

REGENERATIVE FUTURES

- A Transformation of Upphärad Beyond Sustainability -

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CHALMERS
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This is a Master Thesis in Architecture written by
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ABSTRACT

To meet the current climate crisis and the problematic effects of the urban norm society needs to shift. It needs to go from the growth paradigm to a paradigm of regenerative development to reach a future beyond sustainability. The thesis aims to through a local situation exemplify how society on a larger scale can accomplish shifting towards a future beyond sustainability. This is done using three focus perspectives in the rural context of Upphärad. The three focuses are reducing greenhouse gas emissions, circular systems, and regenerative design.

Several methods, such as literature reviews and dialogues with professionals, are combined through research for design and research by design in an iterative process. The theoretical framework covers the discourses of the growth paradigm, the urban norm, as well as how a future beyond sustainability can develop in relation to the three focuses. A design proposal is generated by combining top-down and bottom-up information.

The design proposal is directed at the local scale of Upphärad. It is “urban” design of a rural environment, but also planning of society, as it imagines

a future scenario beyond sustainability. The thesis also draws conclusions about society on a larger level, discussing how local bottom-up initiatives can be supported by collaborations with top-down actors. In rural contexts the bottom-up initiatives are essential for the development beyond sustainability.

The thesis discusses how the physical environment should be flexible and adaptable over time to meet changing needs of the community. Further, the physical environment should gather multiple functions close to each other to facilitate synergies that can create added values. The community needs facilities that support creation of values outside of the growth paradigm and the urban norm. The thesis also draws conclusions regarding the need to be more locally self-sufficient, as this feeds into many of the strategies necessary for a societal shift beyond sustainability. Additionally, the thesis result functions as inspirational material and generates a basis for discussion regarding a societal shift to regenerative futures beyond sustainability.

Keywords: Beyond sustainability, Reducing GHG emissions, Circular system, Regenerative design, Rural context

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INTRODUCTION

The introduction outlines the background and purpose of this thesis. It also describes the method and process, as well as the delimitations of the project. Lastly, some terms are defined that are needed to understand the content and scope of the thesis.

BACKGROUND

CLIMATE URGENCY

Every day the pressure from the global environmental challenges increases. These challenges are very complex and, in many cases, hard to address, but as time goes on, they become more difficult for the world to ignore. In order to keep within the 1.5 °C limit, recommended by the IPCC, extensive measures must be taken (IPCC, 2018).

Unfortunately, the latest IPCC report stress that the trend of planetary degradation, with its severe consequences, is continuing at a rapid speed, and we are not doing enough to stop that development (IPCC, 2022). Together with these challenges, the population and economy are expected to grow exponentially causing a further expansion of resource use and consumption (Raworth, 2017, p. 5).

GROWTH PARADIGM

Today, the definition of a good economy is one with infinite growth. There is, however, a clear connection between increased carbon emissions and a growing economy, making growth into a problematic paradigm. On a finite planet it is unreasonable to strive for infinite growth (Harper & Smith, 2020). Therefore, it is also unreasonable to have a linear economy as a goal, based on GDP (Gross domestic product) growth and dependent on extractivism on a planet where resource access has a limit.

The paradigm has led to a human crisis, where physical and mental illness, and lack of meaning are consequences of the imbalances in our society and ecosystems. The lack of meaning is mitigated by excessive consumption, at the expense of the planet's ecosystem (Högberg et. al., 2018). The linear economy is also a root cause of inequality. For example, the wealthiest one percent owns more than the rest of humanity (Oxfam, 2017).

As a society we seem to understand that we need to shift into being more sustainable, to tackle these issues. However, not much is happening. Phineas Harper describes it as:

“A society which understands there is a climate emergency, that knows it needs to act. And yet somehow, it's still paralyzed, in part by this commitment to the idea that there are just no limits, no limits on growth to human imagination, to culture, to the economy and even to architecture.” (Harper & Smith, 2020).

URBAN NORM

The urban norm, based in the centralization trend, supports the problematic linear model and the growth paradigm. This norm gives interpretive precedence regarding what is seen as successful and valuable regarding planning and development. Consequently, there are spatial lock-ins generated by this power dynamic (Åkerman, 2020).

Instead of working within this paradigm, that ignores the ways of production and consumption, that the glorified urban lifestyle is dependent on, the discussion about sustainable societal development would need to include how society can be organized to significantly reduce resource usage, while still securing good living conditions in all parts of Sweden (Hagbert, 2018).

PURPOSE

AIM

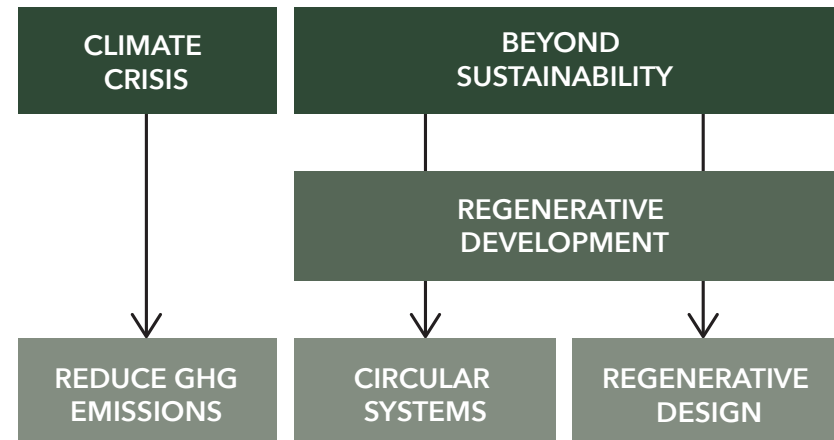
The thesis aims to through a local situation exemplify how society on a larger scale can accomplish shifting towards a future beyond sustainability. This is done using three specific focus perspectives in the rural context of Upphärad.

RESEARCH QUESTIONS

1. How can Upphärad be transformed through strategies and spatial interventions, that focus on:
 - Reducing greenhouse gas (GHG) emissions
 - Circular systems
 - Regenerative design
2. What conclusions can be drawn from the investigation in Upphärad that might be applicable to other similar rural contexts as well as for society in general?

OBJECTIVE

The material investigates specific solutions and generates general guidelines. It also holds inspirational properties.



The thesis background and the focus areas

This diagram shows the two bases for the thesis focus areas: Climate crisis and Beyond sustainability and how they connect to the three focus areas. It further describes how the three focuses of the thesis relate to each other. Reduce GHG emissions is a separate track from the two other and sprung directly from the climate crisis issue. Both circular systems and regenerative design are important building blocks in regenerative development, which in turn is an expression of a development beyond sustainability.

METHOD AND PROCESS

METHOD

For this thesis, a variety of methods has been used. In this page, the main methods have been compiled and briefly described. On the next page the method description is about what type of material and information has been collected and how it comes together in the design proposal of this thesis.

LITERATURE REVIEWS

The literature reviews make up almost all the theory collected for this thesis project. It was important in order to discern the opportunities for a future beyond sustainability and reduced GHG emissions as well as the preconditions for the rural context where the future scenario was tested.

REFERENCE PROJECTS

Reference projects were located that to different degrees embody the goals set out for the thesis design. These projects served as inspiration and guiding examples in terms of program, philosophy and design strategy.

SITE VISITS, ANALYSIS AND OBSERVATIONS

Several site visits were conducted during the process to take inventory of the site and gauge the character of it. The observations and analyses made through the site visits were very impactful for the design outcome.

DIAGRAMMING

Diagramming has been used throughout the thesis to capture concepts or structures that are important to the thesis in different ways. This ranges from diagrams over the thesis process itself to local actors relevant for Upphäråd.

DIALOGUES AND MEETINGS WITH PROFESSIONALS

The meetings were semi structured and mostly conducted digitally. For each meeting there were prepared questions to talk about, but the form was freer than an interview. The expert knowledge into different areas that the participants provided helped guide the thesis along the process.

WORKSHOPS

The workshops were used to gain deeper knowledge into Upphäråd both locally and from a municipal perspective. Here there was also opportunity to present some of the process material, like early designs, and get opinions on it. The workshops guided the direction of the design in the thesis.

TOP OF MIND SKETCHES AND DESIGN SKETCHING

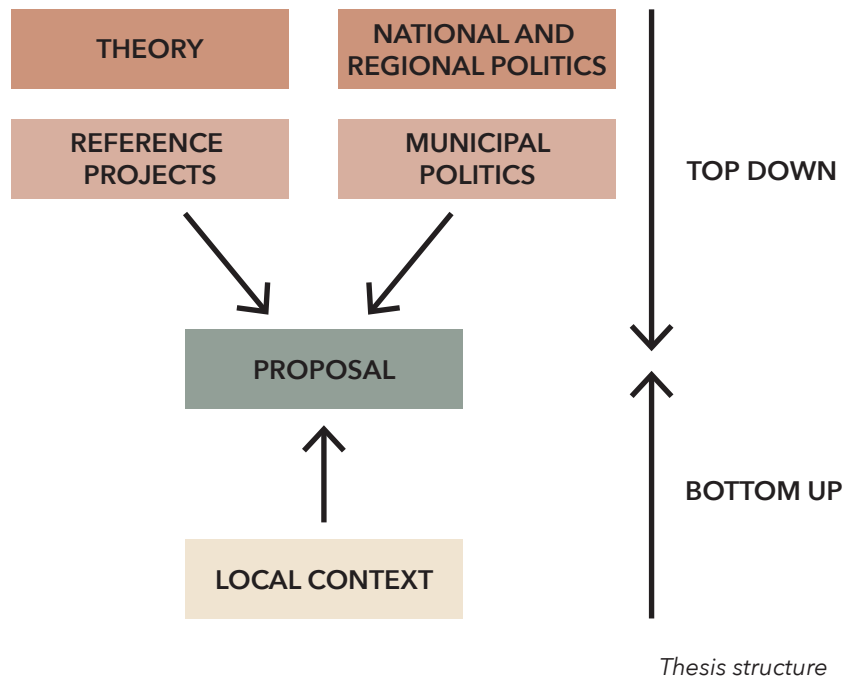
Different types of sketching were used to continuously test ideas throughout the process. Top of mind sketches were used to quickly capture ideas, test them or to help move the design work forward. The design sketching was used in different forms such as 3D, plan and section both digitally and physically.

STAKEHOLDER MAPPING

Mapping stakeholders and their respective responsibility levels has been important to design the program. All items in the program must have a plausible intended owner. This mapping was especially important to discern the line between municipal responsibility, community responsibility and private responsibility.

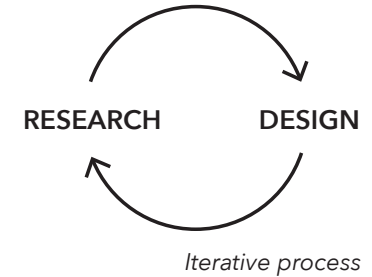
TOP-DOWN AND BOTTOM-UP

This diagram shows the overarching structure of this thesis. Theory, reference projects and political preconditions meet the preconditions and investigations of the local context of Upphäräd in a design proposal. Thus, this thesis has both a top-down, and a bottom-up component.



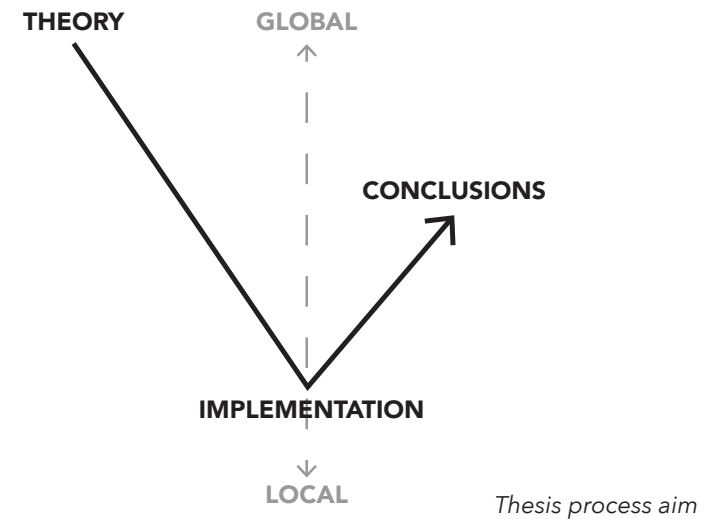
PROCESS

The methods are combined in two main ways: research for design and research by design. The process is iterative and the literature, the dialogues and the reference projects continuously inform an evolving design.



PROCESS AIM

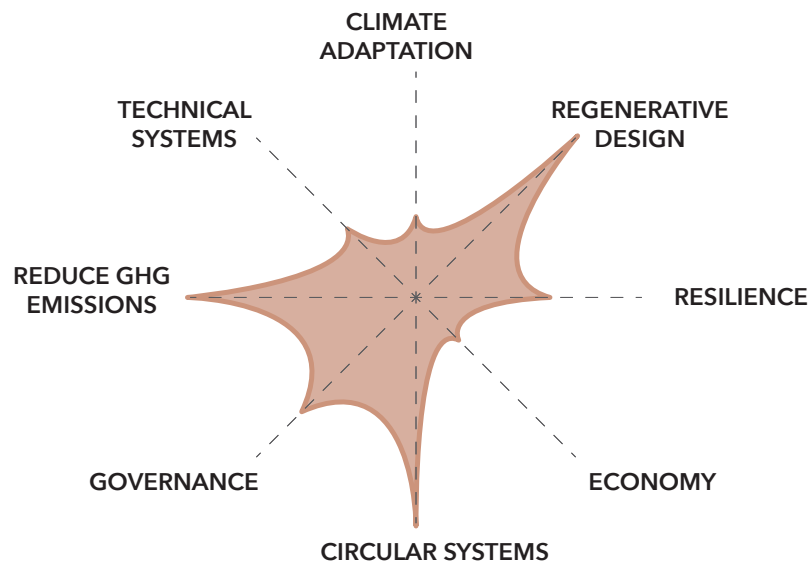
This diagram illustrates another overarching structure that ties back to the aim of the thesis. The theory is implemented in the local context in order to produce conclusions that can be utilized and applied to other similar locations as Upphäräd. It also generates a basis for some generalized conclusions about moving society beyond sustainability.



DELIMITATIONS

SCOPE

The thesis focuses on exemplifying how preconditions for a society beyond sustainability can be provided. It is a wide scope, and thus a relatively generalizing approach that does not go into detail in all aspects of how to achieve the goal. For example, this thesis does not go into detail on how to build sustainably and how to calculate CO₂ emissions. However, the thesis does identify both these things as important strategies and tools to reach the goal. Further areas that are touched upon and identified as important, but not detailed are lifestyle, organization, sustainable farming, ecology, sustainable transports and participatory processes in planning. The diagram on this page further attempts to describe areas that the thesis touches upon, and the ones it details more.



Delimitation diagram

ACTORS

The actors the material is aimed towards will be limited to municipal workers and politicians, as well as smaller local actors, such as local associations and inhabitants.

SCALE

This thesis is aimed at an urban planning scale but applies it to a rural context. The aim of the thesis is to investigate possibilities for a societal shift beyond sustainability through a local situation, thus the main focus is on the scale of the local context of Upphäräd. By local context this thesis refers to the "tätort" (see p. 14, Terms: Geographical definitions) Upphäräd, which will be further explained in the thesis terms. Inside this local context, however, the public space is also focused on to some degree. The investigation on a local scale is later reflected upon in relation to the larger scales of municipal, regional and national contexts. In that reflection, the thesis reaches beyond the urban planning scale and talks about societal design.

TRAIN STOP

Trollhättan municipality sees the implementation of a train stop in Upphäräd as an important strategic move. Currently, the train stop is not on the agenda for the region. However, the municipality is actively working on making the train stop more relevant for the regional strategies. There is a suggestion for placement and dimension of the train stop in municipal documents. This thesis will not question this placement but will instead focus on the implications of the implementation of the train stop. Thus, this thesis takes the train stop as a given precondition for the investigations.

TERMS

SUSTAINABLE DEVELOPMENT

In the Bruntland Report this is defined as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” (UN, 1987). Sustainable development does not, however, talk about how humans could interact with the planet and how we can be a positive part of the natural systems.

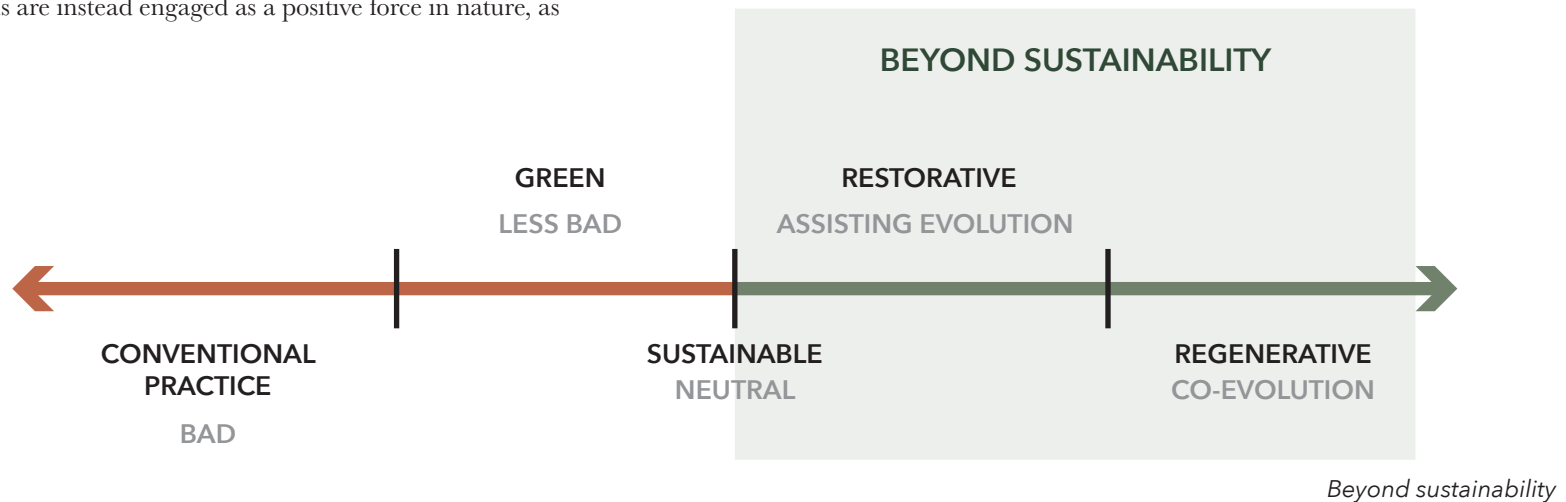
BEYOND SUSTAINABILITY

Beyond sustainability is in this thesis defined as all approaches that move beyond the net zero or neutral standpoint that is part of the term sustainability, as the diagram below shows. When approaching with a mindset to minimize negative human effect on nature (as is the case for the sustainability term), humans are seen as separate from nature and as something inherently bad in the nature context. When going beyond sustainability humans are instead engaged as a positive force in nature, as

a part of natural systems and evolution. Then we have the power to be restorative and regenerative and the opportunity to interact with nature and natural systems become a prominent part of the way we live.

REGENERATIVE DEVELOPMENT

For this thesis, the definition used for regenerative development is one formulated by Regenesi group as: “a system of technologies and strategies for generating the patterned whole system understanding of a place, and developing the strategic systemic thinking capacities, and the stakeholder engagement/commitment required to ensure regenerative design processes to achieve maximum systemic leverage and support, that is self-organizing and selfevolving.” (Mang & Reed, 2012).



REGENERATIVE DESIGN

Regenerative design is an under category to regenerative development. Regenes group defines it as: “a system of technologies and strategies, based on an understanding of the inner working of ecosystems that generates designs to regenerate rather than deplete underlying life support systems and resources within socio-ecological wholes.” (Mang & Reed, 2012). This definition is used for the thesis, but also interpreted in other words as a strategy to integrate humans as a part of nature and to be co-evolutionary rather than apart from nature. It also means to have a sense of responsibility to make up for the degeneration humans have caused the planet so far. Further, it also means to aspire to design for added values by designing for synergies and asking whether the design can have more purposes than one.

RESILIENCE

In this thesis resilience is interpreted according to the two following quotes: “Resilience is the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop. It is about how humans and nature can use shocks and disturbances like a financial crisis or climate change to spur renewal and innovative thinking.” and “Resilience starts from the belief that humans and nature are strongly coupled to the point that they should be conceived as one social-ecological system.” (Stockholm Resilience Centre, 2015).

CIRCULAR SYSTEM THINKING

Braungart and McDonough (2008) introduced the term Cradle-to-Cradle to describe circular system thinking. They divide all resources into two different categories: the biosphere and the technosphere and creates a model where all materials can be infinitely circulated within these two categories (Braungart & McDonough, 2008, p. 103-115). Further, they define their Cradle-to-Cradle model as an approach to “see waste as food, as a nutrient for what’s to come. It is about how to support the biosphere and how to support the technosphere.” (Braungart & McDonough, 2008, p. 5).

LINEAR SYSTEM THINKING

This concept is described by Braungart and McDonough (2008, p. 27) as a cradle-to-grave model, where a material is extracted, refined into a product, used, and then disposed of in, for example, a landfill, where the value is lost. In this thesis, this way of thinking is viewed as having no regard for resource efficiency or environmental degradation.

GREENHOUSE GAS EMISSIONS

Greenhouse gases are the gases in the atmosphere that contribute to the greenhouse effect. The most important ones are water vapor, carbon dioxide (CO₂) and methane. Of those gases, CO₂ is the one that humans emit the most of, making it the one with the largest impact on the greenhouse gas effect and climate change (Nationalencyklopedin, n.d.).

GEOGRAPHICAL DEFINITIONS

Three different geographical terms need to be defined for this thesis regarding the Swedish context. The first is a “tätort” in Sweden, which is defined as a place with at least 200 inhabitants, where the built structures are contiguous to each other (SCB, 2021). Second, a “tätort” can be a “centralort” in a municipality. A “centralort” is often the largest “tätort” in a municipality and is important for the municipal service (Nationalencyklopedin, n.d.-a). Third, in the Swedish context a city or a town is generally smaller than in an international context. The Swedish equivalent of the words is “stad” and can be used to describe varying sizes of settlements. For example, Stockholm is a “stad”, and Trollhättan (the “centralort” in Trollhättan municipality) is also called a “stad”, even though it would not qualify as a city in an international context. In this thesis we will use the term rural town to correspond to the Swedish “tätort”. That applies when said “tätort” is in a rural context, meaning it does not fall under the Swedish definition for a “stad”.

THEORY

The theory chapter is divided into three separate blocks. The first block describes the growth paradigm, doughnut economics, and futures beyond growth. The second block details the three focus areas from the first thesis question. The third block dives into the Swedish rural context, explaining preconditions and the relation between urban and rural areas in Sweden. The last block about rural contexts is relevant because of the site where the thesis question is investigated, which is a rural town in Trollhättan municipality called Upphärad.

GROWTH PARADIGM

Today's society has an economic model based on GDP-growth which relies on endless growth. This is also why society is based upon mass consumerism, since GDP measures the value of what is sold during a year. Further, the idea of eternal growth has taught humans to think that we can create a better version of ourselves by consuming more (Raworth, 2018).

Humans have a perception that continuous economic growth will solve problems like inequality, but it will not and neither has it ever stopped the environmental degradation (Raworth, 2017, p. 148, 208). There is no connection between increased human wellbeing as a result of GDP-growth for wealthy economies. However, a correlation can be seen with GDP-growth in comparison with greenhouse gas emissions (Hagbert et al, 2018, p. 13-14). The linear economy thus creates imbalance and degeneration of our planet (Raworth, 2018). The unsustainable resource use this economic model demands are based on future loans, and therefore externalizes the cost of its consequences to future generations (Westholm, 2018, p. 57). Then why do we continue to strive for more growth?

GROWTH ADDICTION

Economist Kate Raworth explains that our society is so deeply tied to and built upon the idea of infinite growth that we have become addicted to it and never questioned if it is possible, desired, or even necessary (Raworth, 2017, p. 31-33).

This addiction has consequences. Today's economic system is the primary cause of planetary degradation and is directly driven by the finance (Raworth, 2017, p. 199). Donella Meadows, visionary systems thinker, stated that unending growth is one of the most stupid paradigms we have created, and we must continuously ask: "growth of what, and why, and for whom, and who pays the cost, and how long can it last, and what's the cost to the planet, and how much is enough?" (Meadows, 1999).

GROWTH AND PLANNING LOCK-INS

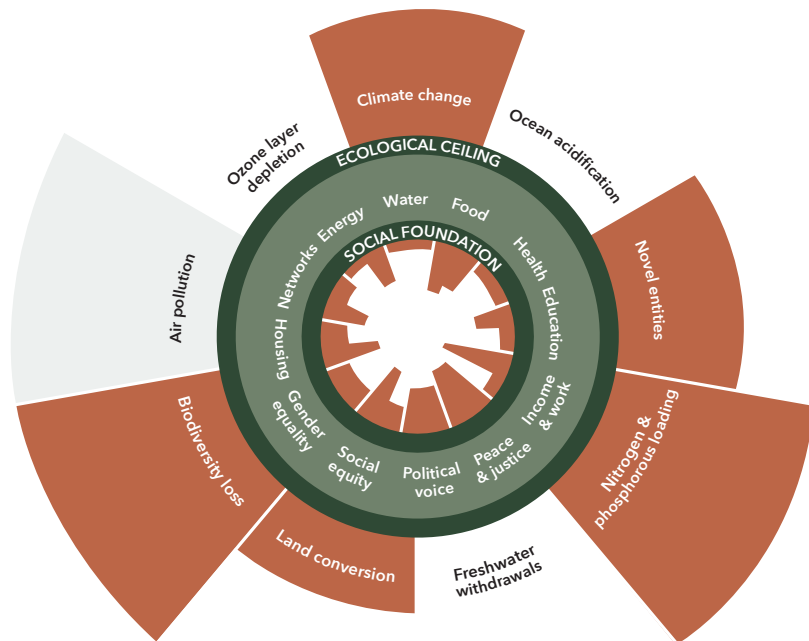
The dependency of GDP-growth creates difficulties for fundamental societal change and thereby the possibilities of designing a thriving society that is needed (Hagbert et al, 2018, p. 10). The growth paradigm is still a driving force for future development and is largely inherent in the society's planning systems and creates institutional lock-ins (Hagbert et al, 2018, p. 36). These structures hinder the shift towards a sustainable future, since the development is based on further expansion of unsustainable consumption and infrastructure (Hagbert et al, 2018, p. 50).

The future planning of our society needs to include other scenarios than continuous growth. The resilience in our systems will benefit from incorporating perspectives of for example degrowth to prevent long-term negative effects. In addition, the economy and society will most likely adapt to a new situation with less growth (Hagbert et al, 2018, p. 33). But then, what is the new goal we should plan and strive for?

DOUGHNUT ECONOMICS

The current economic model and different strategies based on growth are not designed for the challenges we are facing in today's society. Additionally, endless growth is finite. That does not mean that things cannot grow, but eventually they grow up and then thrive just like a tree in a forest. (Raworth, 2018).

The thriving goal is explained by Raworth as: "Today we have economies that need to grow, whether or not they make us thrive; what we need are economies that make us thrive, whether or not they grow." (Raworth, 2017, p. 26). It is from this perspective the Doughnut model is born. The model is based on long-term goals for humanity and then an economic system that would support those goals is applied (Raworth, 2017, p. 9).



Doughnut Model

ECOLOGICAL CEILING

The ecological ceiling in the doughnut model, also known as the planetary boundaries, describe the limits of the planet’s capability to sustain its stability within the conditions of the Holocene. The conditions of this era were a balanced climate, a flourishing biodiversity, healthy oceans and a generous amount of freshwater. However, human’s activity is now putting severe pressure on the planet, and we have entered a new geological epoqe with uncertainties and instability – the Anthropocene (Raworth, 2017, p. 41-42).

In 2021 four of the nine planetary boundaries were classified as exceeded. Those four are climate change, nitrogen and phosphorus loading, biodiversity loss, and land conversion (Attenborough, Clay & Rockström,

2021). As of January 2022, another boundary, that scientists were not able to measure, has been added to the exceeded category. This is the Novel Entities (NE:s) category. NE:s is a collective name for chemicals and other engineered materials that humans create, as well as for naturally occurring elements that are being mobilized by human activities (Persson et al, 2022).

SOCIAL FOUNDATION

The social foundation is represented in the inner circle of the Doughnut model and describe which fundamental needs that should be fulfilled for every human (Raworth, 2017, p. 39). Globally, none of the twelve social basics are achieved, which is represented in the image of the doughnut model (Raworth, 2018).

In the Swedish context the social foundation is almost free from shortfalls, but at the expense of that we have exceeded the ecological ceiling to a large extent (University of Leeds, n.d.). If everyone would live as we do in Sweden, we would need four planets. However, many high-income countries with large ecological footprints have recently also witnessed a new trend of increased inequalities (Raworth, 2017, p. 217).

THE SAFE AND JUST SPACE FOR HUMANITY

Between the ecological ceiling and the social foundation lies a safe and just space for humanity, and the goal of this century is to bring all of society into that spot (Raworth, 2017, p. 39). Raworth further address the urgency to achieve this as: “Given just how far out of balance we currently are – transgressing both sides of the Doughnut – the task of coming into balance is daunting.” (Raworth, 2017, p. 47).

The Doughnut model makes it clear that ecological and social values are connected and depend upon each other (Raworth, 2017, p. 43). It sets out a holistic social-ecological approach where humans are in a co-creative partnership with the natural systems (Hagbert et al, 2018, p. 42).

Creating a thriving society, based on other values than economic growth, will also give potential for increased well-being (Raworth, 2017, p. 37). Human well-being can for example be fostered through physical activity, learning, sharing, and connecting to other people and the environment (Raworth, 2017, p. 240). The safe and just space for humanity creates such opportunities for participation, creativity, purpose, culture, leisure, and freedom (Raworth, 2018). To accomplish this shift, we need an economic model that is regenerative by design as well as distributed by design (Raworth, 2017, p. 133).

THE DOUGHNUT MODEL IN PRACTICE

To apply the doughnut model in practice is a challenging and daunting task as the concept challenges our current linear economical paradigm. However, humans are the ones in power to create a system within the boundaries of the Doughnut model (Hagbert et al, 2018, p. 42). It is important to see the current paradigm as a system created by humans, just as the doughnut model is.

The doughnut model can be used as a base for understanding our impact today, as well as in the future, in relation to ecological and social values. By mapping our impact over different scales ranging from personal level to international, we would get a clear picture of where we are over- and undershooting and that would help us develop a plan for the measures we need to take. If all of us strive towards bringing humanity into the safe and just space of the doughnut, we make way for a future where we can thrive beyond the concepts of growth (Raworth, 2017, p. 48).

FUTURES BEYOND GROWTH

What would a future beyond growth entail? What would need to change to get there? The answers to these questions have been described in the report by Hagbert et al (2018, p. 16) by exemplifying four different future scenarios

for Sweden in 2050. The goal in each example is to meet the sustainability goals that have been set out for Sweden. The four scenarios will be briefly presented below.

1. COLLABORATIVE ECONOMY

The first scenario is based on a future where the sharing economy has been boosted by digitalization. This means that the sharing of resources has increased, making the total amount of resources needed smaller. Renting, borrowing and trading is more common than owning and buying things for your own private use (Hagbert et al, 2018, p. 19).

Another important aspect for this future is collaborative solutions over different levels in society, from local small-scale ones to national and international digital platforms. Further, power and production has been distributed to many different actors. Bottom-up initiatives are an important part of societal development. A lot of actors are involved in production of goods etc., making the output more diversified and catered to needs within the local networks. Many people have become prosumers, meaning they both produce and consume different goods and services (Hagbert et al, 2018, p. 19).

As digitalization plays a larger part in society's structuring, the place itself becomes less important. People are gathered in medium sized clusters and are more spread out across the country than today. The private housing area per person has significantly decreased, but the shared space for communities has increased, making the space more efficiently used (Hagbert et al, 2018, p. 19).

2. LOCAL SELF-SUFFICIENCY

In this scenario local resources and preconditions are at the heart of the societal structure. Globalization and urban centralization have seized in favor of a localized power and production. People have actively chosen to lead a life inside the planetary boundaries, reducing their consumption. Self-organization and do-it-yourself practices have become the norm. All

people who can work are expected to participate in the upkeep of society to be self-sufficient (Hagbert et al, 2018, p. 21).

Many live in rural areas where there is space to farm and have other types of local production. People often live together with their relatives, family and friends in larger houses, sharing that space. Life in one village can be very different to another, as it is shaped by the local preconditions and available products (Hagbert et al, 2018, p. 21).

3. AUTOMATION FOR QUALITY OF LIFE

This scenario is based on robotic development replacing large parts of the human workforce, providing more free time for the inhabitants rather than threatening their livelihood. A 10-hour work week is the new norm and the economic activity is high due to automation and digitalization.

Because of digitalization and the shorter work week people are more spread out across the country. Many people still live gathered in cities where the level of automation is high. Others live outside of these complexes, looking for other types of qualities. A sense of adequacy is more present in peoples' lives, and the need for material status has declined. Thus, the material consumption is lower in this future scenario.

The political decision making has a close relationship to market actors as well as scientists to support continuous development of the societal automation. Direct democracy is more accessible due to the technical advancements, but overall, there is a great sense of trust towards the governing forces in control of the digital systems (Hagbert et al, 2018, p. 23).

4. CIRCULAR ECONOMY IN THE WELFARE STATE

The last scenario is sprung from the realization of ecosystem limits. Laws have been put in place that promotes circular economy, based on reuse and circulation of materials. Waste does no longer exist. The government is an important actor for enabling efficient resource use, by creating preconditions and motivations for it.

The welfare state makes sure that all inhabitants' basic needs are met. People still work an average 40-hour week, but social status is no longer connected to material consumption. Instead, the knowledge about what goods or services are the most sustainable to consume is a basis for status. Some people even choose to live off-grid in a simpler lifestyle.

Most people live in large cities and the rural areas are sparsely populated and have the purpose of supplying the urban areas with goods and ecosystem services. The railway network and the railway stations in rural areas are well developed and maintained. It is less common to own a car, but more people are part of carpools. Generally, people live alone but in smaller and more efficient housing or apartments (Hagbert et al, 2018, p. 25).

SUMMARY OF SCENARIOS

The scenarios from Hagbert et al. (2018) were developed as a tool for discussion and analysis of our current planning practices. They challenge and expand our ideas of the future, opening for visionary ideas that are important for us to be able to challenge the current societal paradigm and imagining a future with other values than today (Hagbert et al., 2018, p. 6; Syssner, 2018b, p. 144).

The four scenarios paint different pictures of what a sustainable future beyond GDP growth could look like. There is not only one possible sustainable future, but an array of them that planning practices need to be able to meet in order to create a resilient future (Björling & Röstlund, 2022).

A FUTURE BEYOND GROWTH IN SWEDEN

For this thesis it was relevant to compile similarities and differences between the four scenarios to roughly map out the most relevant parameters to consider and discuss. The following aspects were clear similarities and differences that can help paint a picture of what a future beyond growth might look like in Sweden:

- The consumption of goods and of meat reduces in all scenarios, as well as the construction of housing and road infrastructure.
- All scenarios have a reduced energy usage and an increase in reuse of materials.
- Private use of cars reduces in all scenarios.
- There are different possibilities for new or strengthened social values in the different scenarios, but also risks for exclusion of groups in society.
- For buildings the report looked at square meters per person, emissions from building material production, and emissions from heating water and buildings. All these three parameters vary from scenario to scenario, but together they make up an equal amount of emissions for each scenario that meets the set-out goal. However, square meters per person reduces in all scenarios.
- The amount of work hours, paid or unpaid, can greatly vary in the different scenarios.
- There are big differences between the different scenarios regarding local self-sufficiency, mostly in relation to local food production.

One thing that the scenarios clearly highlight is that to achieve the set-out goals for emissions in Sweden an extensive transformation needs to happen, and fast. To achieve the transformation, many different parameters also need to change at the same time. Also, the changes and the effects of the changes might vary greatly between different geographical contexts as the local preconditions are site specific (Hagbert et al., 2018, p. 5, 50).

Further, there are different aspects to reaching the goals that we know more about today than others that have not been researched as much. For example, regarding energy and transports there is lots of research on what the future supply might look like, whereas for how people might live and eat there has been much less research done (Hagbert et al, 2018, p. 50).

The degenerative ways of society's current model of unlimited growth need to shift to avoid depleting the environment that sustains it (Raworth, 2017, p. 182). The critique on continued growth is being taken more seriously, as new ways of organizing economy, welfare and society have emerged. Methods and strategies that go outside of the current paradigm's structures

can be viewed as windows to new opportunities and a future beyond the growth paradigm. The scenarios exemplify how it is possible to move towards a sustainable development where our individual and collective well-being is maintained or enhanced. However, this sense of well-being might in the future be based on other values than today, as they are based in another paradigm than our current one (Hagbert et al, 2018, p. 6, 41).

SUMMARY

Based on the theory presented in this block, there is a clear need for society to move beyond sustainability. The focus shift from economic growth and consumption to a thriving goal to be able to bring humanity into the safe and just place in the Doughnut model. Working within the existing paradigm and trying to minimize humanity's negative impacts will not be enough.

It also becomes clear that questioning the growth paradigm is important to live harmoniously within the earth's natural systems, as unlimited growth cannot continue to be supported by the natural circular systems.

In general, a transition from linear models to circular ways of living is crucial. This can concern anything from economy to population or natural resources.

The growth paradigm has created planning lock-ins as all our systems are in some way or other dependent on continued GDP growth. Those structures hinder the societal shift towards or beyond sustainability, and thus need to be challenged and thoroughly examined.

The four future scenarios described and compared depict different visions for what a society beyond economic growth can look like. For the design proposal for Upphäråd, a combination of the different aspects from the scenarios is applied.

THE THREE FOCUS AREAS

This thesis is limited to three focus areas. The first is reducing GHG emissions by shifting carbon heavy activities into more environmentally friendly ones. The second is applying circular system thinking based on local preconditions. The third is utilizing regenerative design to create added values that impact both the local ecological conditions and the socio-economic situation. Below, each focus will be described in depth.

1. REDUCE GREEN HOUSE GAS EMISSIONS

A future without drastic changes is not possible. For example, you cannot secure a stable climate with the current emission rate (Hagbert et al, 2018, p. 50). To tackle the climate crisis and begin the journey to the safe spot within the planetary boundaries a crucial task of high priority is thus reducing CO₂ emissions to net-zero. Science says that now is the time to bend the curve of emissions, to avoid the risk of irreversible tipping points. This will also help stabilize the global temperature as well as directly reducing the pressure of several planetary boundaries like biodiversity, air pollution and ocean acidification (Attenborough, Clay & Rockström, 2021).

ACHIEVING THE REDUCTION GOALS

Greenhouse gases is a collection name for multiple gases. When talking about reducing the GHG emissions it sometimes refers to all those gases, but other times it is focused on emissions of CO₂, as that is the GHG humans emit the most of.

Globally, the emissions are proposed to be cut by 50 percent in a decade, which means a reduction of 6,7 percent per year. This rate means that we can reach a fossil-free society within 30 years, and it can be adopted by countries, companies, and individuals. The world is, in some way, obliged to achieve this (Attenborough, Clay & Rockström, 2021).

To stay within the 1,5° C limit of global warming, a proposed environmental goal for Sweden is to be fossil-free by 2050. This means that the maximum rate of GHG emissions can be 0,82 equivalents per capita. In the Swedish context this means that the use of renewable energy needs to be almost double in relation to its current capacity. Emissions from consumption need to be reduced by 92 percent, and the land use dedicated for consumption needs to be reduced by more than 50 percent (Hagbert et al, 2018, p. 15-16).

Reducing emissions in practice can be done in different ways. Connecting back to the four scenarios by Hagbert, they tested the scenarios against the Swedish goal previously presented. All scenarios can potentially achieve this goal, but the changes needed are diverse. Comparing the scenarios collaborative economy and local self-sufficiency, the latter have most of its emissions connected to food and close to zero emissions from consumption and transports whereas the emissions in the collaborative economy scenario are more evenly spread out (Hagbert et al, 2018, p. 28).

MEASURING EMISSIONS

Another important aspect regarding emissions is to include consumption abroad. Out of Sweden's total amount of emissions the import stands for almost 65 percent (Hagbert et al, 2018, p. 30). In relation to this, Sweden has with under 50 percent the lowest rate of self-sufficiency in the European Union. The transports, particularly from the imported food, are therefore one of the most prominent categories of the Swedish ecological footprint (Åkerman, 2020, p. 29). Concerning this, it is important to not stare blind at territorial emissions, within a municipality or the country, without being aware of the total amount of emissions caused by Swedish consumption.

ZERO EMISSIONS ARE NOT ENOUGH

The most important aspect of reducing emissions can be explained by comparing it with water in a Bathtub. Based on a metaphor, by systems thinker John Sterman, Raworth describes it as: "Just as a bathtub will only start to empty if water pours in from the tap more slowly than it drains out of the

plughole, so carbon dioxide concentration in the atmosphere will only fall if new emissions flow in more slowly than CO₂ is drawn out.” (Raworth, 2017, p. 130-131).

Based on this understanding reducing new emissions to zero are not sufficient. Further, there is a need to bind the existing carbon in the atmosphere. A very cost-efficient and feasible solution for this is to plant trees and restore the nature. Apart from capturing carbon, nature entails other important benefits in relation to biodiversity, food production and the climate in general (Attenborough, Clay & Rockström, 2021). Further, Raworth address this as a design task where we can assimilate natural processes and learn how to store CO₂, in for example products and soils. The concept of biomimicry can also be applied to other processes and cycles (Raworth, 2017, p. 186).

Touching upon further values and cycles this leads to the thesis’s two other focus areas, circular system thinking and regenerative design, that both focus on regenerative development and goes beyond the net-zero goal.

2. CIRCULAR SYSTEM THINKING

The second focus area is circular system thinking. This topic is based on the idea that we need to use our resources wisely and reflect on our part in the larger circular systems that is nature. We need to move beyond the approach of doing less bad and limiting our impacts and try to imagine a system of endless resource cycling to truly move beyond the net zero methods and into the area beyond sustainability (Braungart & McDonough, 2013, p. 8). This shift is vital and would help bring us back inside the planetary boundaries. By shifting from the linear resource systems to circular ones a world without waste becomes possible (Attenborough, Clay & Rockström, 2021).

CRADLE -TO-GRAVE

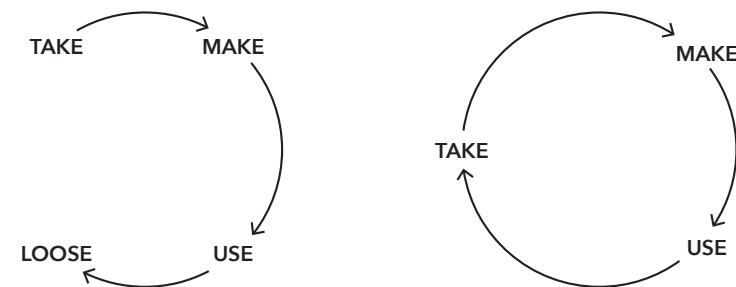
The development over the last two centuries has been degeneration of our planet through linear industrial growth. The resource flow has been to take, make, use and loose, or, in other words, cradle-to-grave (Raworth, 2017, p. 180-181). Within development of our physical environments, the discourse

has long been on technical solutions and increased resource efficiency to come closer to the planetary boundaries (Hagbert et al, 2018, p. 35). These approaches are, however, still within the cradle-to-grave paradigm, and Braungart and McDonough (2008, p. 4) argue that being and doing less bad is not the same as being good.

CRADLE -TO-CRADLE

The term cradle-to-cradle was introduced by Braungart and McDonough (2008), in the book with the same name. It means to close the material loops in society. Human beings are seen as a part of nature, and through that it become clear that misusing our material resources and depleting the planet is suicidal for our species and all other living things (Braungart & McDonough, 2008, p. 3).

This approach closes the take, make, use, loose loop by excluding the loose step. Waste from one process is seen as food for something else, just as it is in nature. The human material flows can be divided into two categories: the biosphere and the technosphere. Within those two categories all materials should flow cyclically without losing quality or purity (Braungart & McDonough, 2008, p. 5).



Take-make-use-loose vs. take-make-use

Cradle-to-cradle can also be a basis for talking about unlimited growth in relation to material flows. Here, there is no direct opposition to the idea of

unlimited growth, but the questions of what we want to grow, and whether those things harm future generations are raised. Unlimited is fine if it is not causing harm by being inserted in the non-degenerating model of the biosphere and technosphere (Braungart & McDonough, 2008, p. 11).

To insert our society in the cradle-to-cradle model we should design buildings that produce more energy than they consume, factories that let out water so clean it is drinking water, products whose components can be sorted into the biosphere or technosphere, meaning they are compostable or a high-quality industrial nutrient. That would result in a world not characterized by pollution, waste and limits, but of abundance instead (Braungart & McDonough, 2008, p. 90).

The issue is not a lack of materials or energy, but a question of resources in the wrong place (Braungart & McDonough, 2008, p. 45). For the four scenarios presented earlier in *Futures beyond growth*, all have in common a redistribution of resources (Hagbert et al, 2018, p. 49). Further, if the materials are allowed to circulate in the cradle-to-cradle way, new opportunities for work opens up as new manufacturing ways are explored (McDonough & Braungart, 2013, p. 45).

HOW TO DESIGN

Braungart and McDonough (2013, p. 7-9) argue that the problem is not pollution itself, but the problem is the way we design, which in turn results in pollution. To design sustainably is to do so in a way that sees to the well-being of all future children, of all species. That is what the cradle-to-cradle model can achieve through the endless cycling through the biosphere and technosphere.

Careless design practices force us all to pay a high price, and good design should not be viewed as a luxury only available to the wealthy, but as a human right, since designers do not have the right to inflict the consequences of unsustainable design onto all of us. The goal should be to design products for the usage period intended, but also for its next use, and the next one and so on (Braungart & McDonough, 2013, p. 17, 211).

3. REGENERATIVE DESIGN

Regenerative design is somewhat similar to circular systems, as they both highlights using waste from one process as food for something else as well as emphasizing that being less bad is not equal to being sustainable. Raworth explains this further by presenting a list of how different corporations answers to their responsibility of working with sustainability: do nothing, do what pays, do your fair share, do no harm and be generous. With time, more companies aim towards the goal do no harm, but only be generous moves beyond sustainability and creates further values and that is what regenerative design is about (Raworth, 2017, p. 185).

GENEROUS DESIGN

Regenerative design is key for creating a thriving society within the planetary boundaries. The basis of generous design is to instead of destroying the planet, aim to restore it and help the world to a better state than it was before. With this ambition, humans are seen as helpful participants in nature's regeneration (Raworth, 2017, p. 185, 205).

An example that shows how humans can help create conditions for the planet to thrive, is gardening. Gardeners plan what to grow where and create a basis for different plants to thrive in symbiosis with nature. By doing this they can give better conditions for certain species than if they let nature grow by itself but also decide what should be left alone (Raworth, 2017, p. 135). This can be applicable to architecture and societal planning as well.

REGENERATIVE ARCHITECTURE

Scientist Janine Benyus depicts a vision of what a human settlement that is in co-existence with nature could be and how architects and planners can create generous environments. An important aspect is to identify the local ecosystems of a site, to understand how the preconditions can be used and strengthen. Out of the regenerative approach arises several design possibilities, where more benefits can be applied to the built environment apart from the initial functions (Raworth, 2017, p. 190).

Regarding buildings, rooftops can be used to gather energy from the sun or used to grow food on. Buildings can also bind carbon, clean the air, and its wastewater can be used as a resource for agricultural soils. Space should be given for natural environments within our built environments and the built structures themselves should be connected in a network of green corridors. Planners can establish conditions for storm water to be absorbed and provide opportunities for urban agriculture (Raworth, 2017, p. 190).

Further, residents can be part of the regeneration that the built environment enables through its design. It can create possibilities for public transport, local production and consumption, as well as reuse and maintenance of products and built structures. The living environment affects human behaviour and can encourage regenerative activities. Generous actions should therefore also be a given part of a new economic paradigm (Raworth, 2017, p. 201).

SUMMARY

From this theory block it becomes clear that an important part of meeting the climate crisis is to reduce the GHG emissions as they are rapidly driving the earth systems towards a critical tipping point.

The emission posts in the Swedish context that can make the biggest difference are consumption, import of food and goods, energy usage, and domestic transports.

Only reducing the GHG emissions is not sufficient to create a thriving society. Other aspects need to be combined with the emission reduction and climate damage control. Two important strategies to move beyond the net zero emissions are implementing circular systems and regenerative design.

There is a possibility to shift the view from humans as beings with a negative impact on nature to humans as a part of the natural systems. Humans are not inherently bad for the planet but can be a force of good and engage with nature in a co-evolutionary manner that aligns with the values of regenerative development.

All the three focuses of the thesis overlap with each other to some degree. Circular systems and regenerative design are closely connected as they are both building blocks in regenerative development. Circular systems and reducing GHG emission are connected as implementing circular systems can help reduce the GHG emissions since it is promoting a more resource efficient approach. Further, reducing GHG emissions is connected to regenerative design and development because emitting large amounts of GHG is not functional within a regenerative approach.

URBAN AND RURAL

The case site for this thesis is Upphärad, a rural town outside of Trollhättan. A rural context has different preconditions than an urban context. The following parts of the theory aims to investigate and clarify what knowledge is needed to successfully plan and design for a rural town to develop beyond sustainability.

URBAN NORM

There is a paradigm of urban interpretive precedence in place in large parts of the world today, including in Sweden (Syssner, 2018a, p. 23). The idea of centralization has been prominent in Swedish planning practice over the last century (Åkerman, 2020, p. 8). There is a norm based in the idea that the problems in the world can be solved by expanding cities and building more houses in these dense areas, increasing the centralization, that results in the rural areas becoming peripheral to the urban context (Åkerman, 2020, p. 137).

The idea of the modern life is set in the urban context, making qualities such as success, growth and development inherent to that context (Åkerman, 2020, p. 8). There has been an emerging discussion in Sweden regarding this relationship, where the urban is seen as the norm and the rural becomes an exception to that norm. Further, the urban is often viewed as a positive process of development, whereas rural areas are seen as a state of being, stagnant and without potential (Syssner, 2018a, p. 23, 43).

The urban norm constitutes an obstacle for rural areas, as the needs of cities and towns are often prioritized (Åkerman, 2020, s. 8). Further, the models for societal development and welfare are adapted under the paradigm of the urban norm. Thus, these very models that are supposed to help guide the societal development are sometimes poorly adapted to the conditions of rural areas (Syssner, 2018a, p. 11).

This issue with generalized planning practices and systems for societal development is not only problematic in the urban-rural relationship but can also be problematic from one rural area to another. The preconditions for planning and development are very different in different geographies. Things like tourist attractions, infrastructure and communication routes, and demographics have a huge impact on the local preconditions for development (Syssner, 2018a, p. 16).

The urban norm is sprung from the centralization trend where the urban areas constitute efficient machines for development and growth. It is not the urban properties itself that are problematic, it is when that narrative overshadows and blocks out any other possible narrative that it becomes problematic. The rural areas have a narrative of their own that needs to be included in the discourse (Syssner, 2018a, p. 44-45).

RURAL AREA

A rural area can be defined as the opposite of an urban area (Åkerman, 2020, p. 10). That description shows how deeply rooted the urban norm is in our minds and vocabulary, as the rural is defined as the lack of the urban qualities instead of as its own entity with its own qualities. The way we describe and talk about rural areas in the societal discourse affects how we view and plan for these places in practice. The Swedish institution Glesbygdsverket has concluded that a clearer definition of the term rural area to some degree would affect the basis for planning and decision-making regarding the rural areas of Sweden (Åkerman, 2020, p. 10).

Further, as the term rural area is defined as the lack of urban qualities, the rural qualities in one place can be very different from the qualities in another. A rural area can be anything from a nearly uninhabited landscape in a large forest to an urban-adjacent landscape that might be on its way of slowly merging with a city. That means that any statement about rural areas in general almost always will be untrue for some rural areas (Westholm, 2018).

As a rural town has a wide definition in terms of size, these places can be in and be part of both urban and rural contexts. A rural town such as Upphärad (for size and context of Upphärad, see local context chapter) is located in a rural landscape but has a population large enough to provide some urban qualities such as a local grocery store. Here, the term rurban becomes relevant. A rurban environment is a place where rural and urban qualities meet and provide other opportunities than a purely urban or rural context does (Björöling, 2019).

RURAL AND RURBAN PROPERTIES

To develop any context, the context must first be understood. Preconditions, potentials and challenges, as well as previously functioning strategies can be useful when planning for the future of rural contexts. The following parts outline important aspects to keep in mind regarding development of rural areas in Sweden, but also describes their potential as a key role in the shift for a future beyond sustainability.

ROLE OF RURAL AREAS IN TRANSFORMATION

To be able to reverse the trend of planetary degradation current norms must be questioned. Here the rural areas have the potential to spearhead the development beyond sustainability. The rural contexts already hold experiences of human-nature interactions, since they through time have been very present and visible. This creates possibilities to learn from local societies on how to work with global challenges (Högberg et al., 2018, p. 149). Thus, they play an important role in this societal shift where more focus will be on local energy, materials, and food production (Åkerman, 2020, p. 85).

Rural areas also have spatial preconditions suited for this transformation, with access to agricultural land, affordable housing and space for common places. Another strength is the smaller scale of which the context can be

easily overviewed, making it possible to have impact on important issues. Further, these areas are outstanding when it comes to not having everything planned (Åkerman, 2020, p. 53, 61). That is important regarding resilience over time. Westholm (2018, p. 59) describes how rural areas can be places for experiment, where a future built on sustainable values can be envisioned.

HOUSING

Concerning global challenges, like the climate crisis, rural areas have an important role to play and accordingly opportunities for housing and work must be available within these areas. Even though there is a demand to live in rural areas and a need for more housing due to its shortage, it is not affordable to invest in these areas within the current paradigm that builds upon profit (Åkerman, 2020, p. 9, 11). As a consequence of profit interest, housing is seen as an investment rather than a basic human right. People have also been encouraged by politics to own their own home which has led to many households having extensive loans. To cover their loan cost, they are dependent on further economic growth, with low interest and inflation. Thus, many people are trapped within the growth paradigm (Hagbert, 2018, p. 37).

The urban norm and the housing market based on yields hinder development in rural areas. Apart from the need of more housing, these areas especially need a larger variety of accommodation. What is lacking in the housing stock is mostly simpler, smaller and cheaper alternatives. A feasible solution is to densify on existing plots, where property owners can rent out an "Attefall" house, a tiny house or a rebuilt barn (Åkerman, 2020, p. 11, 81).

Rural qualities attract many people and if possible, more people would choose to live outside urban contexts (Syssner, 2018c, p.30). The desire springs from opportunities to more affordable housing compared to urban areas, greater access to nature and an idea of another lifestyle. At the same time, qualities that today are connected to urbanity like infrastructure, meeting places, and services are wanted as well (Åkerman, 2020, p. 11). This makes the rurban context interesting.

LIFESTYLE

The longing for the lifestyle rural areas can afford, can be connected to different movements like degrowth, slow city, and the green wave (Syssner, 2018c, 31). There are also those who dream about a simpler life with less consumption and resource use, believing that it can be even better and more joyful. The most difficult aspects of living a life with less consumption are connected to current expectations and norms that encourage extensive consumption (Hagbert et al, 2018, p. 45). This problematic situation is described by economist Tim Jackson: “people are persuaded to spend money we don’t have, on things we don’t need, to create impressions that won’t last, on people we don’t care about“ (Jackson, 2010).

As been briefly mentioned in relation to the growth paradigm, an excessive consumption and increased GDP are connected. The initial goal was to give more people a good standard of living, but in Sweden there has been no correlation of better life qualities or welfare since 1960 even though there has been an increase in GDP. Rather this paradigm has given nutrition to mental illness and welfare diseases (Högberg et al., 2018, p. 159). Given this, there is a need to understand that social relations are more meaningful than consumption and economic growth (Åkerman, 2020, p. 53).

DIGITALIZATION AND DISTRIBUTIVE DESIGN

Something that significantly changes the preconditions both in rural context, but also in relation to bringing circularity into practice is the rising trend of digitalization. Further it can enable design opportunities with a fair distribution, where everyone who has accessibility to digital platforms can take part of information, knowledge and entertainment. To encourage this, there is a need to create makerspaces, where people can exchange ideas, knowledge, tools and services. As an example, designs from shared commons can be downloaded and printed in a 3D printer (Raworth, 2017, p. 162, 167).

Distributive design merges the producer-consumer divide, into something referred to as prosumer where people are both a user and a maker in the

process (Raworth, 2017, p. 162). This concept also supports the peer-to-peer and collaborative economy, where user-values are promoted in place for exchange-values that current paradigm are dependent on (Hagbert et al, 2018, p. 44). Additionally, what is essential in bringing circular design to reality is creating conditions where different communities, associations, and businesses can collaborate in different networks (Raworth, 2017, p. 167).

INFRASTRUCTURE AND PUBLIC TRANSPORT

A common challenge outside the urban context is public transport and infrastructure. Better access to public transport is certainly important in rural areas where there is a high car dependency. Well-functioning public transport paths are also a basis for new housing development (Hjerpe & Glaas, 2018, p. 126-127).

However, the existing built structure can be an obstacle in creating conditions for sustainable transports and the preconditions vary significantly in different geographical contexts. Based on current norms, the investments are often centered around already strong nodes which adds to further growth. Thus, there is a need for alternative methods for planning and assessment on where to invest in sustainable transports, and in relation to climate goals society cannot afford to invest in unsustainable infrastructure. Despite this, all transport investments will have an environmental impact, but what is essential is to create possibilities for long term investments that support a future beyond sustainability over time (Hagbert et al, 2018, p. 37).

LOCAL SOLUTIONS ARE KEY

Regardless of the context, all interventions must be adapted to the local situation. (Hjerpe & Glaas, 2018, p. 142). Local solutions can answer to problems beyond its context, but the analysis and implementation must be based on local preconditions as it connects directly to local politics and sustainability (McDonough & Braungart, 2013, p. 216).

Another important aspect is the ideal engagement you can find in a context. Thus, local qualities, local engagement, and spaces for social

activities should be enhanced (Åkerman, 2020, p. 63). In addition to local interventions, future development also needs to be built upon diversity, network and cooperation to be able to meet the global challenges ahead (Högberg et al., 2018, p. 159).

RESOURCES

One of the most important resources for societal development today is finance. This largely dominates the discourse regardless of if you are talking about housing, infrastructure or health care. However, what is considered a resource is more complex than that. Looking at a municipal scale financial means are essential to provide the necessary societal functions such as infrastructure, healthcare, and other services. Other resources such as knowledge, legitimacy, decision-making ability and labor are also necessary (Syssner, 2018b, p. 93).

Resources can be divided into several different categories. One division commonly used is financial, material, human, and organizational resources. Financial and material resources are quite self-explanatory but can come in a variety of shapes and forms. Human resources refer to the competences, skills and the knowledge that humans have. Different experiences and site-specific knowledge also belong to this category. Lastly, the organisational resources can for example be that a well-functioning organization where the decision-making hierarchy is clear is seen as a resource. Structures that enable long-time planning and coordination can also be viewed as an organizational resource (Syssner, 2018b, p. 95-97).

Generally, what is a resource completely depends on who is making that assessment. What is seen as a liability or problem by one can be seen as a resource by another, thus nothing is in and of itself a resource (Syssner, 2018b, p. 94).

Resources can arise for either a relational, contextual or situational reason. Relational resources only become resources in relation to a need or a goal. a building, for example, can have many different values in relation to a variety of needs, and the value of the building as a resource increases the more

needs it can meet. Contextual resources means that something can be seen a resource or even a liability depending on what context it is viewed in. If it for example snows in Stockholm and in Åre at the same time, the snow in Åre will be seen as a resource for the ski resort, but the snow in Stockholm might be seen as a problem for passability. Situational resources aim to explain how something that once was viewed as a resource in a situation and time can lose its status in another situation. For example, an expensive and sought-after item of clothing in the 70's will not have the same appeal and value as a resource today (Syssner, 2018b, p. 97-99).

For rural areas it is important to examine what resources are available and be creative and mindful with them. Also, it is important to question what is seen or not seen as a resource and why to engage the full potential of the local context.

CIVIL SOCIETY AS AN ACTOR

Civil society is an important actor for societal development through informal planning, even in a country like Sweden where there is an idea that the welfare state cares for all such things. The term civil society refers to the part of society that is not the state, the market or an individual family. It is the part of society where people organize themselves in associations and according to interests (Syssner, 2018b, p. 99).

The civil society is especially important as a driving force in rural contexts as there is not very many other actors such as businesses of different kinds that create events, meeting places and a sense of community. As inequalities regarding the distribution of financial resources in Sweden between urban and rural areas has increased, more examples of local civil societies in rural contexts taking their local development in their own hands have become prominent (Åkerman, 2020, p. 12).

The initiatives of civil society organizations usually have different goals than a business would have. Their activities span over everything from building and managing meeting places, local commons, to housing, with the intention of creating a more vivacious, creative and sustainable living

environment (Åkerman, 2020, p. 12). The importance of civil society has been especially enhanced in relation to issues such as sustainability, integration and public health (Syssner, 2018b, p. 99).

It is, however, problematic to depend on civil society too much. There is an ethical aspect to the matter, if the population in rural areas is not only disadvantaged in the planning process and in terms of distribution of financial resources but are also expected to contribute their free time to establish the same basic societal services that are provided in urban contexts, this is a great injustice. It may also be complicated regarding legal aspects in multiple ways. For example, the legal certainty might be threatened if local actors gain a lot of influence. Another example is if a local association builds and maintains a public playground due to a lack of playgrounds supplied from the municipality, it then becomes complicated if someone gets hurt at the playground. Is the local association responsible? Is it the municipality? This potential complication is reason enough for municipalities to decline such initiatives from local actors in the civil society (Syssner, 2018b, p. 105).

GOVERNANCE

Governance is an important factor in societal development. The form of governance can become an opportunity or a challenge, especially in rural contexts as those have needs that do not conform to the urban norm.

TOP-DOWN AND BOTTOM-UP

Our governing societal structure today is based in a top-down model. Decisions are made by politicians and experts and implemented in society and local contexts. The other way of developing society is to work bottom-up. This means to have change spring from the local context, where initiatives from civil society becomes the driver for potentially extensive change.

As the previously presented literature has described, rural areas are constantly at risk of being excluded from the top-down planning processes as they do not fit the urban and growth norm that tends to be planned for. In rural areas a lot of the development is instead initiated by the locals. They can push for the issues that are important to them in their context and the municipality sometimes allows this to develop freely, without interfering. Municipalities can also with their plan monopoly create guidelines to ensure sustainable values and choose who to include in different planning processes and by that incorporate rural areas (Åkerman, 2020, p. 12, 50, 148).

There is a delicate balance between top-down and bottom-up governance, as going too far in either direction can be problematic. Only bottom-up would mean the locals take on a huge responsibility and the question of what the government's or the municipality's responsibility should be, and what should fall on the civil society becomes an issue (Syssner, 2018b, p. 105). However, the other way around can be problematic too, as too much top-down control can suffocate positive bottom-up initiatives (Åkerman, 2020, p. 50). To make informed decisions, the local knowledge is important in order to find the solution in the planning process that suits the context in question the best (Hjerpe & Glaas, 2018, p. 142). Thus, participatory processes with local inhabitants can become a powerful tool in the planning process. Architects and planners that can initiate the participatory processes thus become a representative for the local inhabitants in relation to the governing forces.

For rural areas, it is important to have the local initiatives be supported by the municipality or the region. In *En annan landsbygd*, by Åkerman (2020), several examples of sustainable projects in rural areas are lifted. They all have in common highlighting the importance of how understanding the local context and having inhabitants be the ones involved in development and planning processes is important to be successful. However, they also emphasize how having support, from the municipality or region financially is needed. Another way of supporting these local contexts that do not focus only on economic support is the Västra Götaland region's local development initiatives. Those initiatives are targeted at providing organizational support for a local context over a 1,5-year period (Västra Götalandsregionen, 2021).

UTOPIAN VISIONS

The politic for rural areas in Sweden is usually focused on solving current problems, lacking continuity and a clear long-term goal. The lack of visions means that instead on looking to the future, the politics are focused on issues that stem from the past (Åkerman, 2020, p. 9). Further, most of the visions that are formulated in Sweden focus on urban areas and on economic and population growth. Rural areas with a stagnant or shrinking population and a different precondition for economical metabolism do not fit that norm. Those areas need different types of visions (Syssner, 2018a, p. 17). Currently it seems to be very challenging for politicians to formulate such visions, that deviate from the norm of growth (Syssner, 2018b, p. 138). However, in society today there are several good examples of experimentation with new sustainable practices that can be part of a larger societal shift and help free us from the structures and issues of the growth paradigm (Hagbert et al, 2018, p. 6).

Visions and utopian thinking can help challenge the current societal paradigm. It can be used to imagine a future beyond the limits of the current norms. Further, it enables focusing on the bigger picture, rather than getting buried in creating solutions for smaller problems generated by the current paradigm. Thus, the utopia can become a method for change, a tool for society to use, that unlocks abilities to imagine alternatives for the future (Syssner, 2018b, p. 27-28; Hagbert et al, 2018, p. 6).

We can envision the future, even though it cannot fully be predicted. We can also redesign systems in society, so they better serve our goals and purposes (Raworth, 2017, p. 138). Based on utopian thinking, we can unleash potential for change. Raworth (2017) describes this in relation to economy, but it is very much applicable to architecture as well: "The most powerful tool in economics is not money, nor even algebra. It is a pencil. Because with a pencil you can redraw the world."

SUMMARY

From this theory block it becomes clear that the urban norm and centralization trend, that are closely related to the growth paradigm, makes the urban-rural relationship problematic. Often rural areas are disadvantaged in societal planning since they do not fit the norm that is planned for.

Rural areas have qualities that can be helpful in challenging the growth paradigm. Since growth is not as strong in these areas, they have potential to harbor other values that lie outside of economical or populations growth, such as social relations and a strong human-nature relation. Those values inherent to rural areas can be built upon when creating a future beyond sustainability.

Strategies that are applied to transform or develop a rural area are benefited by being context specific and grounded in the bottom-up perspective of the locals. The top-down actors need to recognize the needs and wants of the locals in planning processes.

An important tool when working with development in rural areas is to examine the form of governance: what comes top-down and what comes bottom up, how should it be organized, and how can dialogue be created so that both sides are working towards the same goal? Local engagement is crucial for a functioning development, and this engagement can be benefited by support and guidance by politicians and experts.

CONCLUSION AND REFLECTION

The three theory blocks together outline the theoretic framework that shapes the scope for the design brief of this thesis.

The first block helps with understanding the problems regarding the climate crisis and the growth paradigm on a global level. It also describes options to continued dependency on growth and continued destruction of the planet. The second block is based on the knowledge from the first block and details the focus areas that this thesis uses to tackle the problematics. The third block helps with understand the preconditions of the local context, where the thesis investigations are conducted, to meet these global issues.

The beyond sustainability theory is separate from the theory about rural areas, but the two converge as rural contexts have potential for spearheading the transformation of society beyond sustainability.

All parts of the theory are not directly linked to architecture but knowing of these things is very important in order to make architecture catered to a future beyond sustainability and beyond growth.

To further support the thesis link to architecture, there is a need to pair the theory chapter with reference projects (see following pages). In the projects presented the connection between theory and architecture has already been achieved, meaning they answer to some of the global problems through their local situation.

REFERENCE PROJECTS

The reference projects displayed in this chapter have been important for the knowledge gathering that feeds the design. These projects have qualities and strategies that have been adapted into the design proposal of this thesis.

ECOVILLAGE IN BYSJÖSTRAND

INTRODUCTION

This is an eco-village initiative that supports living with a smaller ecological footprint, and that focuses on the social values that are important for human wellbeing and resilience. It is located in a forest area northwest of Ludvika and will support a population of approximately 105-210 people. Bysjöstrand eco-village is about community, social variation, local energy production, energy management, food production, participation in building, and circular systems with limited resources. A varied social-economic demographic should be supported through the initiative. The eco-village is supposed to create resilience and strengthen the local community, as well as its surroundings (Bysjöstrands ekobyförening, 2020).

DETAILING

Two interesting initiatives in Bysjöstrand eco-village are the “Kretsloppkvarter” (circular center) and the “Kulturkvarter” (culture center). The “Kretsloppskvarter” gathers equipment and functions needed for different circular processes such as wastewater management. The “Kulturkvarter” gathers functions that support the community and meets social needs. The project shows how food production can be implemented in different scales locally. There is a shared green house in connection to the “Kretsloppskvarter” as well as intended room for small scale private farming on each housing plot.

The houses in Bysjöstrand are small scale and of varied types. There are four ways of moving to Bysjöstrand: Building your own house, buying a premade co house, renting a house, or participating in a building community. Apart from these four ways there is also two plots for tiny houses to be placed. Further, the character of the built structure is achieved by aspiring for a higher density in the built structure, compared to a traditional villa area (Bysjöstrands ekobyförening, 2020).



Bysjöstrand ecovillage

REGEN VILLAGES IN ALMERE

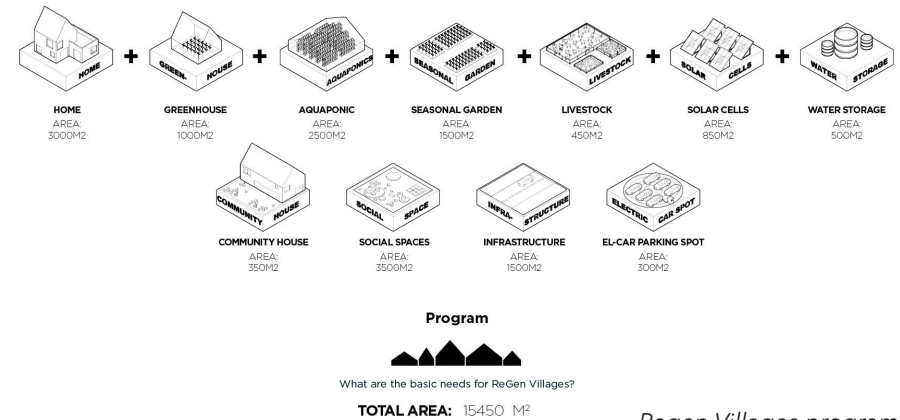
INTRODUCTION

This is a village project in the Netherlands that implements regenerative methods and processes. The project focuses on local self-sufficiency and farming in order to successfully apply regenerative concepts to a village context. Different innovative technologies are applied, such as energy positive homes, renewable energy, energy storage, vertical farming, water management and waste-to-resource systems. The different strategies are combined to form a holistic approach to the project, aimed at finding local solutions to meet global issues. The 75 intended inhabitants become part of a local ecosystem where people can be reconnected with nature and the processes from production to consumption are once again intuitively linked (Effekt, 2022).

DETAILING

In Regen Villages a diversity of farming methods are applied, such as aquaponic farming, seasonal farming and green houses. Further, permaculture farming is promoted in the outskirts of the village. The village is meant to be self-sufficient on food, meaning there is a lot of space dedicated to food production. Calculations have been made regarding how much space each function needs to supply the community. Another thing that is calculated and implemented here are solar cells that supply the village.

The Regen Villages in Almere is its own unit, much like Bysjöstrand, planned away from other built structures. It also consists mainly of villas that are combined with green houses. Apart from the villas, there is a community house and outdoor social spaces. The community house is located in the village center (Effekt, 2022).



Regen Villages program



Regen Villages in Almere

CONCLUSION AND REFLECTION

Strategies that include local food production to support a higher level of self-sufficiency is important in order to mend the relationship between human and nature and adopt a regenerative paradigm.

The local context can have ambitions to impact global issues through serving as a role model.

Both projects presented are like cul-de-sacs, there is no thoroughfare leading directly to another village further away, unlike the thesis case site, which has a thoroughfare road going straight through its center. This means that the reference projects only have travelers that intend to go to that specific place in them.

Both the projects presented here are located independently of existing built structures. They become entirely new areas, unlike the case site for the thesis, which is already a rural town today.

The scale of these two reference projects is significantly smaller than the thesis case site. The amount of people included in the thesis design proposal are approximately ten times more than in these reference projects.

LOCAL CONTEXT

This chapter introduces Upphärad as a site by firstly putting it in its surrounding context. It outlines the preconditions for the design proposal by showcasing spatial qualities in Upphärad, such as greenery and infrastructure. Further, this chapter analyses the site and summarizes it in a *SWOT* analysis.

INTRODUCTION TO UPPHÄRAD

WHY UPPHÄRAD

Upphärad was chosen as a case site for this thesis based on several requirements: the site should be in a rural context, it should have a population of under 5 000 people, it should be small enough that the entire structure can be handled with a certain level of detail, it should be close enough to Gothenburg to be visited easily, and it should show some potential for development already to facilitate the thesis experimentations.

HISTORY

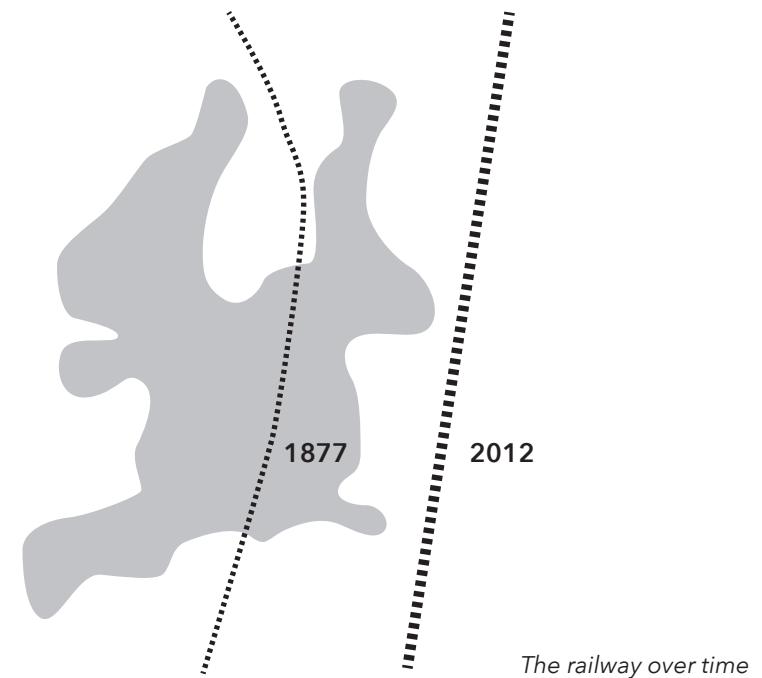
Upphärad is a rural town located near Trollhättan in Västra Götaland region. The oldest mentions of Upphärad dates to the year 1486, meaning Upphärad in some form has existed for over 500 years. The part of Upphärad's history that is most relevant for this thesis starts in 1877, when the railroad and a train station had been built in Upphärad. At that time, Upphärad went from a rural farming village to a "stationssamhälle", meaning a society centered around a train station (Trollhättans Stad, 2017).

Around 1880 Upphärad was almost completely self-sufficient in all areas. At the time there was a total of twelve different businesses in Upphärad with functions ranging from a bank, café, hairdresser, car and bike repair shop, tailor shop, and funeral home to postal office. Upphärad thrived around the train stop during the first half of the 1900's (Trollhättans Stad, 2017).

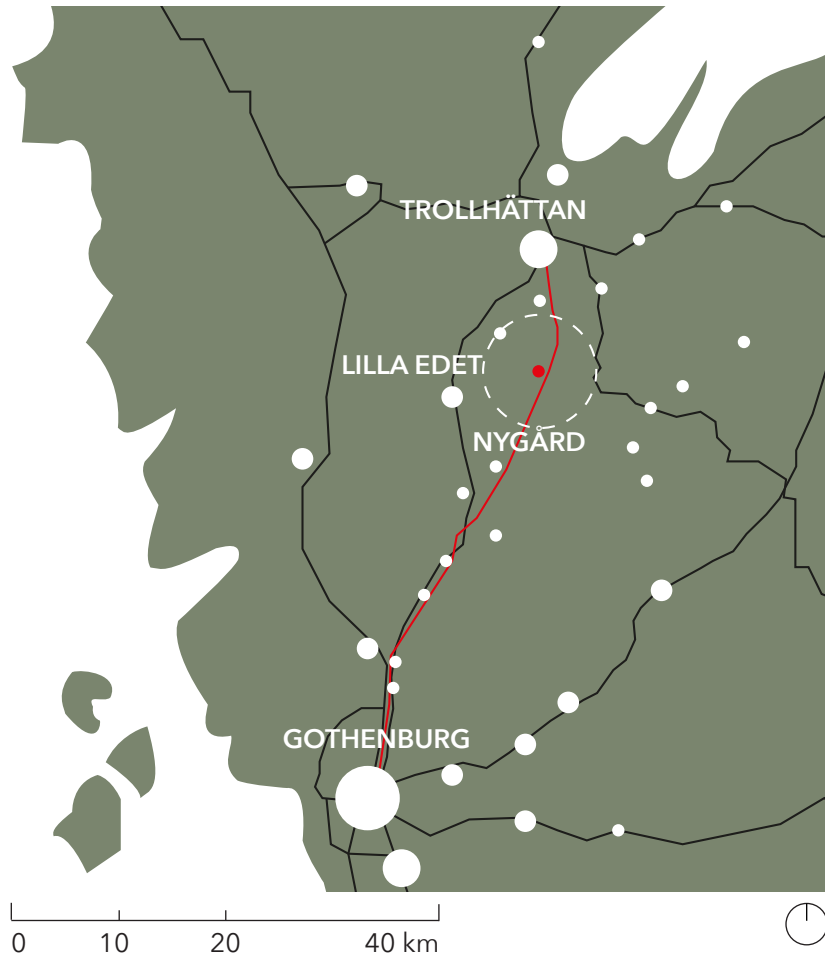
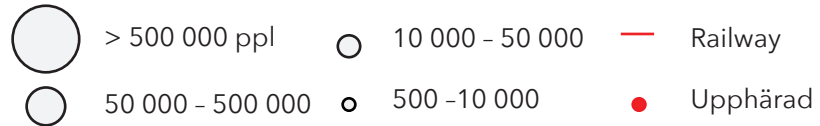
The increased usage of cars for personal travel during the second half of the 20th century led to a decrease in commuting by train. This in turn led to the station in Upphärad being shut down in 1970. In 2012 new train tracks east of Upphärad were inaugurated. These new tracks were double tracks that would allow for more train traffic to pass. The old train tracks going through Upphärad were eventually removed, along with the old station building in Upphärad (Trollhättans Stad, 2017).

TODAY

Recently there have been investigations conducted into adding train stops in different locations in Västra Götaland region. Upphärad is one of those locations and Trollhättan municipality is very interested in the prospect. However, the region has currently decided to not invest in a train stop in Upphärad due to financial reasons (Västra Götalandsregionen, 2018). This thesis identifies green travel as an important aspect of reducing GHG emissions, and thus includes the train stop in Upphärad as if it was approved by the region and was planned to be built soon.



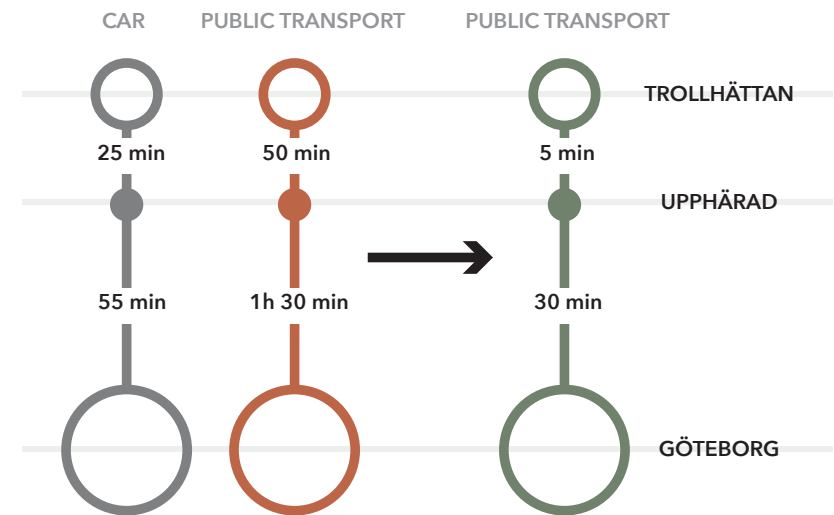
REGIONAL CONTEXT



COMMUTING

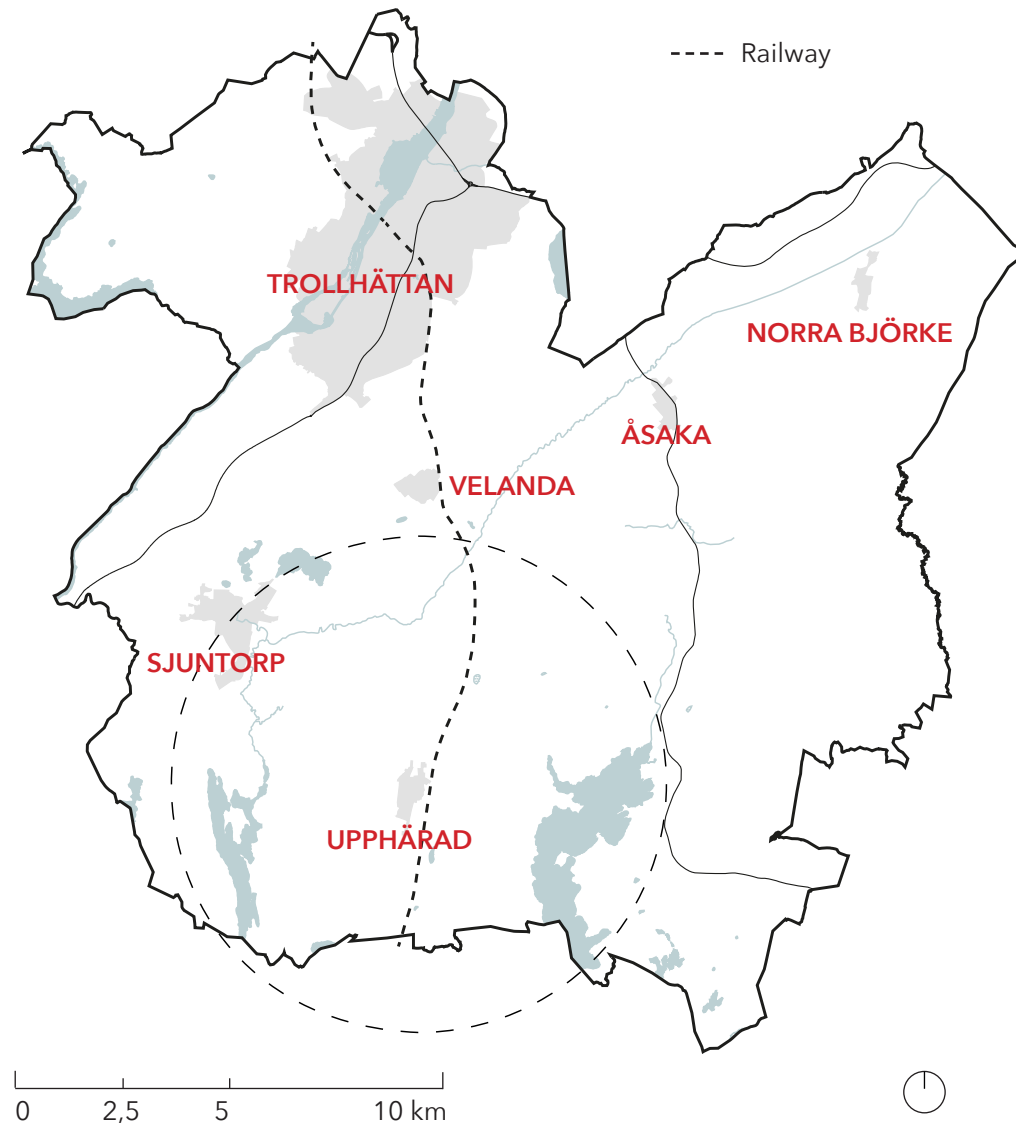
The regional surroundings to Upphärad are presented in this map. Upphärad is the red dot, and the dashed circle around it is the estimated catchment area of the new train stop. From the circle's outline it takes approximately 10 minutes to travel to Upphärad by car, and 30 minutes by bike. Upphärad is connected via the railway to Trollhättan in the north and Gothenburg in the south.

The commuting times from Upphärad today are long via public transport as the diagram below shows. Traveling by car is clearly superior to public transport. With the train stop, however, the commuting time to Trollhättan and Gothenburg are significantly reduced and becomes a better option than traveling by car.



Commuting times

MUNICIPAL CONTEXT



MUNICIPAL SURROUNDINGS

Upphärad is located in Trollhättan municipality. In the municipal context map on this page the catchment area of the new train stop is marked again. The only other rural town it reaches is Sjuntorp to the west. There are approximately 600 inhabitants in the rural town of Upphärad, and within the entire catchment area there are 3 700 inhabitants in total (Trollhättans Stad, 2017).

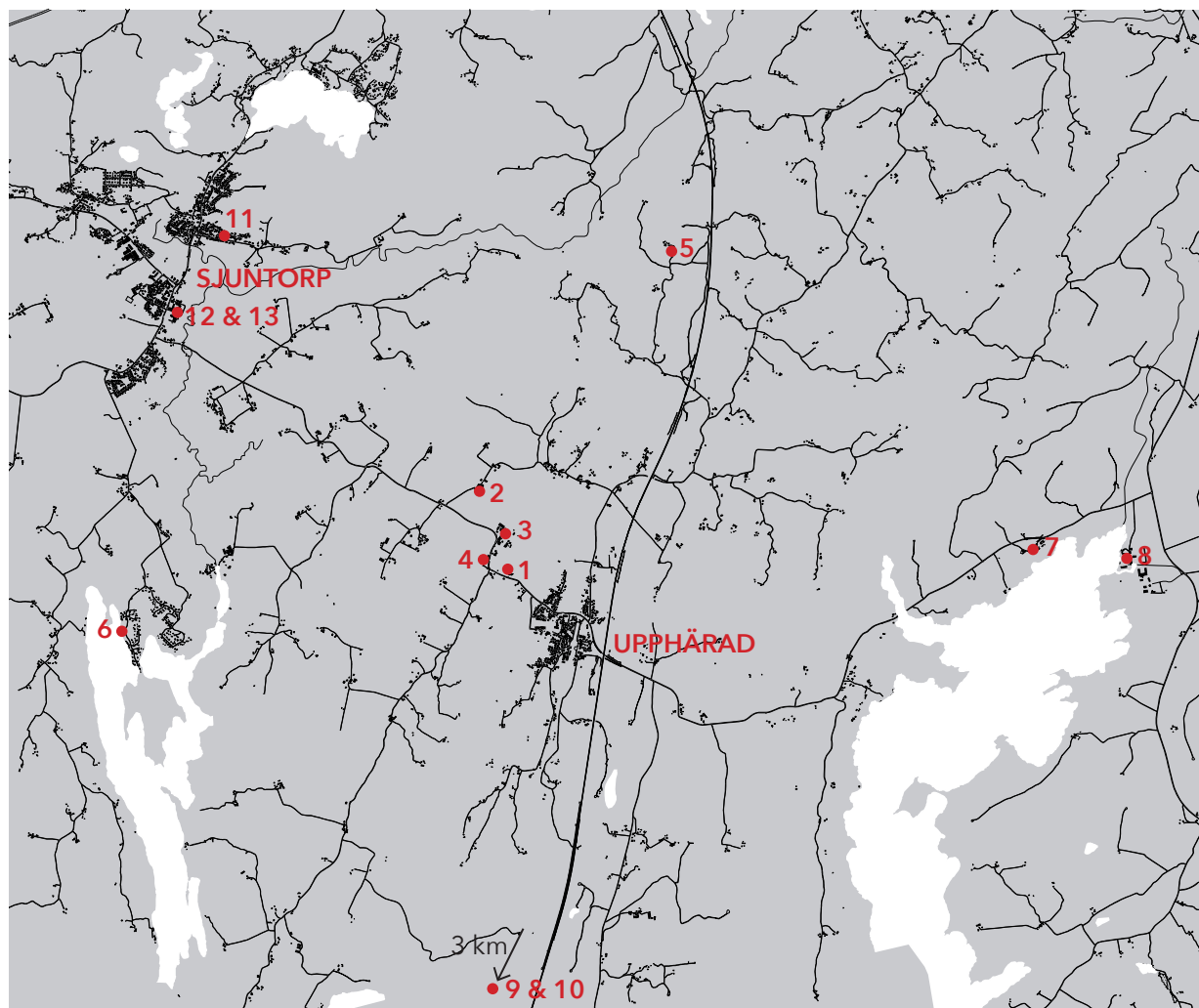
Apart from Sjuntorp and Upphärad, there are a few other rural towns in Trollhättan municipality, as the map displays, as well as the main town Trollhättan. There are also a lot of smaller settlements scattered throughout the countryside as is visible in the map on the next page.

The rural towns provide some services locally and they also provide some services that benefit the other rural towns. For example, children in Upphärad attend school (year 7-9) in Sjuntorp. Many functions and services in the municipality are centralized in the town of Trollhättan. Those functions can benefit the surrounding rural towns. However, those effects can only be noticed to a certain distance away. As Upphärad is the rural town furthest from Trollhättan in the municipality, it is in the biggest need of being strengthened as its own unit.

MUNICIPAL GOVERNANCE

Trollhättan municipality is the primary governing force that affects Upphärad. The municipal boarder itself is not something noticeable in the landscape, but administratively it is an important boarder that in turn can have a noticeable impact physically or functionally in and around Upphärad.

INVENTORY OF SURROUNDINGS



The locations below are important attraction points or services outside of Upphärad.

1. Upphärad's church
2. Ödeby Naturbeteskött (Natural pasture meat)
3. Nyckleby Gårdsmejeri (Dairy farm)
4. Höljebacka Brandmuseum & Café (Fire department museum)
5. Äspenäs farm
6. Gravlångens bathing site
7. Koberg Golfclub
8. Koberg castle
9. Prässebo bating site
10. Prässebo trä
11. Nordängens äldreboende (Elderly home)
12. Sjuntorp school
13. Sjuntorp sports & swimming hall

UPPHÄRAD OVERVIEW

In the map on this page, Upphärad as it is today is showcased and an inventory of important sites and functions is listed below:

1. Current school plot with the new school building that is in the process of replacing the old one. The new school building will have capacity for 150 pupils in grade f-6, compared to the old one with space for 84 pupils.
2. The center of Upphärad with a grocery store, boule court and a pizza place. There is also a parking lot belonging to the grocery store.
3. The "bygdegård" in Upphärad is called Lindåsgården. A bygdegård is a space for community gatherings, common in rural areas and rural towns like Upphärad.
4. The preschool in Upphärad is called Lindåsens förskola and was recently rebuilt to accommodate more children.
5. There are trails with electric lights in the forest west of Upphärad that can be used for recreation.
6. This is the location of the old train station. The train tracks and the station building are removed, but the railway embankment is still there and divides Upphärad in two parts. The dashed line marks the path of the old railway tracks.
7. This is the place where the municipality has suggested the train stop to be placed (Trollhättans Stad, 2017).
8. The workshop buildings in the south of Upphärad are located close to the old railway's path. Today those buildings house a gym and a car repair shop.



CLOSE-UP OF UPPHÄRAD



GROCERY STORE

In this image the local grocery store is visible from the side. To the right in the image the main road going through Upphärad is also visible.



HOUSING AREA

This image exemplifies the character of the built environment, that mainly consists of villas. The buildings are one to two stories high.



OPEN FIELD

In this image the field that divides the northern parts of Upphärad in two is visible. It is municipally owned and not used for farming.

ANALYSIS

The school, preschool, “bygdegård”, and grocery store visible in the map in the previous page are relatively spatially gathered. However, they currently do not form any clear and cohesive spatial context. Today there is no clear neutral meeting place in Upphärad. The grocery store is the closest thing, where you might spontaneously meet others in the community while going to get groceries. There is however no space to sit down and chat at all, and the current option is to stand by your car and chat a while.

The grocery store entrance is facing away from the main road, and towards the parking lot. The speed on that road as it goes through the center is 30 km/h. When the train stop is introduced, the municipality expects there to be 1100 new inhabitants (Trollhättans Stad, 2017). When accommodating for these new inhabitants, there is a possibility to extend the current center across the main road and turn that into a cohesive spatial context that connects the north and south half of Upphärad.

The character of the built structure in Upphärad is homogenous. There is a need for more diverse types of housing, as well as more housing when the train stop is implemented. The biggest area with potential for densification that can meet the estimated number of new inhabitants is the big open field in the northern part of Upphärad. Building on this field would also connect the northwest and northeast parts of Upphärad to one cohesive unit.

The public transport currently stops by the grocery store, but it is not a good option to traveling by car, as it does not go very often and, for example, takes twice as long to reach Trollhättan as the diagram on the regional context page shows. The car dependency is benefited, as many important functions for society have been centralized to larger towns. Further, it is also benefited by the physical environments, as society has been planned for car usage to be dominant for many years.

LOCAL VOICES

One of the methods of the thesis was to have dialogues and workshops with different people and groups. The input from all those communications is summarized in the appendix. Below, we list some important aspects of Upphäråd that were mentioned in the workshop with the local association Backstugans Vänner:

- There are a few local businesses in Upphäråd. However, there is a lack of spaces for those businesses.
- The workshop participants thought there is a need for more local businesses in Upphäråd, and highlighted some existing appreciated ones.
- There is no place for elderly to go in Upphäråd when they no longer can live in their own house. The closest elderly home is in Sjuntorp, but there are not a lot of places there.
- There is not a variety of housing types in Upphäråd. Smaller housing units are lacking, making the population rather homogenous.
- Over the last couple of years, there have been many families with children moving into Upphäråd.
- Through recent bottom-up initiatives from the locals, it has been decided to make a new school in Upphäråd to replace the old one. The new school will have an increased capacity.
- The local food store Tempo is very important to the community, as it is the only local grocery store.
- Historically, the railway is what has given the town liveliness.
- Currently, there is no neutral meeting place for the local inhabitants in Upphäråd. A neutral meeting place is a place where you can go without having to be part of an association or club, or having to pay money to be there, such as in a café. It is open to anyone and can be either inside or outside, although outside is more common.

LOCAL GHG EMISSIONS

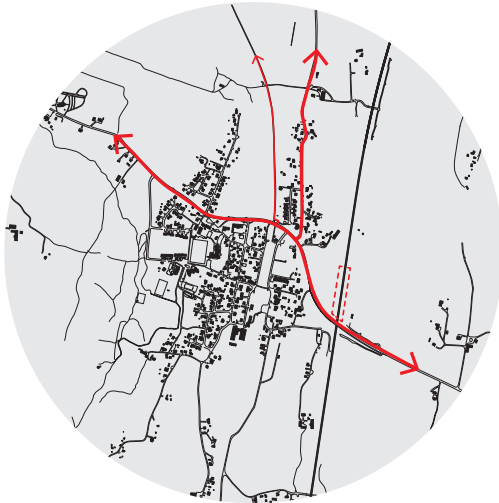
GEOGRAPHICAL EMISSIONS

Regarding GHG emissions, Trollhättan municipality has mapped the emissions in the municipality and made a CO₂ budget based on national and regional guiding values. These calculations are geographically limited to the borders of Trollhättan municipality. Within this geographical delimitation, approximately 80 percent of the emissions come from transports, making that category the largest by far. Around 70 percent of all the transport emissions in turn come from personal vehicles, meaning cars used by private individuals (Trollhättans Stad, 2020). That means that encouraging greener travel modes for the inhabitants of Trollhättan municipality potentially can have a very large impact on the municipality's total geographical emissions.

CONSUMPTION BASED EMISSIONS

The activities and inhabitants in Trollhättan municipality are also responsible for emissions outside of that geographical delimitation. Production and import of food or other goods from outside of the municipality or Sweden that are purchased by the inhabitants in Trollhättan are also part of their emission footprint. Such consumption based emissions are a lot harder to measure than geographically limited ones. However, there are national estimations that puts the consumption based emission at over half of the average Swede's total emissions. Thus, this emission category is also very important to chip away at. Private consumption needs to reduce, and more food and goods needs to be produced locally to reduce import emissions. Such a change of the emissions would redistribute them to increase the geographically delimited emissions to some extent as the production is localized. However, the total amount of emissions would be reduced.

SITE ANALYSIS



CONNECTIONS

This map shows the important roads in and out of Upphäräd by car and bicycle. The thin line is a bicycle path, where the old railway tracks were before. The new train stop is marked to the east and implementing it will affect the preconditions for transport in Upphäräd. It will likely increase the flow of traffic on the main road as commuters might come from Sjuntorp to the west.

- Car road
- Bike path - - - Train stop



WATER

This map shows the areas in Upphäräd that are prone to flooding during heavy rains. It is based on a 100-year rain prediction. The blue areas are prone to flooding during heavy rains, which will become more frequent with climate change. It is not suitable to build in the blue areas. Having a green buffer in these areas can help mitigate the effects of floods.

- Flood risk areas



GREENERY

This map shows green structures in Upphäräd today and what type they are. There is a lot of private greenery in the gardens belonging to the villas in Upphäräd. There is a larger forest area to the west with paths for recreation. There are also a lot of open fields surrounding Upphäräd, some of which are used for farming. Most of the greenery is not public and accessible for the inhabitants to use.

- Field or farming ■ Forest
- Nature protection area ■ Gardens

ACTORS

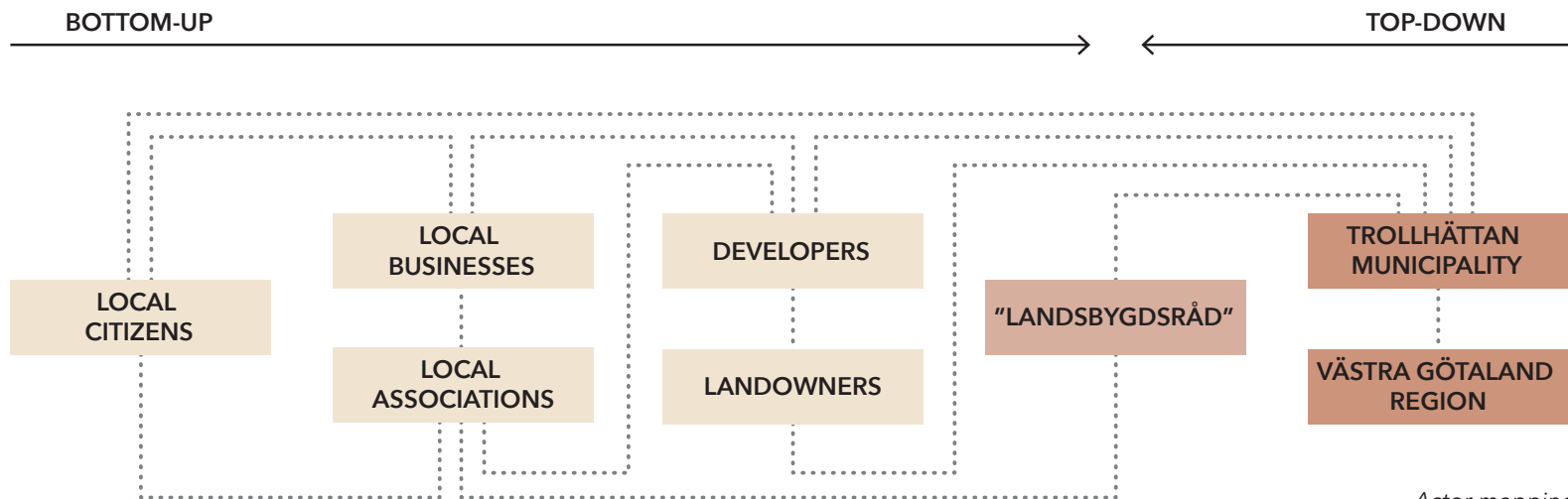
There are many different actors and stakeholders that can affect and be part of a development in Upphärad. The diagram below shows those stakeholders and maps their relation to each other. It also shows what actors belong to a top-down, or bottom-up way of developing.

Starting from the right, the region is a governing force that needs to collaborate with the municipality, as the municipality is the actor with direct power over things related to the local development.

The municipality in turn is connected to four other stakeholders. The first is "Landsbygdsrådet" which is a project recently started by the municipality where representatives from local associations in the rural towns in Trollhättan municipality converge in a group that is responsible for representing their rural towns in dialogues with the municipality. The

purpose of the "Landsbygdsråd" is to strengthen the connection between locals and the municipal decision processes, being the link between top-down and bottom-up processes. Next, the municipality governs and has dialogues with the local citizens, making that connection an important relationship. The two other connections are to developers and landowners. There are independent developers and landowners that can be relevant, but the municipality itself has some developers belonging to the municipal organization, tasked with meeting the municipal responsibilities, as well as being the landowner of large parts of the land in Upphärad.

Lastly, the bottom-up actors in the diagram collaborate with each other in different ways. Those actors are the ones with the biggest interest in the development of Upphärad, which is their place that they feel ownership of. It is important to enable bottom-up initiatives to affect the development.



Actor mapping

SWOT

To understand the local preconditions in relation to the theoretical parts and the scope of the thesis, a SWOT analysis has been created. A SWOT

analysis is a document that lists the Strengths, Weaknesses, Possibilities and Threats in relation to, for example, a physical site.

STRENGTHS

- Close to nature and rurality
- Recreational forest area
- Arable land, farming and forestry
- Childcare and school
- Sense of community
- Local grocery store
- Walking distance within the village
- Room for active associations to thrive
- Close to Trollhättan and Gothenburg

WEAKNESSES

- Long commuting times
- Car dependency
- Few options for senior housing
- Inarticulate character
- Few local job opportunities
- Homogenous housing stock
- No neutral meeting places
- Lack of spaces for local businesses

POSSIBILITIES

- Train stop
- Room for more people to move here
- Locally produced food
- Connections to Sjuntorp and Velanda for pedestrians and cyclists
- Areas available for densification within the village borders
- Potential for pioneering sustainable development

THREATS

- Depopulation
- Local associations disappear
- Buildings decay
- Worse communications for pedestrians, cyclists and public transport
- Increasing car dependency
- Decreased local public and social service
- Becoming a sleeping community
- Climate change
- Continued centralization

This SWOT is based on a SWOT compiled by Trollhättan municipality (Trollhättan Stad, 2017). Then, that material has been adapted according to the findings in the thesis process. Items have been removed and added to represent the thesis's understanding of Upphärad. It has mainly been influenced by the dialogues and workshops but has also been adapted to fit the scope of the thesis as it is defined through the purpose and theory.

The strengths and possibilities listed indicate that there is great potential in Upphärad to move towards values that align with a future beyond sustainability and unlimited growth. The consequences of the current paradigm, however, can hinder and threaten the desired development where Upphärad becomes a place of sustainability and prosperity.

SWOT analysis

CONCLUSION AND REFLECTION

The other rural towns in the surrounding area are relatively far away. Within the municipality the closest one is Sjuntorp. Outside the municipality the closest one is Nygård (see regional map).

The landsbygdsråd that is being created has a big potential for being an important communication path between the locals and the municipality. It might be a complimentary tool to participatory processes for bringing forth the local voices to the municipality.

Upphärad has access to a recreational forest area which is not given for rural towns. Often, they are seen as close to nature, but if that nature is accessible or not is not always so straight forward due to land ownership. Thus, this is a bigger strength for the area than it might at first seem.

There is a lot of land around Upphärad that is arable or has potential to be so. Thus, it is important to avoid having the built structures sprawl out too much, as the arable land has qualities that are very valuable.

As the municipality owns the main part of the land in Upphärad that is a potential for a development of the physical environment that to a greater extent can include values that stem from bigger perspectives than simply profitability. Further, the municipality has developers of its own, making it more likely that the municipal visions are carried through.

Many families with children are moving to Upphärad and the school is being rebuilt to accommodate more students than is needed currently. This target group will be important going forward.

The train stop will create new preconditions on the site that motivate a population growth in Upphärad, but it will not be an unlimited growth.

Upphärad was previously almost self-sufficient when it had a train stop. Although the preconditions in society have changed since then, this gives an indication that Upphärad has the potential to be a functioning unit of its own with the new train stop given that other functions that support self-sufficiency needs to be in place as well.

Through the site analysis and the workshops, the local preconditions have become visible. If this thesis was an actual planning process, there would be an extensive participatory process, including more locals. Due to the scope of the thesis, this has not been prioritized, but it is an important find from the theory that such processes are vital when realizing projects in practice.

DESIGN INTENTIONS

This chapter translates the theory, the reference projects and the information gathered through dialogues and workshops into intentions for the design proposal. It is divided into a design brief and some design strategies. The brief responds directly to the previous chapters by stating what Upphärad needs, according to the information gathered. The strategies take it a step further and translates the brief into seven spatial strategies. There is also a spatial concept where the strategies are conceptually described in a map of Upphärad.

DESIGN BRIEF

ARRANGEMENT

From the compiled information in the previous chapters some statements about what Upphärad needs has been developed. The statements are organized in four categories: housing, transport, community functions and greenery. Each category in the table has statements to the left and to the right there are spatial interventions and functions listed that respond to the statements. Further, the table is supplemented with descriptive text on the right half of each page that further details important aspects in each of the four themes. According to the information gathered Upphärad needs:

HOUSING

MORE DIVERSE HOUSING

Villas
Semi-detached houses
Row houses
Apartments
"Attefall" houses
Tiny houses

HOUSING DIRECTED AT ELDERS

Elderly home
"Vänboende": housing for an elderly community

TRANSPORT

MOBILITY ALTERNATIVES TO PRIVATE CARS

Train
Bicycle paths
Carpool with electrical cars
Public transport nodes

HOUSING

In general, there is a need for housing in rural areas. Due to the train stop, there is a bigger demand for housing in Upphärad. Trollhättan municipality has approximated that the train stop will lead to 1100 new inhabitants in Upphärad (Trollhättans Stad, 2017). In this thesis that number is seen as flexible, and is not actively stived for, though it is allowed for in the design proposal. Further, what is needed is diverse options for housing that can cater to different people with different needs. One example of easily transforming the existing built structures to cater to more groups is to densify on existing plots with "Attefall" houses that can be rented out by the family who owns the plot, or for example be lived in by a grandparent or a young adult. Lastly, it is important to note that the gross floor area (GFA) per person needs to be lower than it is today. In this thesis, the number is lowered from around 50 square meters to 40 square meters per person.

TRANSPORT

The main intervention that helps reduce the car dependency is the train stop. However, there needs to be other options as well for shorter travels. For that, the bicycle paths are important to encourage cycling. This also needs to be supplemented with good options for parking bicycles. Also, the local public transport by bus is important to reach other rural towns nearby. That aspect is controlled by the company that supplies the public transport, but spatially room can be given in strategic locations for bus stops. Another option to further reduce the need to own a car is to provide a carpool where electrical vehicles can be shared. That also demands a functioning charging post infrastructure. Lastly, what is important is that these options to the car are well functioning and easily accessible for them to compete with owning and using a car.

COMMUNITY FUNCTIONS

To reach a society that is built upon social relations and human values instead of economical ones, meeting places are important. Neutral meeting places such as a park or a square are especially important as those are open

COMMUNITY FUNCTIONS

NEUTRAL MEETING PLACES	Town square Parks
MORE BUSINESS SPACES	Business spaces in the rural town center for shops and services Flex offices
SPACE TO PROMOTE CIRCULAR RESOURCE FLOWS	Makerspace Sharing space Bike repair shop Expanded grocery store
FLEXIBLE SPACES THAT SUPPORT THE SOCIETAL TRANSFORMATION OVER TIME	Self-building hall Circular center Cultural center

GREENERY AND SELF-SUFFICIENCY

DIVERSE ACCESSIBLE PUBLIC GREENERY	Parks Unprogrammed greenery Meadows Nature playground
INCREASED ABILITY TO BE SELF-SUFFICIENT	Green houses Seasonal gardens Aqua- & hydroponics Perma forest Solar panels

to anyone. That type of space is nonexistent in Upphäräd today and is in general quite rare in rural areas.

Upphäräd also needs more local businesses to have a more self-sufficient community metabolism. From the local context chapter, it became clear that there was a lack of spaces for local businesses. To turn theory into practice regarding resource circularity, physical spaces are needed to house those practices. Those spaces should be available for the community as circularity is closely related to a sharing economy.

To be resilient enough to support the societal transformation over time the public spaces provided need to be flexible and able to change over time. They should be able to host other functions as well as expand in size as needed. The list of functions presented here respond to the needs identified based on how Upphäräd is today in relation to how the theory describes that it needs to be.

GREENERY

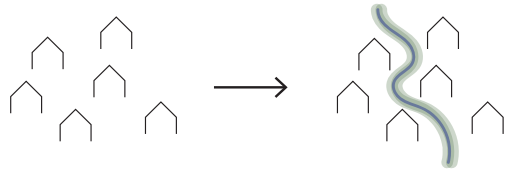
There is a clear need for an increased diversity of greenery, and in Upphäräd that is specifically in relation to the public greenery. The opportunities to farm locally also need to be increased to answer to the need for more self-sufficiency. The green spaces in the intervention list span both recreational spaces and food production spaces. These two functions can overlap, for example by having fruit trees and berry bushes in a public park, but they need to be defined separately. The focus on greenery is important to strengthen the nature-human relationship that is essential to regenerative development beyond sustainability.

It is also important to define what an unprogrammed green space means. This is a space that is not necessarily kept and trimmed by humans, but a space that can be engaged in creatively, or not engaged in at all, by humans. Lastly, solar panels are also mentioned under this theme. Those do not fall under greenery but is an important part of the local self-sufficiency and is therefore included here.

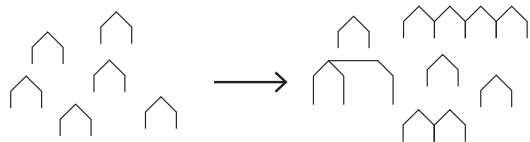
DESIGN STRATEGIES

The design strategies are translating the brief into seven condensed points. It shifts the focus from “Upphärads needs” to “Upphärads will have”, meaning from a problem formulation with suggested solutions to a cohesive plan of action. In this page the strategy points are presented, and on the next page the strategy points are translated spatially into a concept map of Upphärads.

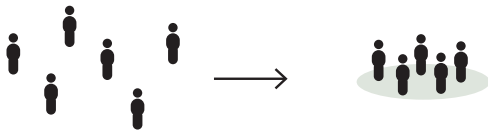
1. INTEGRATE GREEN AND BLUE STRUCTURES INTO UPPHÄRAD



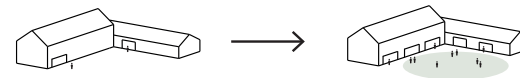
2. DIVERSIFY THE HOUSING TYPES AVAILABLE IN UPPHÄRAD



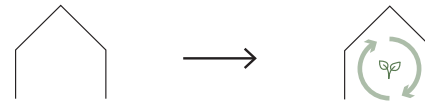
3. CREATE NEUTRAL MEETING PLACES



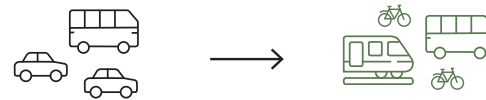
4. STRENGTHEN THE CENTER OF UPPHÄRAD



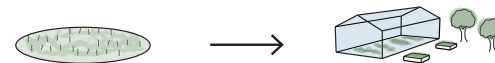
5. MAKE SPACE FOR CIRCULAR AND REGENERATIVE INITIATIVES



6. SUPPORT GREENER TRAVEL MODES



7. IMPLEMENT DIFFERENT TYPES OF LOCAL FOOD PRODUCTION












SPATIAL CONCEPT

A green path has been placed along the areas with the biggest flood risk. This way storm water management is combined with public greenery. This green path benefits both humans and animals as it is a cohesive path for animals to travel. The greenery within the path should be diverse and varied in character. The green path is met by a diagonal social path. The social path connects existing social service buildings in Upphärad with the new part of the rural town center. The public functions created in the center give room for circular and regenerative processes and facilities. A node for farming in the community is also created here.

The densification areas that have been selected are areas with less potential to serve as farming areas or that are important locations to knit together the existing structures to one cohesive unit. Inside these areas, a diversity of housing is placed. The diversification is however also done by proposing densifying with smaller addition buildings on existing residential lots. Lastly, the greener travel modes are mainly spatially supported by the train stop and by the extended bike path going south.

-  Densification area with diversified housing
-  Bike path and train stop
-  Space for circularity and regenerative initiatives
-  Green path through Upphärad
-  Natural blue paths integrated in green areas
-  Town center expanded and strengthened
-  Diagonal social path connecting center activities

DESIGN PROPOSAL

In this chapter the design proposal is showcased. First, an overview of Upphärad is presented in a structural plan. The main visions for the future beyond sustainability, that the design proposal supports, are also outlined in relation to the structure plan. After that, the center of Upphärad and the community functions located there are detailed. Then housing, as well as greenery and self-sufficiency in Upphärad are explained in depth. Then the proposal explains the synergies created and discusses their importance. Lastly, the design is explained over time in different stages of development, describing what functions should come first, what functions are essential and what functions can be flexible.

STRUCTURE OF UPPHÄRAD

INTRODUCTION

In this introduction spread, the rural town scale is displayed. The strategies and the spatial concept have been applied to Upphärad to form the design proposal. In the design proposal, specific solutions and placements are displayed. However, it is the general vision and not the specifics that are important for this thesis. Thus, this proposal is only one of many spatial possibilities to reach the future beyond sustainability.

On the right page is the structure plan of Upphärad. This map shows all the old buildings in gray and all the new buildings in white. It also shows the locations of some functions and zones that are important for the design proposal. At the bottom of this page there is a landscape section that cuts through Upphärad in a north-south direction. The section shows that the landscape is relatively flat and that all the building heights of the new additions conform to the existing ones, with one to two floors.

BUILT STRUCTURES

In the design, the center has been developed and strengthened with a variety of functions. This will be detailed further on, in a zoom-in of the center. Housing of different kinds has been added. There are apartments, row houses, semi-detached houses, villas, “Attefall” houses and tiny houses. The houses also have different forms of lease as well as being either built by a developer or self-built by the private individuals. Further, there have also been additions made within the existing housing areas, such as villa infills or suggestions for “Attefall” house placements on exiting villa plots. Also, the

average number of square meters per person is lower in all the additions in the proposal, compared to today’s standards.

TRANSPORT

Regarding transport, the new train stop is marked. By the train stop there is a public transport stop for buses, plenty of parking for bikes, as well as space for an electric carpool. New streets have been added that connect Upphärad to the train stop. There have also been added pedestrian and bicycle paths along the main road, improving the non-motorized access to the train stop. The new bike path going south is also visible in the structure plan. Further, the ability to walk and bike within Upphärad is maintained through keeping the new streets in the same scale and character as the exiting communications grid.

GREENERY AND SELF-SUFFICIENCY

There are multiple green spaces marked in the structure plan. Within the green areas there is a diversity in what type of greenery it is, such as meadows, public parks or farming areas. This will be detailed later. To be more self-sufficient local farming is very important. A variety of options are provided in the proposal, such as community farming, private or shared farming in relation to housing, and farming in the outskirts of the town that can be owned by the community or a business. Another aspect of the local self-sufficiency is to implement solar energy in all buildings. That as well as using local and renewable materials such as wood for building the new structures are important strategies to reduce the GHG emissions but that are more technical and outside the thesis scope.

Landscape section A-A
1:4000 (A4)





TINY HOUSE AREA

CULTURE CENTER

RECREATIONAL FOREST AREA

PERMA FOREST

LIVESTOCK

MEADOWS

FARMING

SELF-BUILDING HOUSING

TINY HOUSE AREA

"VÄNBOENDE"

COMMUNITY FARMING

PRESCHOOL AND ELDERLY HOME

CIRCULAR CENTER

SPACE FOR LOCAL BUSINESSES

PUBLIC PARK

PUBLIC GREEN PATH

NEW TRAIN STOP

SELF-BUILDING HOUSING

CENTER OF UPPHÄRAD

This thesis has focused especially on the design of the center. It needs to embody the values of a future beyond sustainability, and continuously spatially support the community in Upphäråd in the transition. To reach a society that is built upon social relations and human values instead of economical ones, meeting places are important. In the center there are neutral meeting places, the circular center, a cultural center and more business spaces. There is also a large area dedicated to local farming. The functions are gathered along the diagonal social path that was shown in the spatial concept. The diagonal social path will be discussed more in relation to the synergy mapping later in this chapter.

CIRCULAR CENTER

The circular center houses a makerspace, a reuse space, some more small business spaces, self-building halls, and flex offices on the second floor. All the functions in the circular center support each other. It should provide opportunities for the inhabitants in Upphäråd to rent tools, mend things, trade things, make things, and share knowledge and ideas. Further, it creates possibilities for people to be prosumers.

CULTURE CENTER

The culture center has been exemplified to house a music space with connection to the school and a mediatek. There are also business spaces there that support the opportunities for Upphäråd to be more self-sufficient.

EXTENDED GROCERY STORE

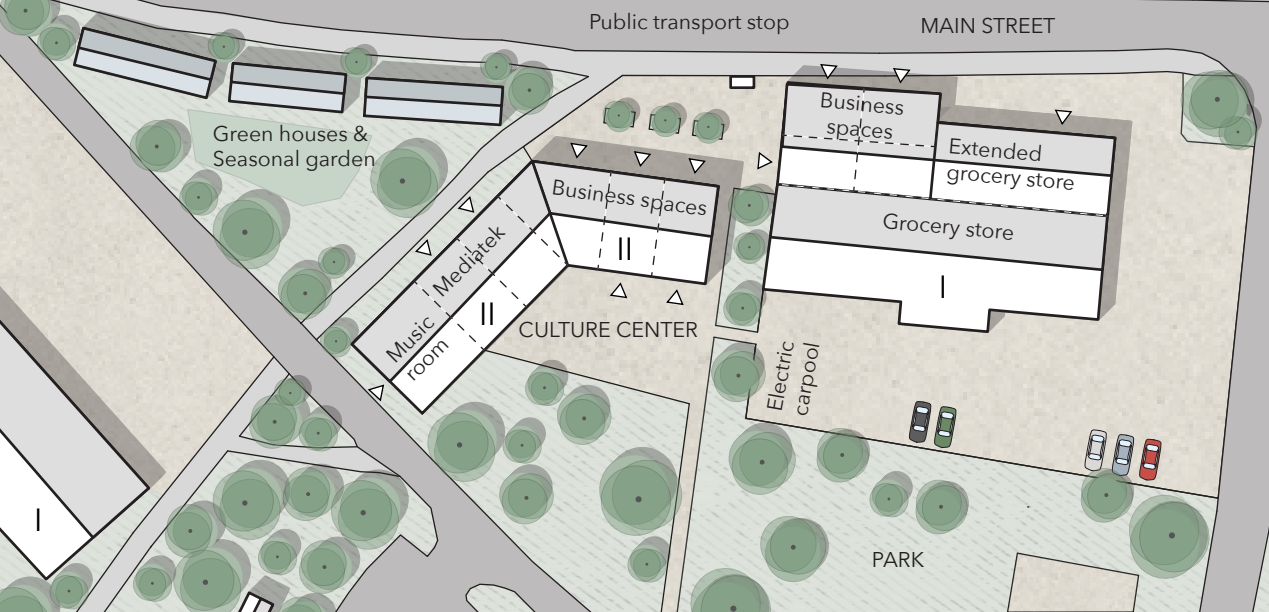
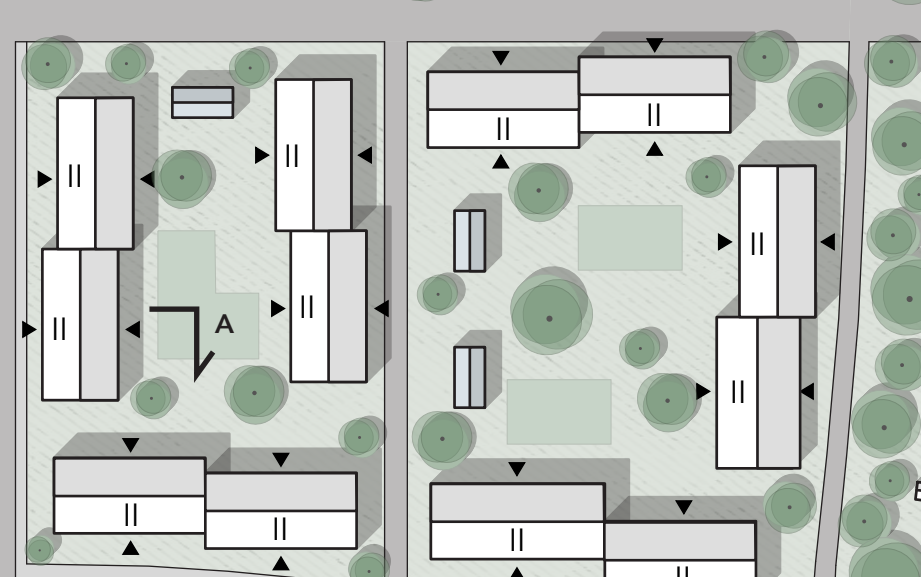
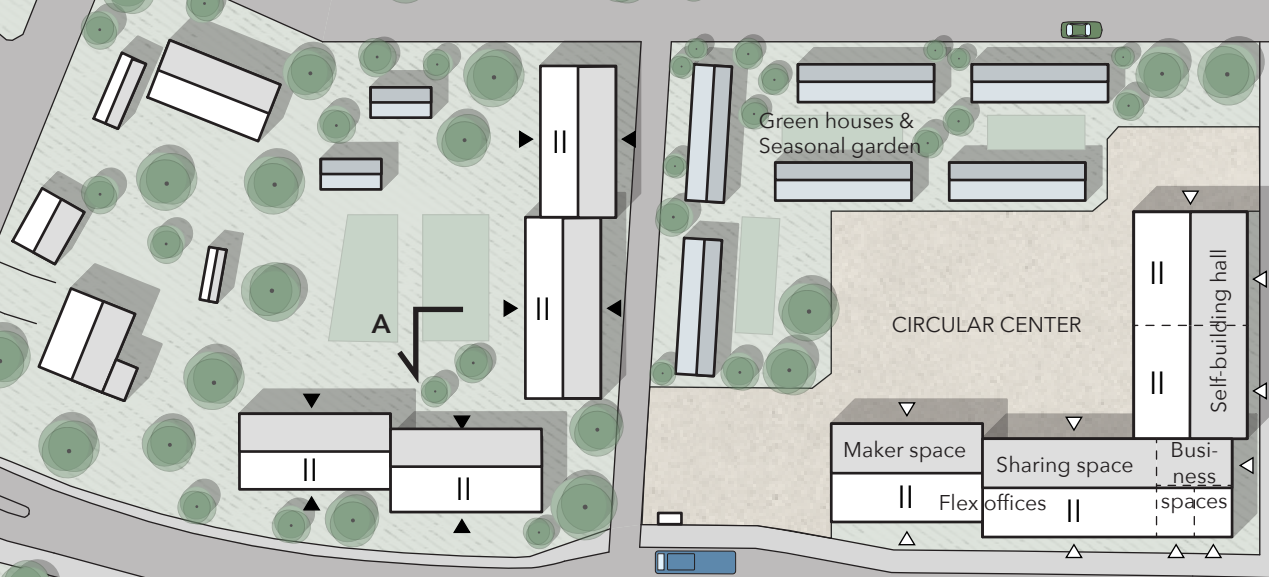
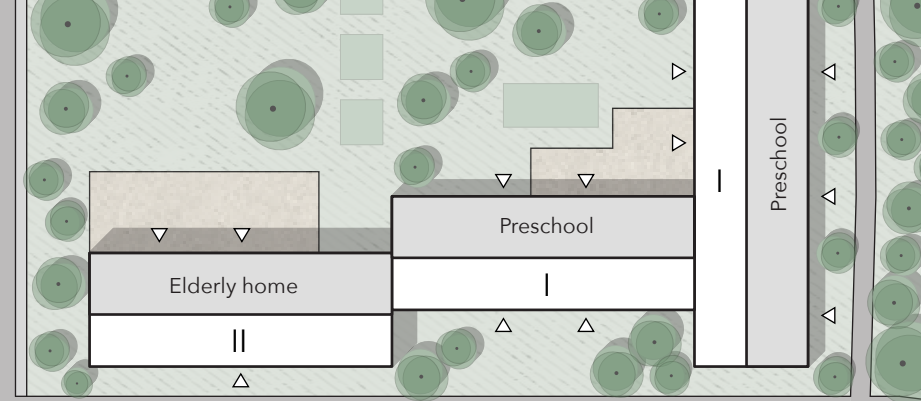
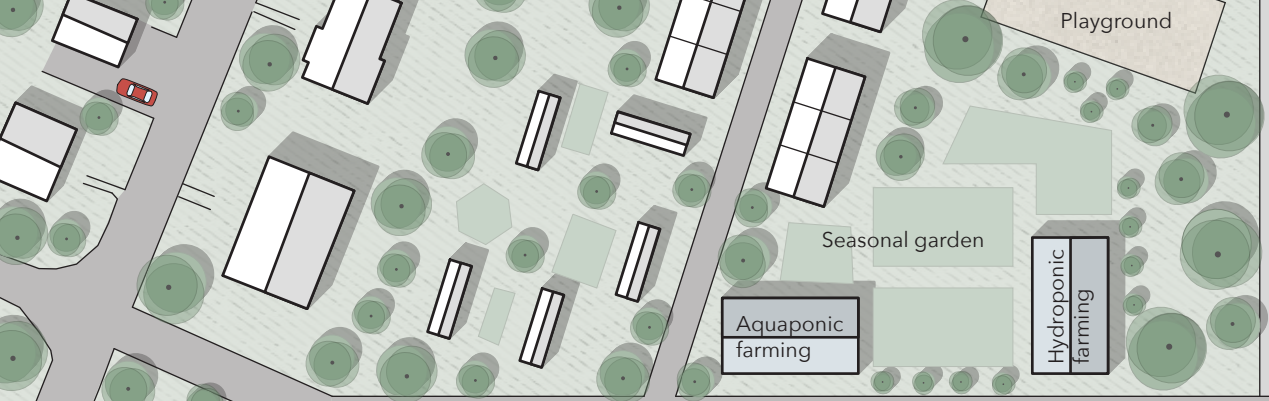
The grocery store has been extended to cater to a larger population in Upphäråd. There are also business spaces in the extension. Some business types that are relevant are a bike repair shop and functions such as a hairdresser. These are important for the local self-sufficiency but what seems relevant today might be completely different in the future.

PLACEMENT

All these exemplified functions are placed centrally and showcased along the main road through Upphäråd. That way, the chances of it creating rings on the water increases. It is important to make them visible for people to appreciate and use them, as well as increase the opportunities for them to support each other. The functions should be accessible to all the inhabitants. More importantly, neutral meeting places outside of the center buildings are created to be accessed by the community.



Section A-A
1:500 (A4)



MAIN STREET

HOUSING

VILLAS, TINY HOUSES AND “ATTEFALL” HOUSES

There are many different types of housing in the design proposal to meet diverse needs of the inhabitants in different stages of their life and with different socio-economic preconditions. Below, five main typologies that are added in the proposal are displayed. The first two are adding either an “Attefall” house or a tiny house to an existing villa plot. In the structure plan some examples have been placed in locations where there seemed to be space for it. However, these housing solutions need to be initiated by the individual villa owners, as the addition is made on their plot of land. Anyone with the space and financial opportunity in Upphäräd can add a smaller housing option onto their lot and rent it out or rent out some land for a tiny house owner. Another option regarding tiny houses is to have permanent or temporary plots that the municipality rent out to tiny house owners. In the design proposal two such areas have been exemplified.

SEMI-DETACHED HOUSES AND ROW HOUSES

The next two images show semi-detached houses and row houses. These are smaller than the average villa and have a smaller private yard but are otherwise very similar to living in a villa in Upphäräd. Surrounding these

added housing typologies there are possibilities for having shared outdoor spaces where different activities like collaborative farming can take place.

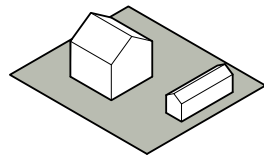
One of the row house areas has been assigned as a “Vänboende” where elderly can come together in a cooperative to make housing that suits their needs and situation. Apart from the “Vänboende”, an elderly home is also added to Upphäräd. Further, there are two areas in the structure plan exemplifying that there should be the alternative to self-build.

APARTMENTS

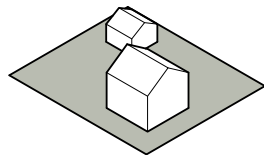
The apartments do not have any private yards for the residents. They have a shared green space where farming can take place, for example in green houses as the image illustrates. Here multiple people are sharing and collaborating around the same farming spaces.

FORMS OF LEASE

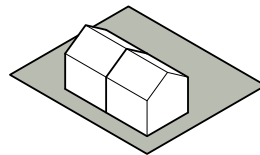
There also needs to be a variety of forms of lease achieve diversifying the housing stock in Upphäräd. Some examples are self-building, renting, owning and condominium associations. These can all be provided by either private or public actors such as the municipality.



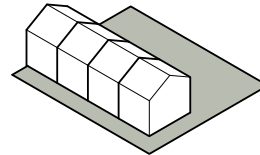
VILLA WITH TINY HOUSE



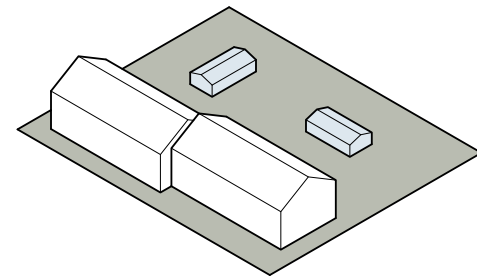
VILLA WITH ATTEFALL



SEMI-DETACHED HOUSES



ROW HOUSES



APARTMENTS AND GREEN HOUSES

GREENERY AND SELF-SUFFICIENCY

PUBLIC AND PRIVATE GREENERY

In Upphäräd today there is plenty of private green space as all houses have a yard belonging to them. Apart from the recreational forest area there is, however, very limited access to public green spaces. A public green space such as a park constitutes a neutral meeting place where anyone in the community can go, without needing to be part of any organization or needing to pay to use the space. This is an important function as it enables spontaneous social meetings, serves as a democratic community space, and provides a space to make inhabitants feel included as a part of the community. By the grocery store there is a park in the proposal that serves as the main green neutral meeting place. Apart from this, several smaller green spaces are formed along the green path going north-south in Upphäräd. These spaces are varied in character, some are more organized, and some are wilder and more natural in character.

HUMANS AND NATURE

The green areas do not only serve the humans but animals as well. By making a connected green path, different species can travel freely between habitats in the area. To truly strengthen the human-nature relationship through spatial planning it is important to consider how the spaces can serve animals as well as humans, increasing the likelihood of them sharing the space harmoniously. Working with greenery in such a way is regenerative design. Another aspect of the green path that is regenerative is how it also functions as a buffer during heavy rains. Further, including blue structures is also beneficial for several species as it constitutes good preconditions for the types of habitats needed.

FARMING

By introducing more farming in Upphäräd the local self-sufficiency increases. Beyond that, the production-consumption relationship is also

made visible locally. That strengthens the awareness of how humans and what we need are dependent on nature, and that we can interact with nature as a part of it. Making the community's connection to nature stronger can also serve as a way of providing a sense of purpose and belonging, not only within the community but in relation to the bigger picture as well. Further, being in natural environments is a strong booster for human wellbeing.

The local farming can be conducted either privately or shared in different ways. All inhabitants with their own yard can farm in a small scale on their own plot. Many of the row house areas in the proposal also have some land outside of their own plots where some shared farming can take place, maybe in a slightly larger scale. The apartment blocks also have shared farming opportunities, illustrated in the plans by placing some green houses in their courtyards. Sharing in such a way is different from completely public sharing, as not everyone is welcome. Only the ones entitled to using that land can take part of the sharing, making those farming areas a so-called club good. In addition to farming related to housing there is also shared farming placed in the center of Upphäräd. This might be completely public and run by the community as a whole, run by an association, or by a local business.



Humans engaging in nature

GREENERY AND STAKEHOLDERS

The green spaces overall have different stakeholders responsible for them, ranging from private individuals, to community initiatives, to the municipality. It is possible for these stakeholders to overlap in responsibility as well, but the most important thing regarding stakeholders is that there needs to be a dialogue between the different levels so that, for example, the municipality owned green spaces are catered to the needs of the locals.

SYNERGIES

To create synergies between different functions is regenerative as it creates added values through interaction between functions as well as giving different functions in the community the opportunity to serve more than one purpose. The axonometric view on the next page shows a mapping of synergy effects in the design proposal for Upphäräd. In the image public social spaces and public green spaces are marked separately. The public green spaces can hold social functions but also serves in other ways as mentioned on the previous page. The club spaces, meaning the shared spaces reserved for specific residents are not differentiated between social and green as the two are meant to completely overlap. However, it is important to note that the green network is larger and more intricate than the image shows, as the completely private and smaller in-between greenery in Upphäräd has not been included in the mapping.

SYNERGIES IN UPPHÄRAD

The diagonal social path visible in the mapping that stretches from the existing preschool, “bygdegård” and school, to the culture center, extended grocery store, main street, circular center, town square, new farming areas and the combined elderly home and preschool. Through visual and spatial connections these different functions are connected. Those connections are the basis for further functional connections and collaborations, such as how the school and the culture center can benefit from each other, or how the grocery store can sell produce from the community farming areas and make the interest in farming grow. Further examples could involve different local businesses that take up shop in the new business spaces, depending on the type of business.

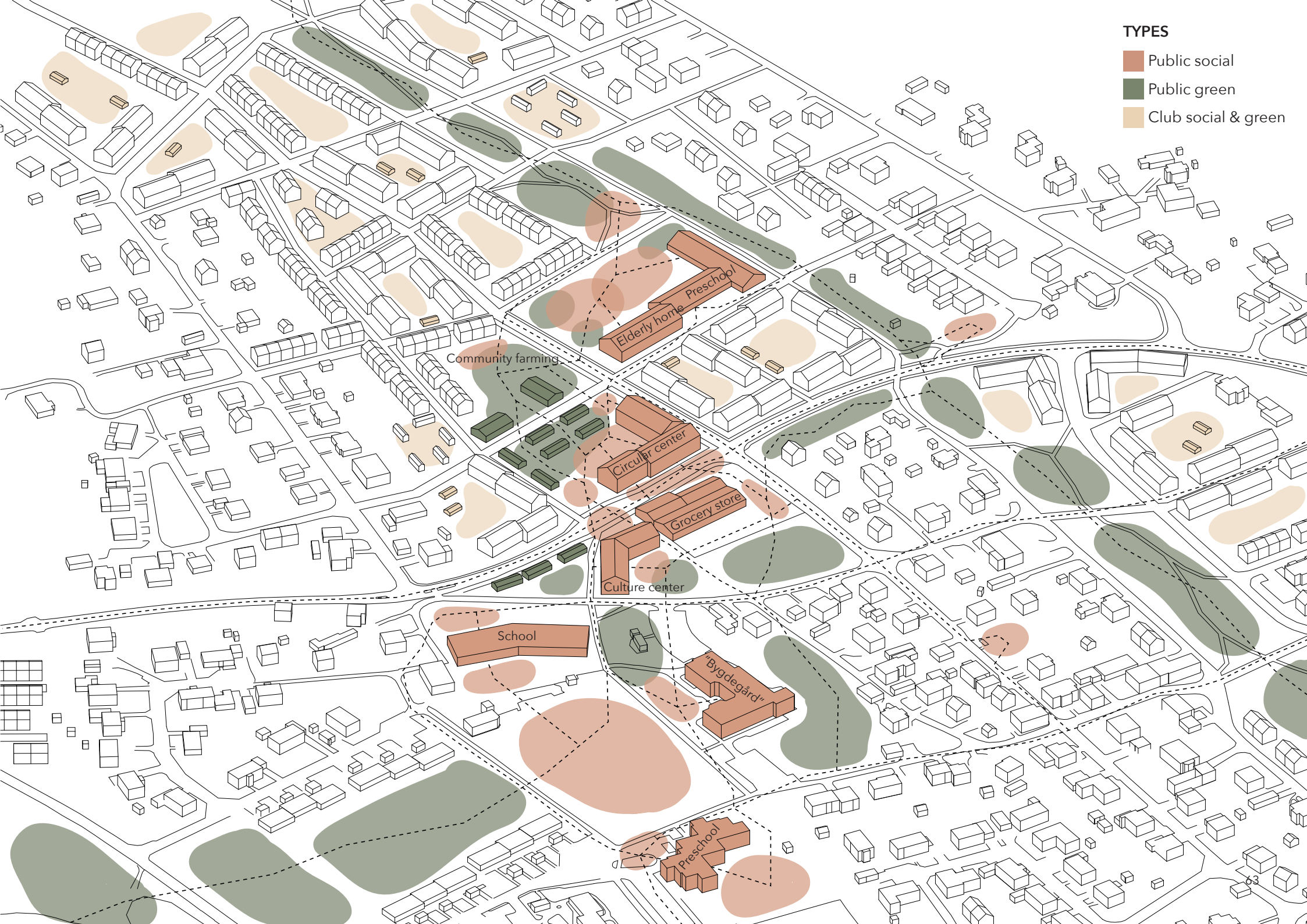
Another synergy effect is created with the elderly home and preschool in the design proposal. The spatial closeness enables intergenerational exchanges that benefit both the children and the elderly. Further, the synergy effect is sprung from having the social sphere and the green path meet in the yard

space for the two functions. Also, the yard is intended to contain some farming, making that an organized activity that the elderly and the children can share, as the image on this page illustrates.



Intergenerational exchange

Further, the green path through Upphäräd is in itself a creator of synergies as greenery and nature is allowed to take up space here. The green path has a natural and wild character, but smaller programmed spaces are integrated along it such as pocket parks and natural playgrounds. Thus, the diverse greenery also creates synergy effects within the green path itself. Also, the storm water buffer function integrated into the green path creates synergies, both for animals and humans. Social-ecological synergies and interconnections are important as they create the basis for moving into the safe and just space in the Doughnut model which is needed to reach a regenerative future beyond sustainability.



TYPES

- Public social
- Public green
- Club social & green

Community farming

Elderly home

Preschool

Circular center

Grocery store

Culture center

School

"Bygdgård"

Preschool

STAGES OF DEVELOPMENT

The synergy mapping on the previous page helps with understanding what parts should be developed first, in relation to regenerative development. The stages of development mapping is divided into buildings and green areas. The darkest colors need to happen first to support further development that can be more flexible over time.

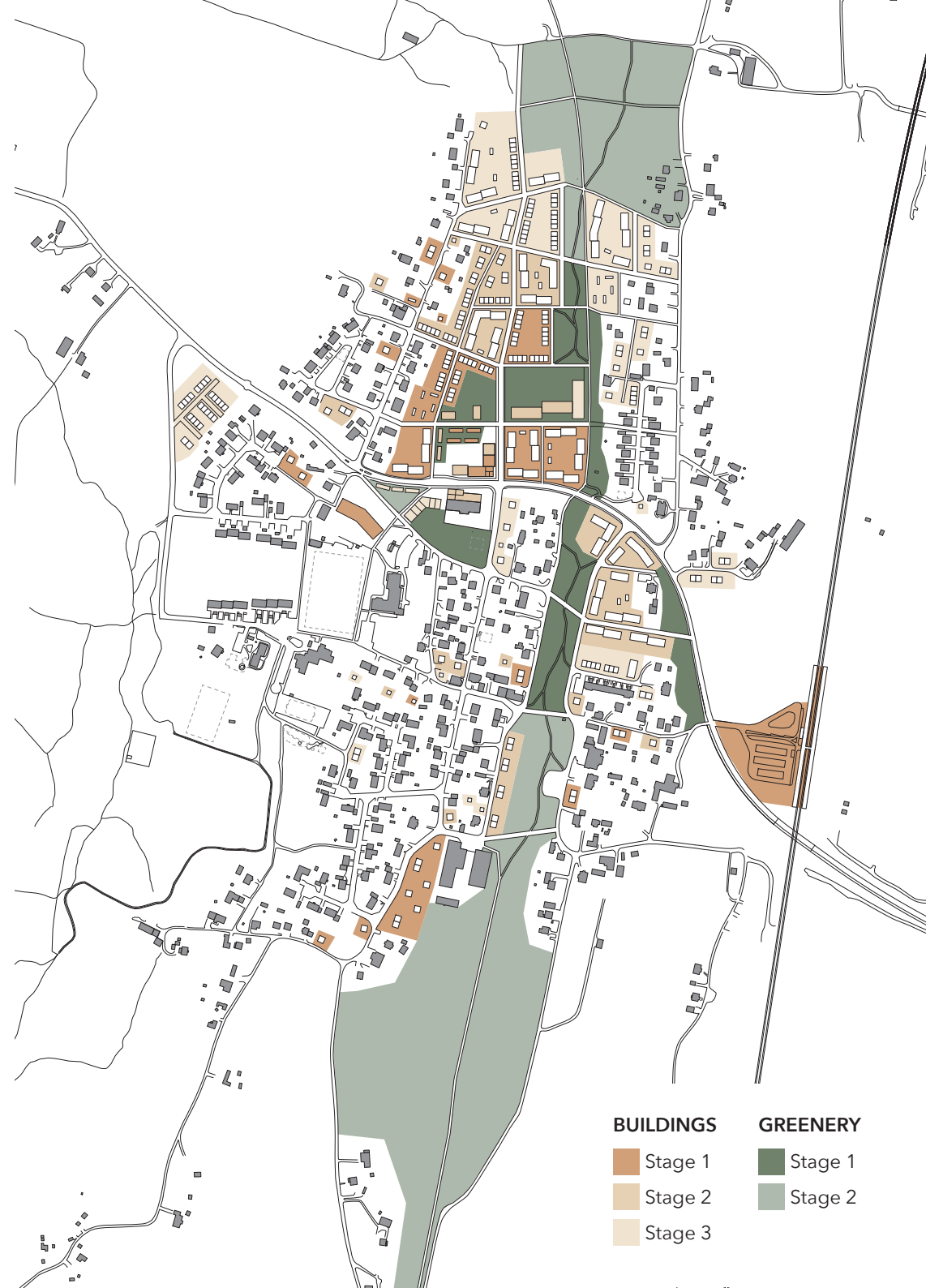
BUILDINGS

The buildings and houses in the north part of the center need to be developed first. Then the development spreads out gradually from there. The train stop is also something that should happen early in the transformation process. Within the center all the buildings are added gradually, for example, the circular center is divided into units that can be added as the needs of the community change and expand.

The design has been created with a total population increase of 1 100 people in mind. This number is based on estimations from Trollhättan municipality. It is however important to keep in mind that such an estimation that intends to express the future of Upphärad should be considered flexible. The design should be able to perform with both more and fewer people than estimated.

GREENERY

Greenery unlike buildings take many years to grow. Thus, the green areas in the first stage are in general near building areas in both stage one and two. Further, the green areas in stage two are dedicated to functions that seem more relevant a way down the societal transition journey, such as a permaforest for the local community.



CONTEXTUALIZING

The purpose of this chapter is to contextualize the scope of the design proposal. This thesis aims to exemplify how a societal shift can happen by testing strategies in a local context, but also recognizes that change needs to happen on other levels than the local to reach that goal. Different strategies necessary for a societal shift have been mapped over four different stakeholder levels in this chapter, creating a basis for discussion that reaches beyond the local context of Upphärad. This discussion further takes its starting point in the top-down or bottom-up aspect of creating change.

STRATEGY COMPILATION

The information gathered through the literature, the reference projects and the dialogues with different specialists has been compiled in a spreadsheet, visible on the following spread. It lists an array of strategies relevant for the transformation stated in the research question. The purpose is to create a basis for discussion and dialogue regarding how different stakeholder levels can collaborate. The diagram showcases multiple layers of information to showcase different synergies.

INFORMATION LAYER ONE

The first layer is about strategies mapped to actor levels. The diagram mapping informs which actor levels the different strategies are relevant to, as well as who's responsibility it is to engage in the strategy in question.

The strategies are grouped in different themes in the left most column. The different strategies are then mapped across four actor levels: National and regional, Municipal, Local communities and businesses, and Private individuals. These four levels correspond to the top-down and bottom-up perspective. National, regional and municipal actors and actions are categorized as top-down, and the actor levels of local communities, businesses and private individuals are seen as bottom-up actors.

INFORMATION LAYER TWO

The second information layer colormaps the strategies according to which of the three focus areas from the first research question it targets. Some strategies only correspond to one of the focus areas, while some strategies are relevant for two of them, or for all three.

This information layer makes the synergy effects between the three focus areas visible, as their overlaps are visually represented. Some focus areas have stronger connections to different actor levels. Further, some focus area

combinations have different tendencies when mapped to the actor levels. For example, circular systems on its own (yellow) tends to map toward the top-down levels. Another example is that it is common for the strategies that are relevant to all three focus areas map towards all four actor levels.

INFORMATION LAYER THREE

A third information layer can be seen in the diagram when looking at the different strategy categories in the left column. All categories, whether it is "Lifestyle and goals" or "Infrastructure and mobility", have links to all different actor levels through at least one of the strategies in that category. This indicates that collaborations and dialogues between the different actor levels will be important regardless of what aspect of moving beyond sustainability that is being handled.

EXPLANATORY EXAMPLE ONE

Two examples of how a strategy can play out across different scale levels will be presented here. The first example is the "Promote local food production" strategy under the "Food and farming" category. It refers to different actions and types of actions across the different actor levels as is explained below:

- For private individuals it is about actually taking the time to grow something on your own, whether it is parsley in your kitchen window or potatoes in your backyard.
- For local communities and businesses, it is also about taking initiative to grow something locally. This can be organized in many ways, for example through a condominium association, a local association with an interest in farming, or through a small local business.
- For the municipality it could mean supporting local initiatives like the ones mentioned before, for example by allowing access to municipally owned land.
- Nationally or regionally, it could be about changing laws to make it easier to produce and consume locally, or to shape taxes to make locally produced a better option than imported food. Also, private individuals should strive to buy the locally produced products over imported ones.

Further, this example maps to all three focus areas. It maps to reduce GHG emissions by reducing the emissions through eliminating long transports for food that, if not produced locally, would be imported from somewhere else. It maps to circular systems by localizing resources and strengthening the opportunities to have circular systems in relation to local farming. Lastly, it relates to regenerative design as it strengthens the human-nature relationship by encouraging humans to engage in nature through farming.

EXPLANATORY EXAMPLE TWO

The second example is “Use a CO₂ budget”, under the “CO₂ and energy” category. It relates to the actor levels as follows:

- Nationally or regionally, it is about taking responsibility, trying to meet the 1,5° C limit promoted by IPCC (2022). Clear goals for reduced CO₂ emissions can be set with a CO₂ budget as a base.
- Municipally it is harder as the competence to calculate a CO₂ budget is not necessarily available in the organization. Then, a collaboration with an organization that has the competence to do so could be sought out. For example, Chalmers Industriteknik has a team that has helped municipalities calculate their CO₂ emissions and the expected effects of their intended climate actions.
- For local businesses, associations and for private individuals, it is not realistic to have a set CO₂ budget, but they should actively strive to reduce their emissions according to national goals.

This example only maps to reducing GHG emissions as it is specifically targeted at limiting the emissions.

DIAGRAM REFLECTION

This diagram is complex and difficult to read information from at first glance. It is not meant as a strong visual compilation, but as an organization of thoughts and strategies that emerged throughout the thesis process. It is an attempt at mapping actor levels to strategies for moving beyond sustainability, with the three thesis focuses, according to responsibility and capability.

What is clearly showcased however, is that almost all strategies span over multiple actor levels, making collaborations between the levels very important. The diagram can be seen as a starting point for moving that discussion further, talking about what responsibility the individual actors have and how they can collaborate to reach the goal of moving beyond sustainability. All actor levels are necessary in the transformation.

Further, this diagram should only be seen as a starting point for discussion and not as a long-term plan. All the individual strategies presented seem relevant for the transformation today, but in five or ten years, it might be different. Some strategies might be redundant, and some other strategies might need to be added instead, to reach the goal as the preconditions change.

		TOP-DOWN		BOTTOM-UP	
		National and regional	Municipal	Local communities and businesses	Private individuals
STRATEGIES	ACTOR LEVELS				
BUILT STOCK AND STRUCTURE					
	Value and take care of existing physical structures				
	Promote transformations over demolition of built stock				
	Densify on existing residential plots				
INFRASTRUCTURE AND MOBILITY					
	Promote and use sustainable transports				
	Invest in charging-post infrastructure				
	Promote cycling through making bicycle paths				
GREEN AND BLUE STRUCTURES					
	Strengthen ecosystem services				
	Increase biodiversity				
	Apply a holistic approach to blue and green structures				
RESOURCES					
	Reuse				
	Use renewable materials				
	Use local materials				
	Close material loops				
	Manage resources				
LIFESTYLES AND GOALS					
	Create rural identities that do not try to compete with the urban				
	Create and strengthen neighborhood communities				
	Create neutral meeting places				
	Act as a role model for regenerative development				
	Support circular lifestyles				
	Promote and use car pools				
	Engage in self-building				
	Create and use maker spaces				

STRATEGIES	ACTOR LEVELS			
	National and regional	Municipal	Local communities and businesses	Private individuals
PLANNING AND ADMINISTRATION				
Increase self-sufficiency				
Collaborate and learn from others				
Promote a sharing economy				
Promote open source design				
Include rural areas in planning				
Support innovation				
Invest in strategies that solve multiple problems at once				
Create workhubs				
Engage the creativity inherent to the rural population				
Support consumption of local products and services				
Support regenerative and sustainable local businesses				
Engage inhabitants in dialogues for planning				
Map circularity				
Support initiatives for increased resilience				
FOOD AND FARMING				
Promote local food production				
Reduce meat consumption				
Reduce nitrogen and phosphorus emissions in food production				
Use regenerative farming methods				
Promote farm shops and local food markets				
CO₂ AND ENERGY				
Phase out fossil fuels				
Invest in renewable energy				
Use a CO ₂ budget				
Bind carbon dioxide in carbon sinks				

Reduce GHG emissions
 Reduce GHG & Circular
 Circular systems
 Circular & Regenerative
 Regenerative design
 All 3 focus areas

DISCUSSION AND REFLECTION

This chapter discusses the design proposal and the thesis process in relation to the aim and the research questions. The discussion and reflection elements in this chapter are combined. The text is structured into themes that help focus it according to the research questions. Then discussion and reflection on a larger scale is presented, and lastly the method is discussed.

INTRODUCTION

The discussion takes its starting point in the purpose of the thesis. Thus, the research questions are presented again below.

RESEARCH QUESTIONS

1. How can Upphärad be transformed through strategies and spatial interventions, that focus on:
 - Reducing greenhouse gas (GHG) emissions
 - Circular systems
 - Regenerative design
2. What conclusions can be drawn from the investigation in Upphärad that might be applicable to other similar rural contexts as well as for society in general?

The discussion first dives into the first research question and the three focus areas, each in turn. Then it focuses on the second research question. After that some overarching or left-over reflections are mentioned, and lastly the method and process are reflected upon.

REDUCE GHG EMISSIONS

PERSONAL CAR TRAVEL EMISSIONS

In Upphärad, the single measure that will have the largest impact on the geographically delimited emissions, according to the emission data from Trollhättan municipality, is to reduce the car dependency and providing greener travel modes that can compete with the car. In this thesis the design

proposal does this in four ways. The first is of course to implement the train stop. The second is to add a bicycle path going south from Upphärad, as well as creating the possibility for commuters to safely store bicycles by the train stop. The third is to give opportunity for buses to stop in strategic locations, such as in the center of Upphärad. The fourth is to offer options to owning your own car. This is done by suggesting a carpooling service, preferably with electric cars that can be shared by the community. Such solutions can also be implemented on smaller scales, such as within a condominium association.

There are many ways to help reduce the GHG emissions from personal transports, where the solutions range from large infrastructure investments to providing sharing services locally. The situation today in Upphärad, as in many other rural areas, forces the inhabitants to be car dependent to have access to basic societal services. Another way that the issue of GHG emissions can be tackled is thus by increasing the services provided locally, removing the need to drive far to get groceries or get a haircut. Thus, the thesis proposal also has a fifth strategy to reduce the need for personal travels by car, since the initiatives to strengthen the center provides more business spaces where the services needed can be provided.

CONSUMPTION BASED EMISSIONS

Apart from the personal car travels, what is indicated in the theory chapter to potentially be an even bigger source of emissions is personal consumption. This can be consumption of goods such as clothes or electronic devices. The current consumption centered lifestyle, sprung from the growth paradigm, thus needs to be challenged. In this thesis that is expressed in two ways. The first is by imagining a future that offers alternative ways of defining self-worth and other things to value in life. In a future where sharing is more prominent, the community naturally becomes a more important part of everyday life providing a sense of purpose, culture and a chance to connect to one another. Those values become more accessible in a future where a doughnut economy challenges the growth paradigm.

The second is by the local self-sufficiency. Being more self-sufficient locally makes the chain from production to consumption visible for the consumer, which in turn gives the product more value than if it was produced anonymously and shipped to the consumer. How such connections look is to a large part lost today, and thus entering the path of regenerative development and examining how humanity fits into the natural cycles will help make them visible again. In relation to GHG emissions, however, it is important to be aware of the limitations when measuring them. If the local self-sufficiency increases, the local emissions that are geographically delimited will increase, but only because the effect of emission displacement is undone. The total emission levels will be lower, as producing and consuming locally removes the need for long transports that are associated with importing products and goods. It can be a complicated thing to measure GHG emissions, and even though CO₂ budgets and other tools are helpful for setting goals, there is a danger in getting too caught up in the numbers within a municipal geographical delimitation.

OTHER EMISSIONS

Other strategies applied in the thesis design proposal to reduce the GHG emissions is to bind CO₂ in green areas that continuously absorb it and to implement solar panels that can replace the partially fossil dependent energy Sweden has today. Both these strategies do have an impact, but not as large as the previously mentioned ones. The solar panels, however, have another beneficial aspect as they contribute to the local self-sufficiency. Just as for the import of products make the chain from production to consumption less visible, having electricity provided anonymously also mentally disconnects that chain. Thus, producing electricity on a villa or apartment building and having that energy be consumed by the residents is a clear production-consumption connection that gives another value to the electricity, potentially making the residents consume it more mindfully. There are also an array of strategies and methods to make the houses themselves more energy and material efficient in relation to GHG emissions. Such aspects are important but fall outside of the thesis scope.

OUTSIDE OF THE LOCAL CONTEXT

This thesis is focused on the local scale and solving the global issues by working with the local context. By doing that, it also became clear that there is a lot outside of the local context that is required to successfully make a societal shift happen. In that realization process, the previous chapter “contextualizing” was added to the thesis, mapping the identified strategies over different actor levels. Through that table you can see what levels the reducing GHG emissions related strategies span over. Almost all of them tick the national and regional box, showcasing how a transition must happen on all levels and be supported by for example laws, adapted taxes and guidelines.

CIRCULAR SYSTEMS

CIRCULAR CENTER

The main thing this thesis proposes in the physical environment to support local circular systems is a circular center where things can be traded, repaired and shared. This space can help with coordinating circular material flows and be a hotspot for it. It can serve circularity in different ways, for example having a place to store actual material like wooden planks, furniture or clothes in between owners is an important aspect. Further, having this physical space where local circular processes become visible is an important pedagogical tool to support a paradigm shift. Also, a circular center could have synergies with other local functions or actors such as businesses or the school through for example temporary projects and initiatives.

In this thesis, that space has not been defined in a detailed way. A location within the community has been given and a space has been approximated, but there has been no further investigation into exactly how much space is needed and what performance requirements it would have. This would be very interesting to investigate further, but also falls outside of the thesis

scope. Such a description should, however, be developed in close dialogue with locals, as it is bottom-up initiatives, needs and wants of the locals that drives such as circular center. Further, the space required would look different over time in a transition towards a society with more circular systems of materials, resources, and so on, because the needs and the extent of them would change over time. The space thus needs to be flexible and adaptable. The possibility of gradually adding parts of the town center buildings supports this need for gradual and flexible development. Another aspect is that such a space, as envisioned today, might be completely differently envisioned in the future. It is difficult to anticipate what will be different, but to prepare for that possibility is still important. Lastly, another aspect that can support the circular center is digitalized ways of sharing. This can refer to digital coordination or of the center's activity or to a sharing of knowledge for example. Digitalization opens a world of possibilities and is hard to predict as it is fast evolving.

OTHER CIRCULAR SYSTEMS

This thesis does not go into the details of how technical systems need to support society to be circular. For example, wastewater is a thing that can be implemented in circular systems and create added values, like how it is in the reference project in Bysjöstrand, but that is outside of the thesis scope. Another aspect the thesis recognizes but does not detail is local economic circularity. The economic aspect of circularity is important. Money needs to be reinvested in the origin of the profit, not just generating but also regenerating in order to keep the circular loops going. Some options that could be implemented in a further investigation of this are a local currency or a trading economy.

CIRCULARITY ON DIFFERENT SCALES

Locally, there are many different possibilities for a circular economy of goods, resources or knowledge. However, this focus area in the thesis was in the table of the contextualizing chapter to a high degree also mapped to larger actor levels and top-down initiatives. On these larger levels,

planning and mapping tasks are central to achieve circularity in society. By creating and encouraging collaborations and coordination between different corporations for example, one company's waste can be used by another. Further, the ideas from Cradle to Cradle regarding the biosphere and technosphere is even more relevant for larger businesses than on the local scale, and adapting to those cycles need to be regulated internationally, nationally, regionally and municipally.

REGENERATIVE DESIGN

GREENERY AND FOOD PRODUCTION

The regenerative elements in the design proposal are mainly centered around greenery and farming with the purpose of mending the human-nature relationship. To be regenerative can mean many different things but engaging in nature through local food production that harmonizes with nature is one important part of it. It is also beneficial in a pedagogical way as the entire chain from production to consumption becomes visible.

What truly becomes regenerative about the local greenery and local food production is how it can create added values such as increased wellbeing through being in green environments, social relations and knowledge sharing around the food production process, and a sense of purpose. Experiencing those things can be a big transformative force as it gives incentive for change of society's ways. A person can be motivated by knowing about for example the climate crisis and want to change their ways of living, but an even stronger motivation springs from experiencing an increased wellbeing with the new way of living.

GREENERY AND ECOSYSTEM SERVICES

Further things that the design proposal suggests regarding greenery that respond to the regenerative aspect is to create diverse landscapes, promote

biodiversity, have multiple ways of farming, avoid monocultures, strengthen existing ecosystem services and consider how we can be of service to these systems. This way of thinking is encouraged and expressed in the new town center that should be helping the entire local population slowly adapt to these new ways of living and valuing things that are needed in a future beyond sustainability.

However, the aspect of ecosystems and ecosystem services has not been very detailed in this thesis. They are important and animals could even be thought of as a stakeholder in Upphäräd. Working with it that way can help make visible the synergies that we have with nature and animals in it. The thesis has only tackled this on a general level, with the input and advice from a landscape architect in Trollhättan municipality, as it does not fit into the thesis scope.

OTHER REGENERATIVE ASPECTS

Some other regenerative aspects implemented in the design proposal include solar panels on buildings, combined preschool and elderly home, and the storm water management function of the green corridor. All those have in common that they do not only fill one purpose but multiple, and in turn generates synergies and added values between those different purposes and functions. For example, the solar panels are placed on a house, making that house into both a building and a small power supplier. Another example is the combined preschool and elderly home where both functions share some spaces. In those spaces the children and the elderly meet, giving the elderly a more fun and lively existence, and the children the care and knowledge from the elderly. It is regenerative design to consider if the building or landscape you are making can serve multiple purposes, paving way for synergies to form and added values to develop.

RURAL AND RURBAN CONTEXTS

The second research question in the thesis refers to the learning outcomes from the investigations the thesis conducts through designing and researching for Upphäräd. This part of the discussion and reflection tackles the second research question.

POLITICS AND DISCOURSE

What becomes clear through the theoretical research in this thesis is that there is a need for the discourse and the politics to shift regarding the rural-urban relation. This is especially important because rural areas have the potential to spearhead the development beyond sustainability. The values inherent to rural areas, such as access to land and a less rigidly planned structure, are things that need to have a place in society's visions for the future. The first step to doing so is to stop viewing the rural as "other" to the urban and as its own valuable entity. Hopefully the up-and-coming discourse with the term "rurban" can contribute to nuancing valuing the rural qualities as well as the urban qualities in politics and planning practices.

Further, what rural areas generally have as a strong force is the bottom-up initiatives related to their geographical surroundings. What the politics and the top-down control needs to do is allow the bottom-up initiatives, and support them, for rural areas to thrive. This is a difficult balance and needs to be adapted to each local context in order to be successful. It requires dialogue between stakeholders and one good example of creating a space for that dialogue is the "Landsbygdsråd" that is being created in Trollhättan municipality. This organization holds great potential in coordinating the municipality's different rural towns and in creating a communication around common goals to work towards.

LOCAL PRECONDITIONS

There can be big differences between different rural areas. One solution does not fit all rural areas, just as the urban norm does not fit them either.

For example, there can be a growing or shrinking population. Most commonly the population is shrinking in rural areas, but in Upphäräd it is growing or at least estimated to be growing due to the train stop. The size and variation of services provided in the rural town in the proposal is entirely dependent on the expected amount of people and cannot be directly applied to any other rural area. However, the general ideas are very much applicable, like spatially gathering and coordinating the services and functions to help them feed of each other and strengthen one another. Those ideas can be adapted and applied in differently sized rural areas. Giving space for the societal transition is the key element and can be done in a multitude of ways, depending on what that specific context needs.

The concept of moving beyond sustainability can also be applied in urban areas, even though the physical expression of for example local farming and production will be different due to the different spatial preconditions. In the end, shifting the perspective to a paradigm where the focus is on human wellbeing in harmony with nature instead of one focused on consumption and economic growth is relevant regardless of if it is a rural or urban context.

RURAL VALUES AND TRANSFORMATION

One important aspect to be considered when planning for transformation of a place is how that transformation will affect the place. What are the current qualities of the place and does the transformation threaten to destroy those qualities are questions to be considered. For Upphäräd some qualities might be the character of the existing built structure, the access to land, the access to nature, the cheaper housing prices, and so on. Some things need to be preserved, some things can be developed and enhanced, while some things are more uncertain. For example, the housing prices are in general cheaper in rural areas. As the housing market is today, there is a clear risk that the housing prices in Upphäräd will rise as the train stop is implemented because Upphäräd then becomes connected to larger urban areas and thus becomes more attractive and accessible. It will be offering the best of both worlds in a sense, where the rural qualities are accessible but the opportunity to find work within commuting distance increases. Discussing the issues of

the Swedish housing marked lands outside of the thesis scope, but one way the risk is handled in the proposal for Upphäräd is by offering a variety of housing types that makes the place accessible for a larger variety of people with different socio-economic situations.

LARGER SCALE

INVESTING IN A FUTURE BEYOND SUSTAINABILITY

In order to achieve a transformation, there needs to be investments of different kinds in for example physical structures and environments that enable the transformation. In this thesis one contradictory aspect of discussion has been how it can be justified to build more houses in Upphäräd, as housing construction is a big source of GHG emissions. What the thesis essentially proposes is to invest CO₂, that is inevitably emitted by constructing housing and infrastructure, in order to gain a society with a less CO₂ intensive metabolism. In the short term, the emissions caused by Upphäräd will increase due to construction, but in the long term Upphäräd would become a less CO₂ intensive rural town that also offers added values as an inspirational example and learning experience for society's larger transformation.

Another aspect of interest when considering investments in a future beyond sustainability, or a future that is at least more sustainable, is the region's current reasoning behind not implementing the train stop. Our society's structure is as the theory has stated caught in the growth paradigm. The region is no exception, and their decisions are fully understandable according to the logic of the growth paradigm. However, the main purpose of investing in railway infrastructure is to offer more people a functioning option to traveling by car and thus reducing the GHG emissions. That is more important, as it helps bring society inside the safe and just space for humanity, then continued economic growth. After all, what is money really worth in a world of climate collapse?

A further problematization of the region's decision in relation to the theory presented in this thesis is how Upphärad and other small rural towns are disadvantaged for bigger ones, where it would be more profitable to invest in infrastructure. Again, this reasoning makes perfect sense in the growth paradigm but is at the same time problematic. The consequence of the less populated areas being disadvantaged is contributing to maintenance of the urban norm. The urban norm and the growth paradigm are closely interlinked in many ways, as areas with urban qualities are also the ones with most potential for profitability.

ZOOMING OUT

It has become clear throughout the thesis process that even though working in a local context holds great potential, there is also a need for transformation to happen on larger scales as well. There is a risk of the large-scale bureaucracy being a force that slows down initiatives and transformation coming from local contexts such as the thesis exemplifies in Upphärad. However, there is also a risk that rural towns and other small communities are not transforming and developing sustainably or beyond sustainability if the larger actor levels do not encourage and favor it. The balance between actor levels, where the responsibility lies and who needs to lead the way is not something this thesis has a definite answer to. However, what has been clear is that it takes communication and collaboration to move forward together as a unit across all levels and contexts.

PLANNER'S ROLE

When the top-down information and governance meets the bottom-up the planner or architect has an important role as a representative for the local voices. In that role the planner has governing power as they select what bottom-up information is relevant for the planning process which in itself is a top-down process. This is important to be aware of as a planner.

METHOD AND PROCESS

PROCESS

The design process has been continuously iterative. It has been shaped by input from literature, dialogues, workshops and reference projects throughout the thesis process. It has been ever evolving and improving, and attempts to capture what has been found, through the input from the different methods of gathering information, to be the most important factors for a transformation of Upphärad beyond sustainability. This growing process has certainly affected the outcome of the design proposal, compared to if all the information had been gathered at the start of the thesis instead. It has given more room for error in the design process, as all the answers were not there at the start. Thus, there are a lot of learnings regarding what would not work in Upphärad, making the final proposal more credible.

METHODS

The thesis implements a variety of methods. Within those methods decisions have continuously been made regarding what literature to include, who to schedule a meeting or workshop with and what reference projects to take inspiration from. Those decisions have been very impactful on the thesis design outcome, and were continuously made throughout the process, based on what seemed most relevant at that time. If someone else replicated the thesis, with the same questions, it is doubtful that they would end up with the same results. The process of combining the methods as deciding what or who to include has been a living process, subjected to pure chance and coincidences regarding for example referral of contacts.

SUSTAINABILITY VERSUS BEYOND SUSTAINABILITY

A large part of the discourse today is aimed at reaching a sustainable development, and a net zero impact. Thus, a lot of the information

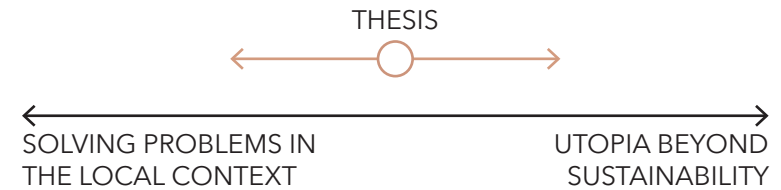
gathered for this thesis is based in reaching sustainability, and not beyond sustainability. That does disadvantage the suitability of the information sources for this thesis to some extent, but not enough to become a problem as reaching sustainability is a part of reaching beyond sustainability.

Further, there is no established definition of what beyond sustainability is and in this thesis that had to be defined. It came down to doing so via the three focus areas and thus defining beyond sustainability through one of the items that fall under it. That item is regenerative development. There might be other ways of defining all this terminology, but for this thesis it was helpful to narrow it down in such a way.

Getting to the point of deciding how the thesis scope should be defined in relation to the focus areas and terminology was a process. Since it attempts to challenge the norms for planning practices and the terminology was not self-evident regarding going beyond sustainability, this process continuously developed throughout almost the entire thesis process. It was thus an iterative process of making a scope definition, reading literature, going back and editing the scope definition, and then reading more literature, and so on. This continuous iteration has shaped the thesis outcome and could probably be continued even further if there was more time.

LOCAL CONTEXT VERSUS UTOPIAN FUTURE

In this thesis there is a conflict of interest between meeting the preconditions of the local context and pushing the vision for a society beyond sustainability. The purpose has been to create something to exemplify the shift beyond sustainability, but to also do it in a way that can be inspirational. To truly build a utopian vision for what a rural town beyond sustainability could look like it is important to make that design free from problems and preconditions stemming from the growth paradigm. But, to make a good proposal for Upphäräd it is important to tackle the existing issues of the local context. Thus, this thesis is neither the optimal solution to the local context, or the optimal utopian vision for the future, it is instead an attempt to breach the gap between the two. As the diagram shows, the thesis reaches towards both the two aspects.



Design proposal purpose

What the thesis achieves is investigating how a transition towards a future beyond sustainability might look like, recognizing components such as collaborations and local self-sufficiency as important tools to do so. This is more useful to planning practitioners and other actors as we currently face the task of transitioning society towards a more sustainable future. Thus, it is not the specific way the design looks in Upphäräd that is important in the material, but what the general vision and strategies to get there are.

FURTHER REFLECTIONS

This thesis targets multiple societal levels in order to investigate the research questions. Thus, the thesis stops at a relatively generalized level of investigation for all levels. However, the thesis finds the connections between the levels and recognizes the importance of inter-level collaborations, such as how a local community and a municipality can work together.

The thesis has a larger focus on paradigms and imagining ways to challenging them, rather than solving, for example, technical solutions. In some ways that approach allows the thesis to reach further as it attempts to free itself from the paradigms of today. It allows the focus to shift to the future to a larger degree instead of tackling problems stemming from current and past practice. However, as authors of the thesis we identify that we have been affected and shaped by the growth paradigm all our lives. That makes the ideas of the paradigm harder to take distance from and it has certainly shaped the outcome of the thesis. Nevertheless, what this thesis hopefully achieves is shining a light on an important aspect of being critical of the norms and paradigms in society that do not serve us in the long run.

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FIGURES

If not specified below, all figures are made by the authors.

All maps over Trollhättan municipality and Upphärad are based on digital map material received from Trollhättan Stad.

Page 17: Doughnut Model

This illustration is made by the authors but based in the Doughnut Model, originally by Kate Raworth. <https://www.kateraworth.com/doughnut/>

Page 34: Bysjöstrand ecovillage

Bysjöstrands ekobyförening. (2020). Ekobyplan för Bysjöstrands ekoby. Retrieved 2022-02-23 from <https://bysjostrand.se/wp-content/uploads/2020/04/ekobyplan-bysjostrand-april-2020.pdf>

Page 35: Regen Villages program

Effekt. (2022). Regen Villages. Retrieved 2022-02-23 from <https://www.effekt.dk/regenvillages>

Page 35: Regen Villages in Almere

Effekt. (2022). Regen Villages. Retrieved 2022-02-23 from <https://www.effekt.dk/regenvillages>

Page 47: SWOT analysis

This SWOT analysis is based in a SWOT originally made by Trollhättan Stad (2017). Their SWOT has been reinterpreted in the thesis in accordance with the theory that was gathered. Some points have been removed from the original version and some points have been added.

APPENDIX

In the appendix all the meetings and workshops are summarized.

MEETING LOG

Emelié Carlsson
Spatial planner | Trollhättan municipality

Meeting:
3 Nov 2021
27 Jan 2022
1 Apr 2022

Summary of communication:

Emelié is responsible for the municipal strategy for the rural areas in Trollhättan called “Landsbygdsstrategin”. She has good knowledge about the intentions of the municipality regarding the rural areas of Trollhättan.

Emelié has been the primary contact person at the municipal office and has helped with finding additional contacts that we have emailed questions to and had meetings with. She has also been very helpful with providing different municipal documents related to Upphärad.

In our third meeting we showed Emelié some of our process material for the development of Upphärad and discussed it together. We also discussed her old summer internship material for Upphärad and what the goals behind that material was. Lastly, she helped us organize a date for the workshop at Trollhättan municipality where the participants would all be available.

Frida Fredriksson
Spatial and social planner | Trollhättan municipality

Meeting:
25 Feb 2022

Summary of communication:

Frida is responsible for the process of creating a new group for communication regarding rural areas called “Landsbygdsrådet”. She explained what the purpose of it is, how it is intended to function and where the process is currently at.

Frida also has good knowledge of statistics for the municipality, regarding for example demographics, local private businesses etc., and could send us documents with that information.

Further, she could help us find relevant contact persons in Upphärad.

Agnes Falck
Sustainability strategist | Trollhättan municipality

Meeting:
25 Feb 2022

Summary of communication:

Agnes is substituting for one of the municipality's Sustainability strategists. She has previously mainly worked with sustainability in relation to a building scale.

She could help us find information regarding the municipality's work with sustainability. She helped us understand what the municipality's biggest challenges were in terms of CO₂ emissions.

Yvonne Träff
Environmental strategist | Lidköping municipality

Meeting:
4 Mar 2022

Summary of communication:

Yvonne has a long experience of working with sustainability on a municipal planning scale. She sent us the document "Hållbarhetsprogram för Lidköpings kommun" and we talked about it during the meeting. Lidköping municipality are currently in the phase of investigating how they practically can implement the contents of the document to reach their sustainability goals.

She exemplified many ways of working with the sustainable societal shift, and highlighted interesting strategies to promote. We also discussed how this shift looks different in urban versus rural contexts and what strategies are more relevant for the rural contexts. She also gave us her view on the potentials for transformations of rural areas such as Upphärad.

Erik Berg
Architect | Project support for Bysjöstrand Eco village

Meeting:
24 Mar 2022

Summary of communication:

In this meeting we asked Erik questions about the project in Bysjöstrand and about his view on sustainable development in rural versus urban contexts. He began by pointing out how the built environment plays an important role in supporting or hindering a sustainable development of society, making architecture a powerful tool. It is also important to give more room for things to develop bottom-up, since we in general plan too much. Bysjöstrand eco village is a project initiated by the local byalag, making it a bottom-up initiative.

In a village, there needs to be other functions than just housing for it to become a functioning village. According to Erik, what makes a village a village is when there are meeting places for the community. Local nodes that support the village economy is also very important.

In Bysjöstrand there are two main meeting places called Kulturkvarteret and Kretsloppskvarteret. Kulturkvarteret is meant to be meeting place with food, a stage and a public living room. There should be a mix of functions such as bakery, preschool, work hub, etc. This space is supposed to be built in different stages, continuously meeting the needs of the village.

In kretsloppskvarteret the resource chains of our consumption of food and production of waste is made visible. This is also a type of meeting place, as it might be an interest for those who move to the eco village to control their environmental impact by seeing, understanding, affecting and working the resources flows 'upstream and downstream' of themselves. Kretsloppskvarteret might contain a chicken farm, a green house, a biological water treatment system, bee keeping units, a workshop and joint farming plots. The produce from kretsloppskvarteret could be used by businesses in kulturkvarteret, if there for example is a café or restaurant.

There are four ways of moving to bysjöstrand. The first is by self-building, the second is buying a premade eco house, the third is renting a house, and the last is to participate in a building community. These four ways of moving there should support having a variety of people in the village, which is very important for achieving social resilience and social sustainability.

However, Erik points out, at the early stage of an eco-village there is naturally more people who have the specific interest in pioneering a sustainable lifestyle. These people tend to be in a specific age range etc., thus somewhat homogenic. Later in the process, there needs to be a larger variety of people with different reasons for moving there, creating more resilience in the village population. In Bysjöstrand they have created the opportunity for people with tiny houses to move there. This group of people are often very motivated and willing to participate in the village community development.

For society to achieve a sustainable development there needs to be a paradigm shift. When it comes to an individual choosing their lifestyle, they are influenced by what others are doing and expecting them to do. To go against the norm, you need to feel that a new way of living is of personal gain for you. To achieve that, communities are very important as an asset. Thus, groups, culture and communities are the keys to transition to a new paradigm, creating resilience both for individuals and for society. A meeting place can therefore be the core center of a new way of living and the start of a paradigm shift.

We ended the meeting by discussing the differences between urban and rural contexts. One main thing is urban situations have a lot of people and not a lot of space, whereas rural contexts are the opposite. In rural areas it is therefore important to densify around existing structures and to create meeting places there, for the rural areas to thrive. Done right, a small rural community can easily be more vibrant, vital and connected than a typical urban neighborhood. Another difference is that in urban areas there is an expectation of everything to be planned, ordered and nice looking, whereas in rural areas you can be more experimental, as experiments by nature do not always turn out nice looking. Thus, there is a potential for innovation in rural areas.

Malin Jakobsson
Civil engineer | Chalmers Industriteknik

Meeting:
24 Mar 2022

Summary of communication:

This meeting was centered around climate actions from a municipal scale point. Malin has been part of a team from Chalmers Industriteknik, helping municipalities calculate their CO₂ emissions and the expected effects of their intended climate actions. She could highlight some general patterns regarding what emissions usually are the largest in municipalities. The largest emission categories for the municipalities' own organization are production of electricity and heat, and transportation. Regarding the emissions caused by the inhabitants, a large part of the direct emissions is caused by transportation. It is also important not to forget other consumption-based emissions in relation to lifestyle. The emission categories that are the largest are also the most efficient to target with climate actions.

We also talked about what differences there are between urban and rural contexts when it comes to CO₂ emissions. These two types of environments generate different types of lifestyles. Some types of consumption-based emissions are larger from urban environments, perhaps because the access to a variety of products is larger there and a stronger part of the lifestyle identity. Another difference between rural and urban CO₂ emissions is that the transport and heating categories are a larger part of the emissions in rural areas, as, for example, the access to public transport is lacking there and the travel distances usually are longer.

Björn Olén
Developer | Västra Götaland region: Culture development dep.

Meeting:
4 Apr 2022

Summary of communication:

This conversation focused on the region as an actor in relation to placemaking and development. Björn shared his experiences with supporting local contexts in their development through the regional initiative of local placemaking.

Västra Götaland region works on a larger scale and on the local scale to develop the region. The local scale is project based, often sprung from an application sent in from a local community. The region supports them by financing a part time job for one of the locals to organize the development process. This project structure lasts for 1,5 years, and during that time the region also contributes with coaching the local actors through that process.

To achieve a sustainable transformation in local contexts Björn highlighted long term goals, creating meeting places and including circular processes as important factors for success. In rural towns and local communities there is a strength in how they can organize themselves around the place itself, as it oftentimes has an historical importance for the locals, and they therefore are more likely to want to take care of it. Organizations in urban contexts usually revolve around other things than a place such as a shared interest, unlike in the more rural contexts where the geographical organizing has a greater prominence.

To be successful in placemaking and development of the local context, the initiative should come from the inhabitants of the place in question, then it turns out the best according to Björn. That is another difference between urban and rural contexts as the urban inhabitants are used to having good access to societal services and being serviced by society, whereas the rural inhabitants have a tradition of taking care of themselves and taking charge of their own development.

WORKSHOP LOG

Backstugans vänner **Local association in Upphärad**

Workshop:
28 Mar 2022

Participants:
Lena Calmestrand, Kaisa Vento and Ida Rask

Summary of communication:

This workshop was split into three separate parts. In part one we asked the participants to answer the questions “What is good and what is bad in Upphärad” and “What strengths and weaknesses does Upphärad have?”. These questions were the foundation of session one, but we added nuance in the discussion by posing further questions like “Are there any important meeting places?” and “What important local actors are there?”. The discussion was supported by working with maps over Upphärad on A3 papers. We had red and green stickers for the participants to mark the locations we were discussing, and post-its to write comments on.

Session two had a similar set up as session one, but this time the context we discussed was not Upphärad today, but Upphärad in the near future if it gets the train stop. The question was “What possibilities and threats can you see?”. Here we also nuanced the discussion by asking further questions, but also by letting the conversation flow freely and circle back to the first session and understanding the aspects mentioned there in a new light.

In session three we presented some process material where Upphärad had been zoned and functions had been paired with the zones. We asked the participants’ opinion on the proposal presented and discussed subjects such as what type of housing and meeting places would be needed and that there is a need for a bike path to a nearby bathing site.

Some important take outs from this workshop were:

- Currently, there is no neutral meeting place for the local inhabitants in Upphärad.
- There are a few local businesses in Upphärad. However, there is a lack of spaces for those businesses.
- The workshop participants thought there is a need for more local businesses in Upphärad, and highlighted some existing appreciated ones.
- There is no place for elderly to go in Upphärad when they no longer can live in their own house. The closest elderly home is in Sjuntorp, but there are not a lot of places there.
- There is not a variety of housing types in Upphärad. Smaller housing units are lacking, making the population rather homogenous.
- Over the last couple of years, there have been many families with children moving into Upphärad.
- Through recent bottom-up initiatives from the locals, it has been decided to make a new school in Upphärad to replace the old one. The new school will have an increased capacity.
- Regarding the proposal we presented, the workshop participants thought it was a good idea to collect functions such as the makerspace and culture center near the existing town center.
- Backstugans vänner has previously had initiatives in collaboration with the local school, where they grew vegetables together and taught the children about for example traditional potato kinds.
- The local food store Tempo is very important to the community, as it is the only local grocery store.
- The possibility of the new train stop would significantly change the preconditions to choose greener ways of travel to and from Upphärad, as well as the possibilities for locals to work in for example Gothenburg or Trollhättan.
- Historically, the railway is what has given the town liveliness.

Trollhättan Stad

Different competences at the municipal office

Workshop:
13 Apr 2022

Participants:
Emelié Carlsson (Spatial planner), Frida Fredriksson (Spatial and social planner) and Elin Holgérus (Landscape architect)

Summary of communication:
This workshop was done in a hybrid format with half the participants on site in the municipal office in Trollhättan and half joined digitally. We used MIRO as a platform for visual communication to introduce the thesis topic and to have maps to draw on together. The purpose of this workshop was for us to get input in our process by experts who know the area we are working with. The workshop and discussions were organized according to the following topics:

Resilience

To achieve resilience in rural areas the participants mentioned three different categories: meeting places, access to services, and recreation in nature. Meeting places refers to there being a need for neutral places to meet for the inhabitants. Neutral meeting places are public places that can be accessed by everyone. The existing meeting places in Upphärad are tied to associations or are interest specific. Those meeting places are good, but there needs to be some other, neutral, arena for the local community to be strengthened.

Access to services refers to the need for having different practical and social services present in a rural village. Such services are for example, schools, preschools, workplaces, local markets etc. Further, the access to sustainable ways of traveling is also important. For example, bike paths, public transport, or other solutions that are specific to rural areas.

Recreation in nature refers to how rural areas often are talked about as being close to nature or having the natural landscapes close by. This, however, does not mean that the nature is accessible for recreation. Often, the land is privately owned, for example a forest or a field and it is not a given that the locals can access those areas.

Further, another aspect that is relevant for local resilience is to include the inhabitants in participatory processes. This can also be helpful in strengthening the existing qualities as locals have that expert knowledge of what their place has to offer.

Green structures

To have a good natural environment for recreation it is important to have different types of experiences in different locations. Green rooms serve an important function as meeting places. It is important with both programmed and unprogrammed spaces for everyone to be able to find “their” space depending on their current needs.

Elin referred to the eight park characteristics developed by Patrik Grahn to ensure a variety of green spaces. There is a big potential for implementing several of those characteristics successfully in a rural area such as in Upphärad. Strengthening of ecosystem services can be integrated and highlighted in those different park characters in different areas. Natural materials can be used to create the park environments. Wood and stone are examples of such materials.

To strengthen the biodiversity in Upphärad Elin suggested we make continuous green paths. Different species have different needs and for some “steppingstones” are enough for them to be able to move across different areas, but others need cohesive green paths to move from habitat to habitat. Further, green paths and transitions have the potential to tie built structures and different functions together. They can also contribute to making the environment more attractive for pedestrians and cyclists if their communication spaces are in or near the green paths. This contributes to both good health and to further promoting green transport modes.

Blue structures

The blue structures we discussed were based on a map with 100-year-rain mappings. We were advised to use the existing topography and avoid building in areas with a flood risk. We discussed the possibility of using the old railway embankment as a park as there was big flood risks there. This could be a regenerative green and blue path through Upphärad, providing a recreation environment for humans and a habitat for animals. Wet areas can be seen as a resource and can help ecosystem services and water infiltration.

Rural town center

Regarding the needs of a town center in rural areas, one thing often missing is benches to sit on. This further indicates that the lack of neutral meeting places is a general thing for rural areas. Designing public spaces in the rural town centers is an important strategy to work with. The workshop participants thought the diagonal path, from the existing preschool up to the new preschool and elderly home, that we propose seemed logical. It also gives the potential to have a miniature urban character meet the green and the natural in the park paths that are located along the flood prone areas. We also talked about how it becomes important to investigate what should happen along the paths leading to the new train stop and got a tip to look at STRAVA heat maps to see how the existing paths in Upphärad are being used today.

Housing

The housing in Upphärad is almost exclusively villas or row houses. Many people moved here during the green wave boom. A lot of those people have now grown old and do not have the same needs for their living situation. Currently elderly who can no longer live in their own house in Upphärad have no other housing options in Upphärad and must move somewhere else. If suitable housing was provided in Upphärad, such as smaller apartments or senior housing these people would be able to stay. It is also more likely that more villas would become available and the trend of families with children moving there could expand.

Actors and stages of development

We ended the workshop by briefly discussing the role of local actors and the

different stages of development in our vision for Upphärad. Regarding the actors, the new rural council (Landsbygdsråd) that is being created right now will have a big potential for coordinating the local development and local needs with the municipality's planning. The local associations in Upphärad will also be important for the development as they are strong actors for taking initiatives.

Questions that will be important to ask in relation to development stages are what is needed today and what will be needed in the future, how can we develop the site according to changing needs, what can be developed before the train stop is implemented or if it is not implemented, what makes someone choose to live in Upphärad, should Upphärad grow, and what is sustainable?

MODEL IMAGES

In this spread you see a collection of images of the physical model displayed during the exhibition of the thesis. The model was made in scale 1:2000.

The lighter colors on the houses represent the existing built stock and the darkest houses are the additions proposes in the thesis.





