation, in the Book (Chapter 4) are not the most sustainable one. Although, when a less sustainable solutions has been made, it has been made because it was a wish or need of the family. By also prioritising their needs, one can minimise the risk of the kitchen being renovated or rebuilt again in a few years. The same goes for when the sustainable solution has made the workflow in the kitchen worse, like the access to the dishwasher being very tight if the old sink was to be kept. By making a less sustainable choice now, the risk of all of this being rebuilt in a few years is minimised.

# The answers to the questions

*What values can be found in kitchens from 1940s-2010s?*

Research into what these values could be has been done, and several values have been found in the literature, for example “Byggnadsvård för lägenheter” (Ridderstrand & Wenander, 2018), “Varsamt & Sparsamt” (Blomberg, 2003) and “Kök i Sverige” (Snidare, 2004). By then visiting the different case studies, an understanding of how many of these values are still present in these kitchen have been gained. Several aspects of these kitchen that are still present can then be understood as sustainable values. These are both things that have stood the test of time, as well as aspects that have been valuable to the owners and therefore been kept.

*How can a method for sustainable kitchen renovations be described using these values and then serve as a support for homeowners?*

A complete kitchen rebuild where everything is replaced creates a lot of CO<sub>2</sub>-e emissions. This number can be lowered by keeping as much of what is already there while conducting a renovation. For a kitchen renovation to be sustainable in the eyes of this thesis, as much of the original kitchen as possible has to be kept while renovating. Instead of using the stick to shame people into not renovating kitchens at all, this thesis uses the carrot to show homeowners what values can be found in these kitchens in the first place. By showing different characteristics and aspects of kitchens from different times and what values can be found in them, the eyes of homeowners can be opened to new possibilities when it comes to kitchen renovations. In the Book created within this thesis a method for sustainable kitchen renovations are described. This method is targeted towards homeowners who are considering renovating or rebuilding their kitchens. This method has its starting point in seeing the values from the different time eras, and how these can be kept and somewhat preserved, while still making changes in a kitchen. The ideas and the background behind this method is gathered and compiled using different literatures and discussions regarding sustainability and building preservation.

## What this thesis adds

There are today several books and websites aimed at homeowners showing how they can renovate or rebuild their homes, complete with guides on how to go about it, for example “Från golv till tak: renovera din lägenhet själv” (Salzinger, 2005), “Nytt kök – allt du behöver veta för att renovera och bygga om ditt kök” (Wasling, 2011), “Kök: Inspiration, planering, bygga om.” (Bergqvist & Allt i hemmet (tidskrift), 2002) and the website “Byggfabriken” (Byggfabriken, 2019). All these show how to renovate or rebuild within a home in general or in a kitchen. The main starting point when it comes to kitchens for the majority of these books and website is rebuilding. If a renovation is described, it is almost exclusively used as an example of how to get a change for a smaller amount of money. The result of this thesis, The Book is a way to show that renovation does not only have to be the solution if you cannot afford to do a rebuild, but actually the first thought that comes to mind. This book brings up the issues of the way kitchen rebuilds are conducted today, and also shows how sustainability can be used as a starting point for a renovation instead of an after-thought.

In extension, this book is also a part of starting the discussion on how kitchen furnitures are built today, and how this can be changed to become more sustainable. While going through the process of creating this thesis, several case studies have been done, to try and find the different values of kitchens from the different decades, and this has also led to a greater understanding of what makes a kitchen live to today. This Book will act as an eye opener for homeowners in regards to sustainability in combination with kitchens and kitchen renovations. If more homeowners learn about this topic and starts to see the impact bad quality kitchens have on the environment, the demand for more sustainable materials and practices will increase. This will then leading to companies having to change their approach towards this topic as well. This thesis and its main design proposal, The Book aims to be a part of this knowledge base for homeowners.

# Thesis work reflections

At first within this thesis project, the first chapter discussing the historical aspects was supposed to be very short and general, but as time moved forward, it expanded so that it could give a fair overview of the different decades that have been investigated. By giving this historical part more space than first intended, readers of the book can get a greater understanding of what values the different kitchens have, and be able to place their own kitchen into the analysis as well.

The first ideas for the main design proposal of this thesis was supposed to be a handbook, during the course of the thesis work it has turned more into a sort of Coffee table book. The first aim was to create and show thorough guides for homeowners to use while actually renovating. After some discussions these ideas were scrapped, since this would entail a lot of research into fields that are not within the field of architecture. Instead more focus has been put on creating a general method for a sustainable kitchen renovation with its basis in established sustainability ideas and aspects, as well as aspects of careful renovations. The example kitchens of chapter 3, has been given more space than initially intended, to be able to show readers more examples of what can be done to kitchens other than a complete rebuild. The sustainable scenario (Chapter 4) has also been given more space than initially intended, to be able to show more in depth how the method for a sustainable kitchen renovation can be put into practice into a real kitchen.

The case studies that have been visited throughout this process have been found by talking to family, friends, coworkers and neighbours. These Case studies could therefore not be considered to represent the population of Sweden as a whole. If this thesis would be conducted again or a continuance of it were to be made. A wider selection of case studies should be considered, that takes into account the demographics of the owners as well as where the kitchens have been situated in Sweden.

Lastly, to create a design proposal in the form of a book instead of a building proposal, has posed its difficulties itself. Since it is a project that is not common within the architectural education, a lot of problems have occurred throughout this process. How to show the book as it is within the framework of an architectural proposal has been the most difficult part of this thesis work.





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**CHALMERS**

There is nothing wrong with the kitchen

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