

ATTACH YOUR HOME AND LIVE TOGETHER

PLUG-IN ADAPTABLE RURAL CO-LIVING COMMUNITY

BY XUELI MA

MASTER THESIS | AUTUMN 2018

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DEPARTMENT | ARCHITECTURE AND CIVIL ENGINEERING

CHALMERS UNIVERSITY OF TECHNOLOGY

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ABSTRACT

This thesis focuses on west coastal rural areas in Sweden. As these areas have a very attractive natural environment, rich cultural heritage, and are approximate to urban areas, they have become rural areas where depopulation and new migration co-exist, where young people keep moving out for study or work in bigger cities, while elderly people and middle-aged people are moving back for better life quality. As a result, housing prices keep a continuous rising, these rural areas gradually become a privilege for the middle class; at the same time, ageing population in these rural communities has become more severe, bringing economic and social challenges to the local municipality.

Therefore, the thesis problem is: how to make living in these rural areas affordable for a larger range of groups and better support an aging society?

This thesis tackles these problems through co-living concept. By sharing spaces and facilities co-living can reduce living expenses; the interactive lifestyle co-living prioritizes allows people to support each other, which is also optimistic to an ageing society. However, conventional co-housing projects take a long time from concept to practice, it turned out that co-living practices are also responses of those relatively resource-rich urban families. Therefore, the

focus of this thesis is to provide an adaptable and affordable rural co-living development model -- plug-in adaptable rural co-living community.

This thesis is based on a mixed approach of literature study, case study, questionnaire survey, interviews, model making and research by design.

The result of the thesis is a research by design, the research part focuses on the region Orust and Utsikten eco village, the design proposal part focuses on Utsikten eco village. The design proposal reflects a specific context-Utsikten eco village, however, the concept model can be adapted in other contexts as well. Regarding sustainability, it relates more to social, economic, and building aspects rather than environmental technics.

The conclusion is that based on the trend of culture movement and technology development, living in rural areas will be choices form more people in the future, which brings great opportunities to rural areas. However, the increasing affordable problems can be a factor which prevents more people to immigrate to these rural areas. Therefore, this new type of rural co-living community is a sustainable solution to provide affordable, inclusive living alternative in the rural areas, it will give more people the chance to move back to the countryside.

Key words:

co-living,co housing, rural housing, rural co-living, ecovillage, affordable housing, intergenerational housing, sharing lifestyle, rural lifestyle, collaborative consumption, adaptable development, sustainability, participative urbanism

ABOUT THE AUTHOR



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Xueli Ma finished her bachelor of Urban planning at Sichuan University in China and continued master education in Architecture and Urban Planning beyond sustainability at Chalmers in Sweden.

She worked as an urban designer in China for several years. Her practices mainly focus on urban and rural sustainable development. She has worked in projects of different types and scales, ranging from masterplan, site plan, detailed plan to building design.

During the master studies at Chalmers, she focused on courses in social inclusion, heritage protection, architecture and urban transformation, and also the development of towns and villages.

Her concerns for sustainable urban and rural development are not only from architecture and technical perspectives but also from social and economic aspects. She is not limited to the exact boundaries of building design, planning or landscape design but would like to integrate knowledge in different fields. She is also interested in solving social problems through building projects.

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READING INSTRUCTION

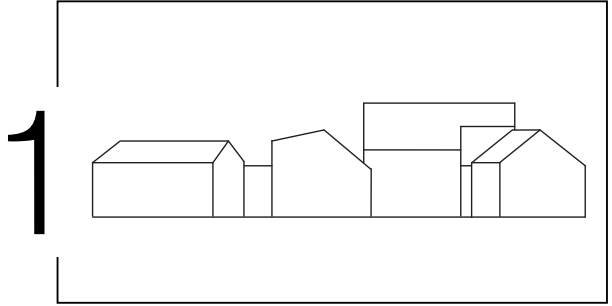
The thesis is made up by research and design.

In Chapter 1 it introduces the background and starting points of this thesis.

Chapter 2, Chapter 3, and Chapter 4 is the research part. Chapter 2 is about the region study-Orust; Chapter 3 studies the current living situation in rural areas and co housing development in Sweden; Chapter 4 is the site analysis and survey result of Utsikten eco village on Orust where the site for design proposal is located.

Chapter 5 and Chapter 6 is the design proposal part. Chapter 5 focuses on the concept and renewal proposal on village planning scale; Chapter 6 zooms in to the building scale to explain how the building typology works.

Chapter 7 is the conclusion of the whole thesis and author’s reflections during the process.



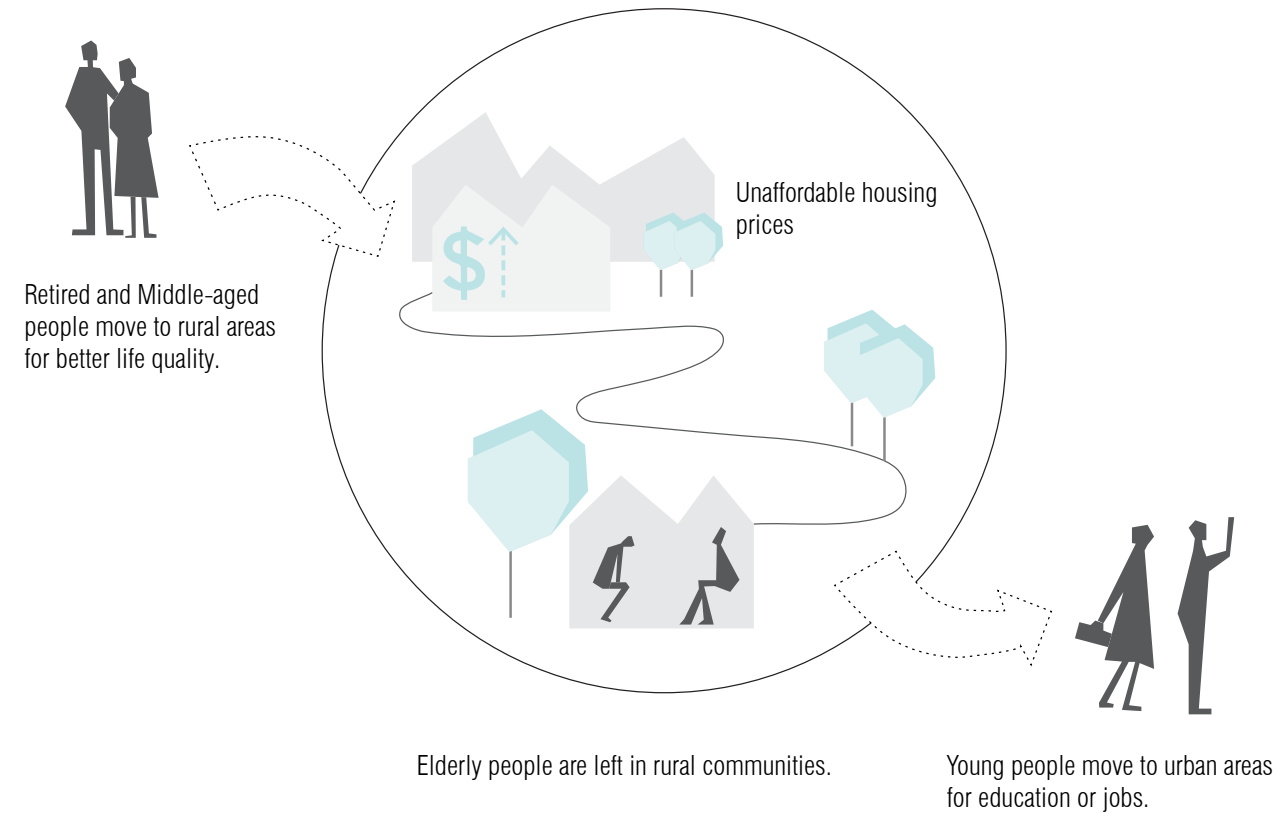
INTRODUCTION

BACKGROUND

THE REVIVAL OF RURAL COMMUNITIES

The renewed interest in rural living has been observed in many countries throughout the western world, and Sweden is not an exception. Located in the northern periphery of Europe and with large areas of dispersed settlement, Sweden has other preconditions for rural residence and migration than other countries in Europe (Hjort & Malmberg, 2006).

In this urban-rural migration trend, periurban countryside benefits the most. However, on the other hand, housing prices keep rising in those popular rural areas. As a result, these rural areas gradually become a privilege for the middle class. The increasing housing prices cause **unaffordable problems** to local young people and it can be a factor which prevents more people from migrating to these rural areas in the future. Meanwhile, the major migration of retirees and middle-aged people **aggravates ageing problems** in these rural communities again, bringing economic and social challenges.



WHERE

This thesis focuses on west coastal rural areas in Sweden. As these areas have a very attractive natural environment, rich cultural heritage, and are approximate to urban areas, they have become typical rural areas where depopulation and new migration co-exist.

The research region is Orust—Sweden's third largest island, which is 75km from Göteborg and 30 km from Uddevalla. The site for design proposal is chosen in Utsikten Ecovillage (Utsiktens ecoby), which is in the northeast of Orust.

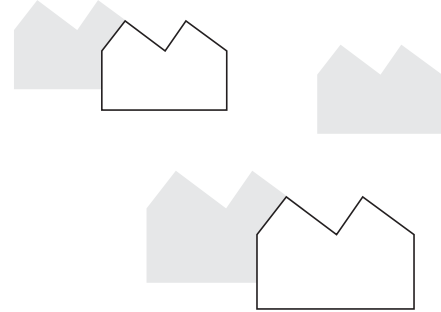


PROBLEMS



HOUSING PRICES ARE NOT AFFORDABLE.

As a popular rural area, more and more retirees and middle-aged families move to Orust for better life quality. Housing prices in Orust keep a continuous rising, sometimes even higher than surrounding cities. It gradually becomes a privilege for the middle class and wealthy people. The increasing housing prices cause unaffordable problems to local young people and it can be a factor which prevents more people from migrating to these rural areas in the future.



HOUSING TYPES ARE HOMOGENEOUS.

The island is dominated by single houses and summer houses. It is hard to find cheaper apartments or other rental accommodations. However, in the new wave of migration to rural communities, certain new demographic groups are observed in shaping the future of rural life. The housing market in rural areas needs to adapt to future trend, providing diverse living alternatives to different groups, especially young people without many assets but might bring dynamism to the rural economy.



SOCIAL ISOLATION EXISTS IN RURAL COMMUNITIES.

Compared to surrounding areas, these rural areas show a higher percentage of ageing population. In the scattered villages on this island, only a few elderly people are left. Based on the dispersed layout, low-density and car-independent facts of the island, elderly people face great challenges to manage daily life, struggling to the shops, health care, and social isolation. The homogeneous demographic composition also makes it hard for them to get help from the neighborhood.

THESIS QUESTION

How to make living in rural areas affordable for a larger range of groups and better support ageing rural communities?

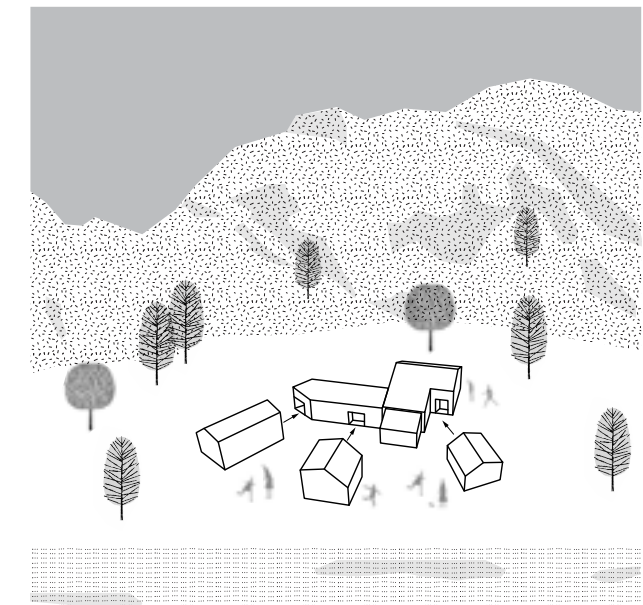
HOW

This thesis brings **co-living** concept which exists mainly in urban areas back to rural areas. It aims at providing **an adaptable and affordable rural co-living development model**. It throws its insights to future rural living, which adapts to modern sharing lifestyle while keeping traditional rural idyllic lifestyle appeal at the same time.

By sharing spaces and facilities co-living can reduce living expenses and give more people the chance to move back to the countryside. Meanwhile, the interactive lifestyle co-living prioritizes allows people to support each other; it promotes intergenerational inclusion and reduces the loneliness in rural communities.

AIMS

- Make living in rural areas much **easier**.
- Provide **adaptable** rural co-living development model.
- Provide **affordable** rural living alternatives.
- Promote **intergenerational inclusion** and **mutual caring** in the neighborhood
- **Reduce loneliness** in rural communities.



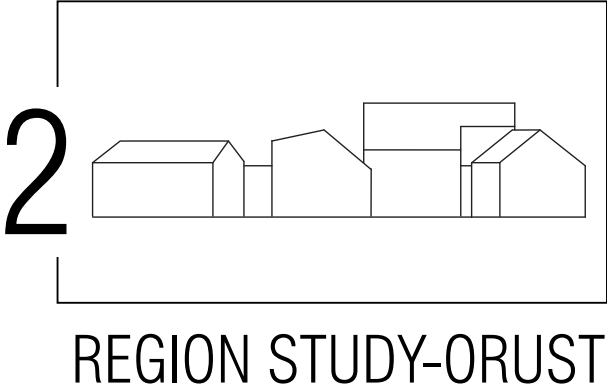
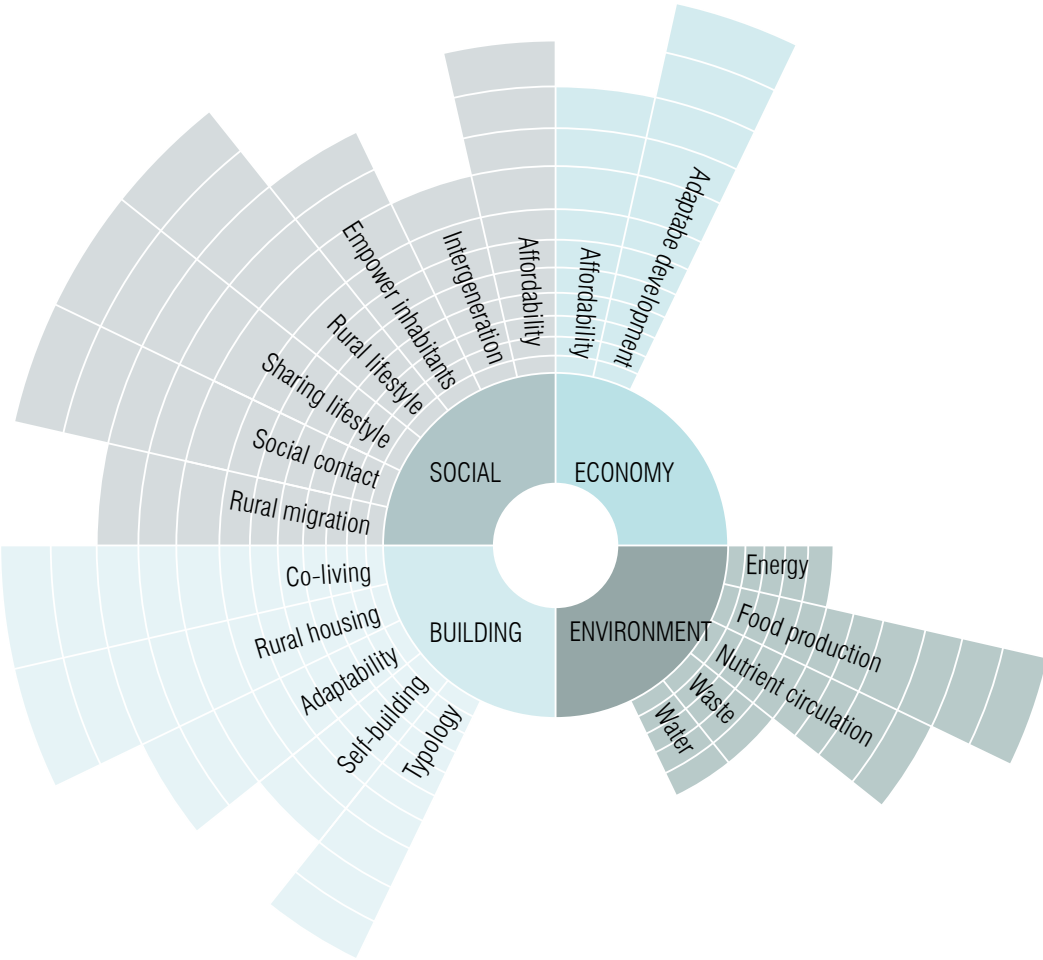
DELIMITATION

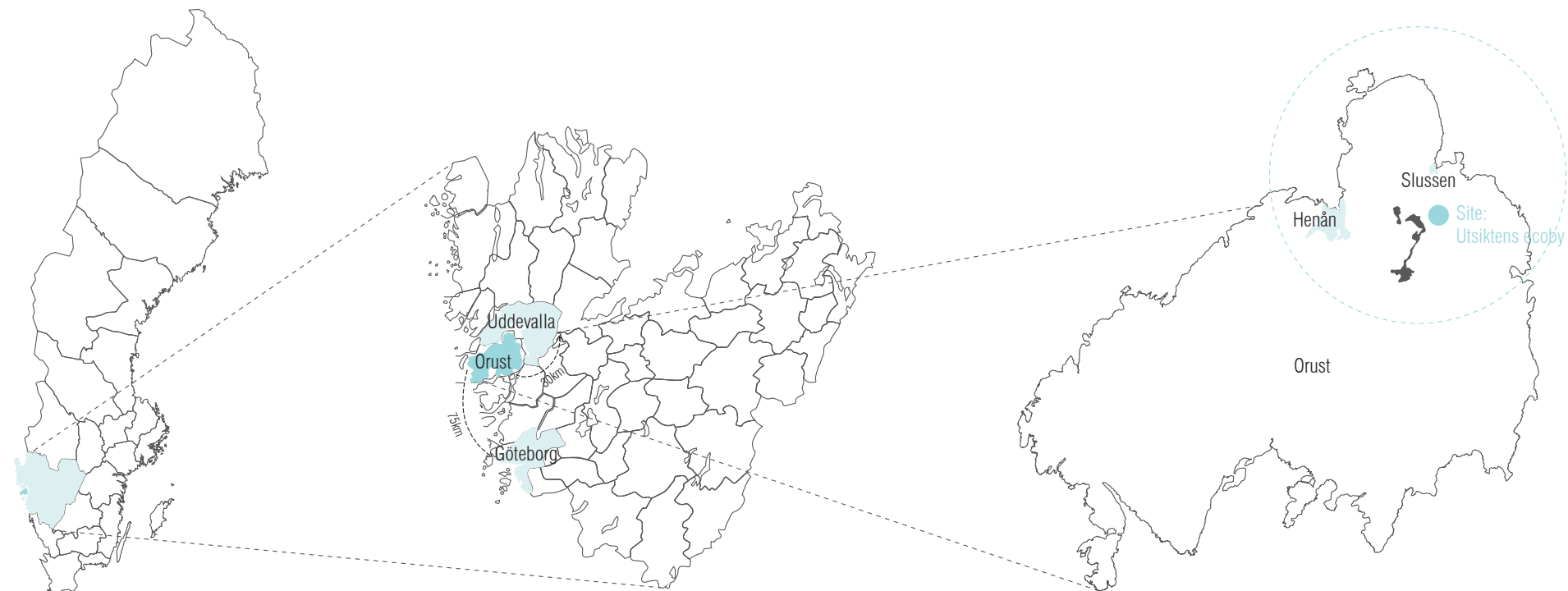
The focus of the thesis is an adaptable rural co-living development model, which reflects correlative strategies in **building typology** and **land use adaptability**.

Regarding to sustainability, it relates more to **social, economic, and building aspects** rather than environmental technics. The design proposal reflects a specific context—Swedish village, but the general concept of the development model can be adapted in other contexts as well.

METHODS

The thesis is based on a mixed approach of literature study, case study, questionnaire survey, interviews, model making and research by design.





LOCATION

Orust is in the western coast of Sweden. It is Sweden's third largest island after Gotland and Öland. The municipality has a total land area of about 388 square kilometers.

The municipality of Orust is located in Henån, which is around 75km to the north of Göteborg within one hour's driving distance, and around 30 km from Uddevalla within 30 minutes' driving distance. There are approximately 15,108 inhabitants live on Orust (Statistics Sweden, 2017). It is a typical rural community where 60 percent of the population lives in rural areas. The site for design proposal is located in Utsikten Ecovillage (Utsiktens ecoby), which is in the northeast of Orust. (Orust kommun, "Översiktsplan 2008", 2008, p. 9)

HISTORY AND IDENTITIES

HISTORY

Orust has a long history of fishing and shipyard. Boat production is the old tradition of Orust. Most of Sweden's exports of sailboats come from Orust. Nowadays, due to its coastal location, attractive natural landscape, the island has become a popular destination for vacation in summer, and it is dominant by plenty of summer houses. The number of inhabitants triples in summer (Orust kommun, "Översiktsplan 2008", 2008, p. 9).

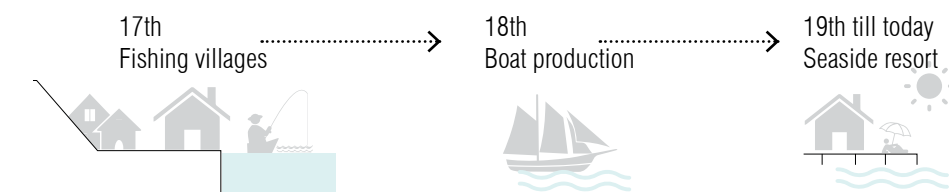
IDENTITIES

Maritime culture: West of Orust is typically developed from traditional fishing villages. Fishing culture, seafood production, boat production crafts and the boathouses along the seashore all reveal its maritime culture.

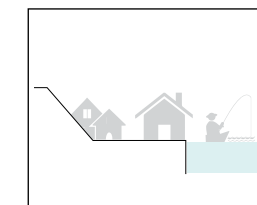
Inland farm: The inland landscape of Orust is mainly farm.

Mozaic landscape: A combination of the seashore, forest, hills, lakes, meadows and farmland makes Orust attractive.

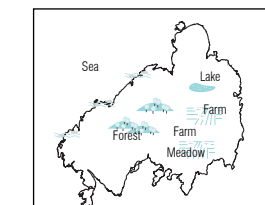
Agriculture activity: Seafood production, livestock-raising, and dairy production are the main agriculture activities on Orust.



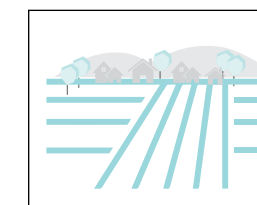
Maritime culture



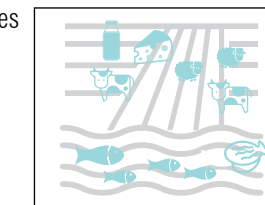
Mozaic landscape



Inland farm



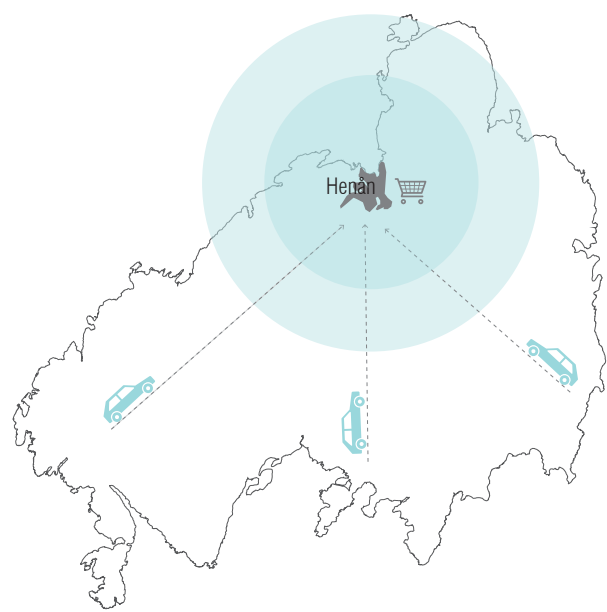
Agriculture activities



LOCAL CHALLENGES

CAR INDEPENDANCE

Villages are dispersed on Orust with a low density. Services are centralized in the municipality--Henån, there is only one supermarket on the whole island. With weak public transportation connection, the island is highly car-independent.



SEASONAL CHANGES

As a vacation destination, population and activities on Orust reveal significant seasonal changes. The number of people in summer approaches 40,000 people almost triples as other seasons. There is a lack of all-year-around inhabitants. (Orust kommun, "Översiktsplan 2008", 2008, p. 9)



HOMOGENIOUS HOUSING TYPE

The type of housing is almost entirely dominated by private villas and summer houses. There are 7,000 permanent houses and approximately 5,700 summer houses in Orust (SCB, 2014). Apartment constitutes approximately 10% of the total. There is a high demand for apartments, especially in Henån (Orust kommun, "Program för Bostadsförsörjning ", 2016, p. 15).

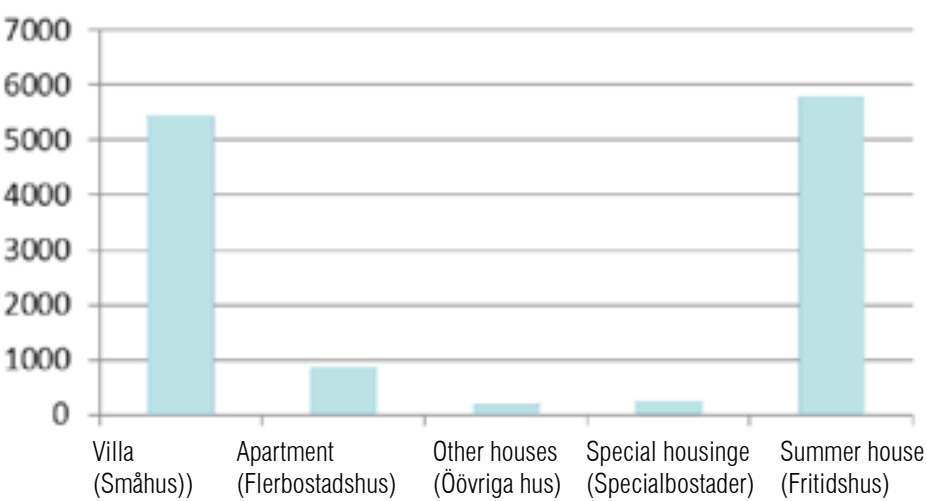
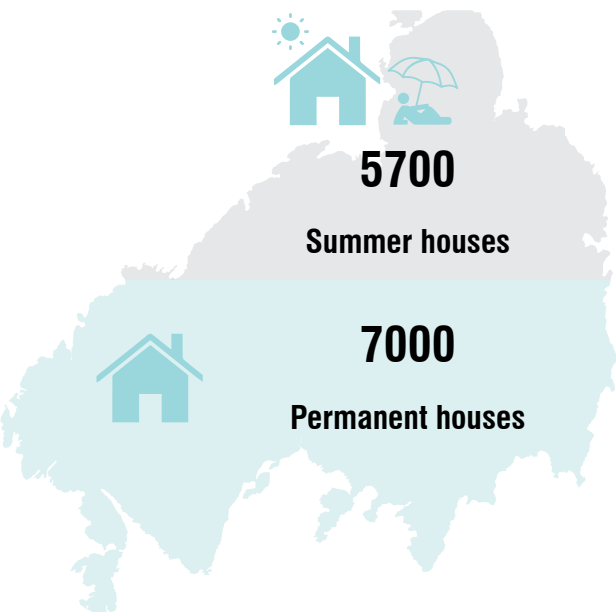


Figure 1. Housing types on Orust (Björling Stefan, 2016).



HIGH HOUSING PRICES

Housing prices kept a continuous rising in the past 20 years on Orust (Figure 2, Figure 3), and when compared to the villa prices in Göteborg and Uddevalla, the prices on Orust is almost the same as the other two cities, sometimes even higher than Göteborg (Figure 4), which is quite rare for a rural area.



Figure 2. Annual price of summer houses on Orust (Svensk mäklarstatistik, 2017).

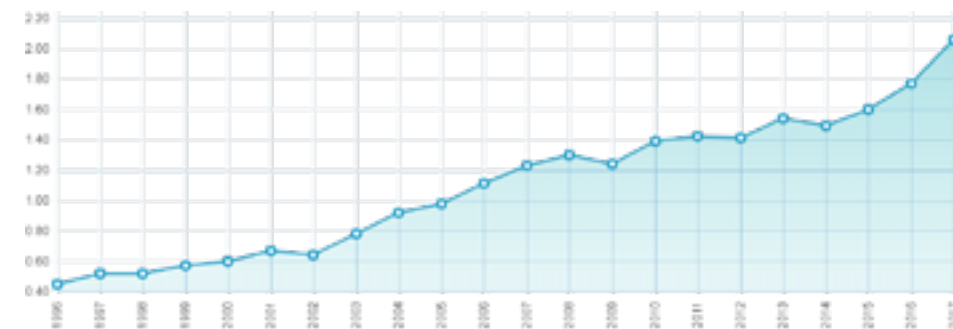


Figure 3. Annual price of villas on Orust (Svensk mäklarstatistik, 2017).

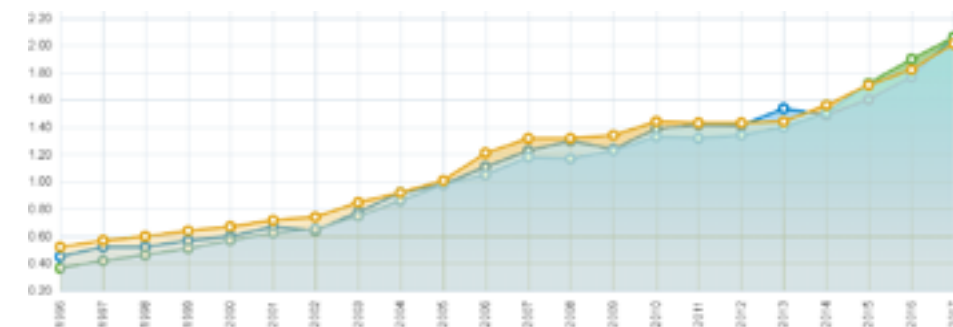


Figure 4. Villa prices comparision (Svensk mäklarstatistik,2017).

AGEING POPULATION

Orust has an higher aging population than average compared to surrounding areas (Figure 6). Young people from 20-30's are missing. It also means that relatively few children are born. The decrease of schoolchildren by about a quarter will have major influences on education facilities on the island (Orust kommun, "Översiktsplan 2008", 2008, p. 14).

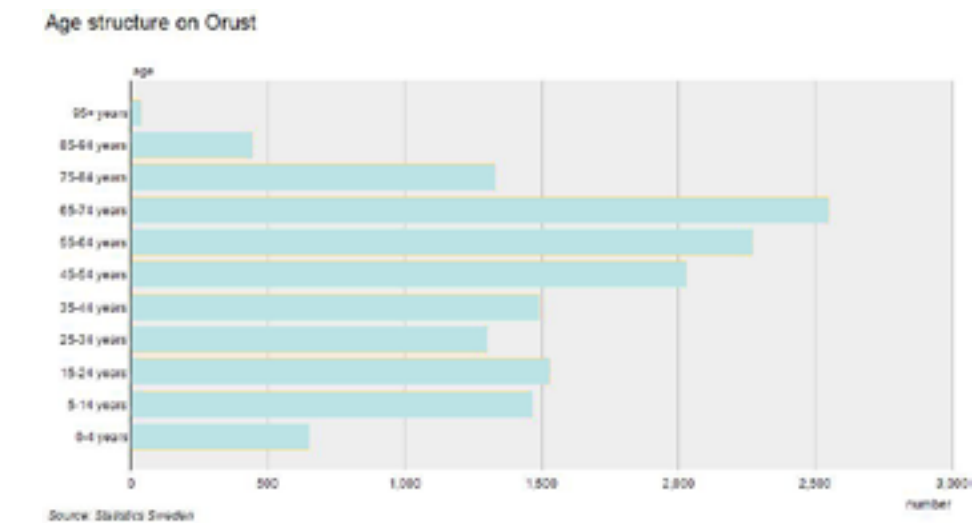


Figure 5. Age structure on Orust (Statistics Sweden, 2017).

Figure 6. Percentage of inhabitants over 65 years old (Västra Götalandsregionen, 2017)

MIGRATION PATTERN

Orust is attractive to new migrants compared to surrounding municipalities. The main groups moving in Orust are elderly people, middle-aged people, and families with children. The largest migration comes from Gothenburg. The proportion of immigrants is low, only 5 percent of the populations are born abroad. Most of immigrants are from the rest of the Nordic countries and the EU. Refugee population is very low on Orust. (Orust kommun, "Översiktsplan 2008", 2008, p. 13)

For the migration pattern, it shows local young people are leaving; west of Orust which has the best seashore attracts many wealthy people to build their summer houses there, and the seashore villages are with high density; east part of Orust, as it is closer to the main land, services, housing prices are lower, it attracts more long-term residents, families, both from local Orust and from the outside.

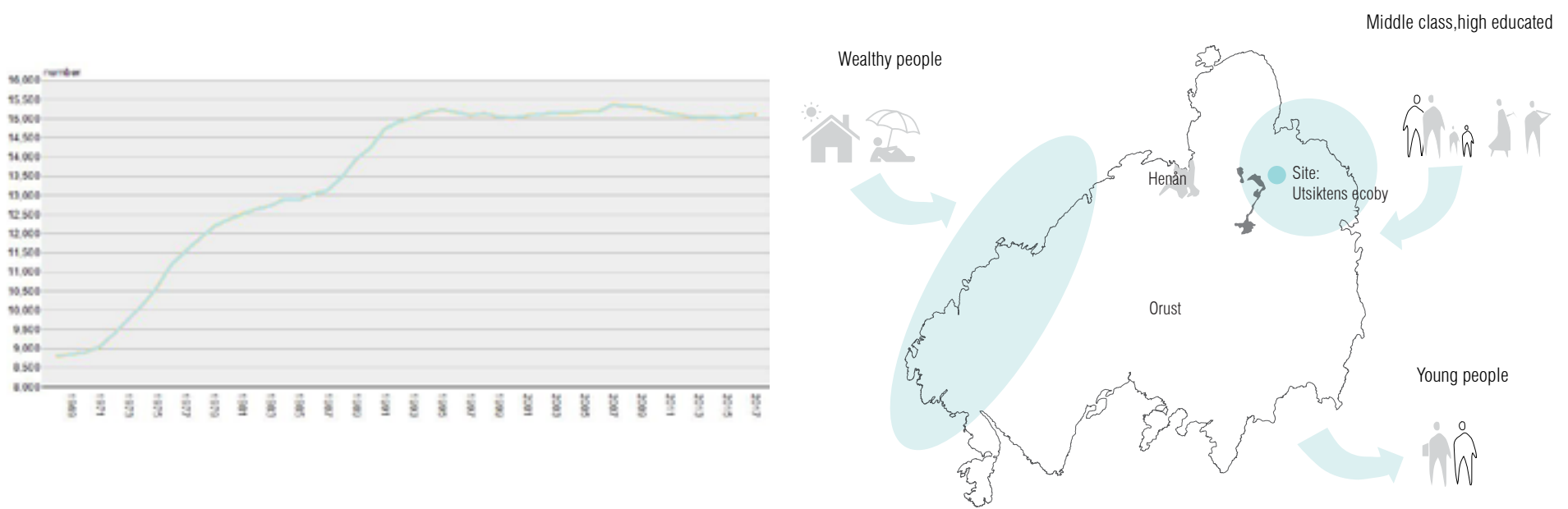


Figure 7. Population growth on Orust (Statistics Sweden, 2017).

CONCLUSION

As a rural area adjacent to Göteborg, Orust shows a growth in population and housing.

With advantageous location, rich cultural and natural resources, Orust has benefited from the counter-urbanism trend. The new migration pattern has proved it. This trend of moving to the countryside brings Orust great opportunities.

There is a potential to attract larger interested groups.

The location of Orust makes it attractive not only to retirees and middle-aged groups but also to young families with children and even more young people. The local housing market should adapt to provide more diverse housing types that suit different groups rather than only single houses and summer houses. The grasp of young people is essential as they might bring dynamism to the local rural economy.

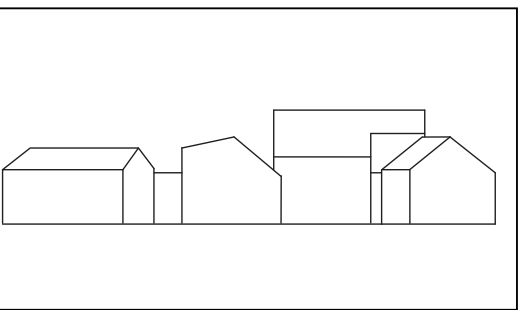
Unaffordable problems might be an obstacle for future development.

However, the increasing housing prices cause unaffordable problems to local young people and it can be a factor which might prevent more people from migrating to these rural areas in the future.

Aging population calls for intergenerational housing solution.

The ageing population, scattered village layout, car-independent facts bring challenges for elderly people. They have to struggle with shops, health care, and social isolation every day. The homogeneous demographic composition makes it hard for them to get help from the neighborhood. Therefore, intergenerational housing solution should be promoted to solve social isolation and loneliness in rural communities.

3



LIVING IN THE COUNTRYSIDE

SWEDEN'S RURAL AREAS

According to Jordbruks' report "Allt om att bo, leva och vara på landsbygden", Sweden's municipalities are divided into four types: metropolitan areas, urban areas, countryside, and remote rural areas, the latter two counts for rural areas. Therefore, 34% of Sweden's population lives in rural municipalities. (Lina Bjerke, "Allt om att bo, leva och vara på landsbygden", 2013, p. 5)

In many rural municipalities, the population and jobs have increased.

Under the strong influence of urbanization, the picture of rural areas throughout the world looks gloomy. However, the case of Sweden is different. There are rural areas where both the population and the jobs are increasing. 36 rural and sparsely rural municipalities have had a positive population growth from 1995 to 2011. The growing municipalities not only include those with close relationships to the main labor market region (Stockholm, Gothenburg, and Malmö) but also those managed to attract young highly educated people. The problem for many rural communities is that young adults move out to study and not come back. (Lina Bjerke, "Allt om att bo, leva och vara på landsbygden", 2013, p. 5)

Some rural areas show strong growth in housing development


The housing market in rural areas has a weaker development than in cities, especially for permanent housing. Nevertheless, there are many rural municipalities still show strong growth. This applies mainly to municipalities along the west coast with strong tourism attractions, and university cities and municipalities that have a lot of work to offer. (Lina Bjerke, "Allt om att bo, leva och vara på landsbygden", 2013, p. 5)

Tourism and recreation are important to rural areas

For many people, the countryside is synonymous with tourism and recreation. Many tourism-related industries are located in the countryside. More than 70% of Sweden's summer homes located in the countryside. The number of employment in the tourism industry has increased much more than the total employment growth in Sweden. The strong growth of tourism can thus function as an attraction and create competitive advantages for municipalities. The most popular areas for outdoor life are either in the coastal landscape, areas close to metropolitan areas or in northwestern rural municipalities of Sweden. (Lina Bjerke, "Allt om att bo, leva och vara på landsbygden", 2013, p. 5)


WHO ARE MOVING TO RURAL AREAS?

They study shows the main groups moving to the countryside of Sweden are women, elderly people, and families with children (Sofia Ulver, Fil. Dr, Ekonomihögskolan, Lunds Universitet, "DEN NYGRÖNA MÄNNISKAN", 2012). And if we look at the trend in the UK and south Europe, under the influences of culture movement and technology improvement, new demographic groups also play key roles in shaping the future of rural life, the number of Digital Nomads, Entrepreneurs, creatives, single-person households moving to rural areas is also on the rise.




Retirees

They move to rural areas for better life qualities. The proximity to cities is not their main concerns. They are more likely to move to remote rural areas compared to other groups.




Middle-aged people

Middle-aged people who are not constrained by workplaces move to rural areas to enhance life quality. They care about good living conditions.




Family with children

Younger families support the local education facilities and leisure activities and sustain local shops. However, the affordability of housing is a challenge for them. There has been a significant increase in respondents expecting to live in rental accommodation. (Strutt & Parker, " Housing futures 2016-the village revival ", 2016, p. 7)



Digital Nomads/Entrepreneurs/Creatives

These people normally are self-employed or they can manage their own business from remote locations. They can work while moving across the world in search of inspiration and collaboration. Technology is key to these groups; they intend to move to a village citing broadband as the main motivation for moving. They are also those who can bring dynamism to the rural economy. (Strutt & Parker, " Housing futures 2016-the village revival ", 2016, p. 7)



Single-person household

Single-person households are growing. The challenge is to provide suitable housing options for them. These range from individuals who need to downsize as they occupy a home that is too large for their requirements to people seeking more spacious options than those offered by a one-bedroom flat. (Strutt & Parker, " Housing futures 2016-the village revival ", 2016, p. 7)

HOUSING CHOICES IN RURAL AREAS OF SWEDEN

MAIN CHOICES

For those who want to move to the countryside. Normally they move to existing old houses, such as **family farm (släktgård)** or **summer houses** rather than new buildings. The difficulty of making larger investments in rural areas has led to the fact that **catalog houses** have become the main option to make it economically possible. (Werner & Svensson, 2011)

The challenges for family farm and summer houses is that it takes time to wait until there is a property on sale, and the facilities and qualities are bad as they are normally old houses. And for catalog houses, the private expression on houses is reduced as a result of industrial production, and they look quite similar. (Werner & Svensson, 2011)

ECOVILLAGE

Other intentional communities like Ecovillages are also on the rise with a move to a more sustainable lifestyle. There are currently around 30 Ecovillages across Sweden, with varying sizes and organizational structures. The Ecovillage movement of Sweden can be traced back to the 1970s when it was part of the 'green wave' counter-urbanization movement, while EVIs started in the 1980s were often associated with the anti-nuclear movement (Jamison, Eyerman, & Cramer, 1990).



Figure 8. Eco-villages in Sweden (Magnusson, 2018, p. 8).

COHOUSING IN SWEDEN

Cohousing is an intentional community with individual dwellings around common spaces and shared facilities. It promotes the interactive lifestyle and emphasizes the collaboration and residents' participation in the design and management process.

Cohousing exists both in urban and rural areas. In Sweden, there are over 40 cohousing units, mainly are the result of civil society campaigns and positive responses from public housing authorities during the 1980s. The existing cohousing units are concentrated to the main urban centers, university cities; half of them are in Stockholm. ("The Swedish National Association Cohousing NOW," 2018)

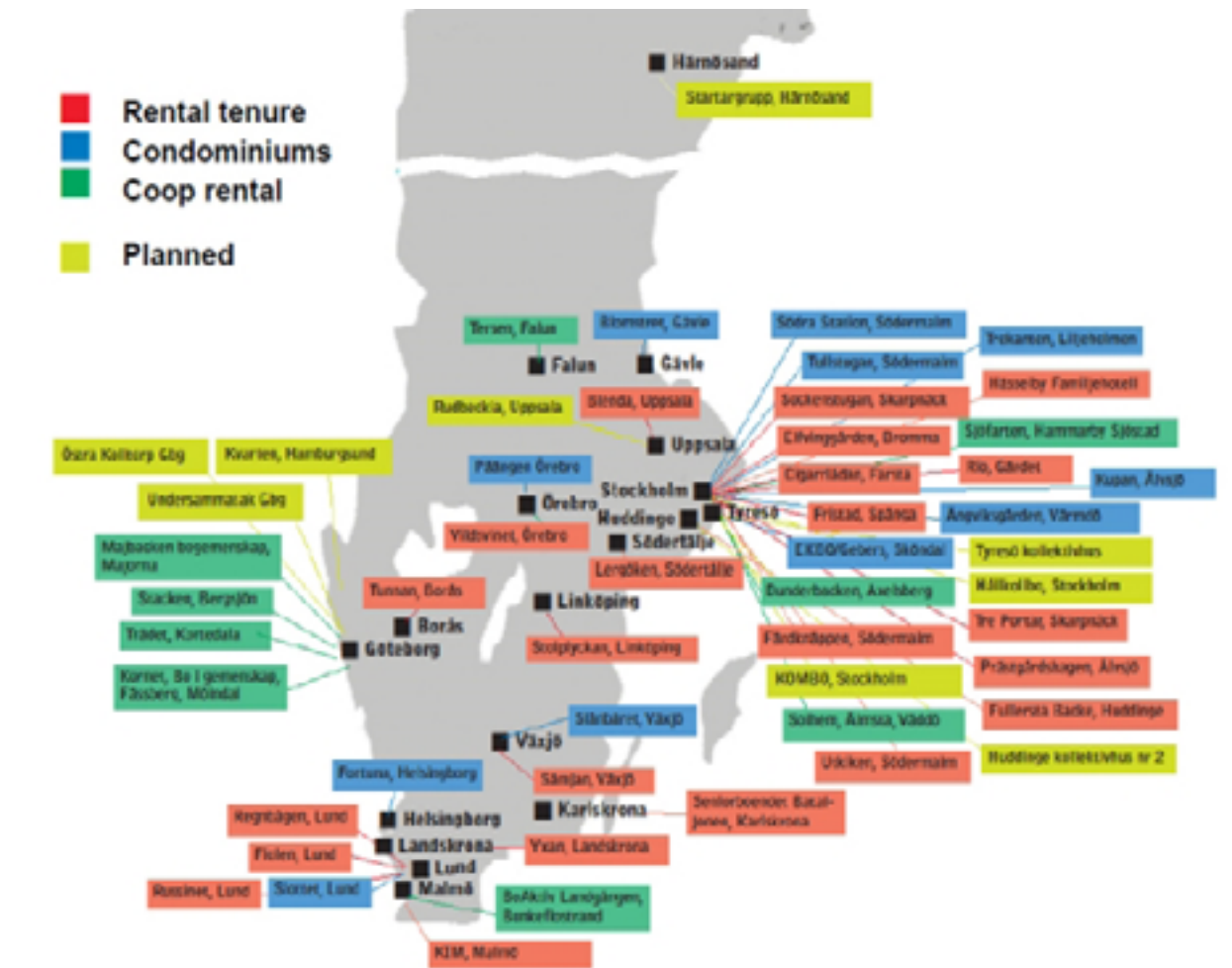


Figure 9. The Swedish National Association Cohousing NOW (Kollektivhus NU, 2018).

CONVENTIONAL COHOUSING PROJECTS IN RURAL AREAS

As the origin of cohousing, there are many cohousing cases in rural areas in Denmark. Tanderparken (Figure 13) is a typical conventional cohousing project in Denmark. As it shows, most cohousing projects are built as private homes clustered around shared space. Normally a common house is placed in the middle or at the entrance of the community, which includes a common kitchen, dining area, laundry, and recreational spaces. Shared outdoor space includes parking, open spaces, and gardens. Neighbors might also share resources like tools and lawnmowers.

For this kind of cohousing community, the challenges include:

It takes time and is hard to find proper land.

The expense of cohousing normally is not affordable, which makes it a privilege for minority people.

Study shows no matter in cohousing practices of Denmark or USA, it all seems that they are responses of those relatively resource-rich urban families, many of them are close to or already in retirement.

As it takes time, it faces an unpredictable financial crisis in the development process.



Figure 10. Tanderparken in Denmark (Max Pedersen, 2015, p. 133).

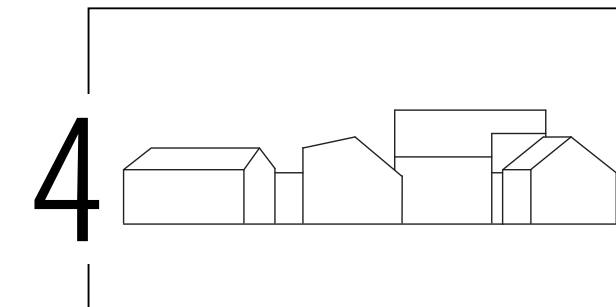
CONCLUSION

Providing diverse housing alternatives for new groups is essential for rural revival.

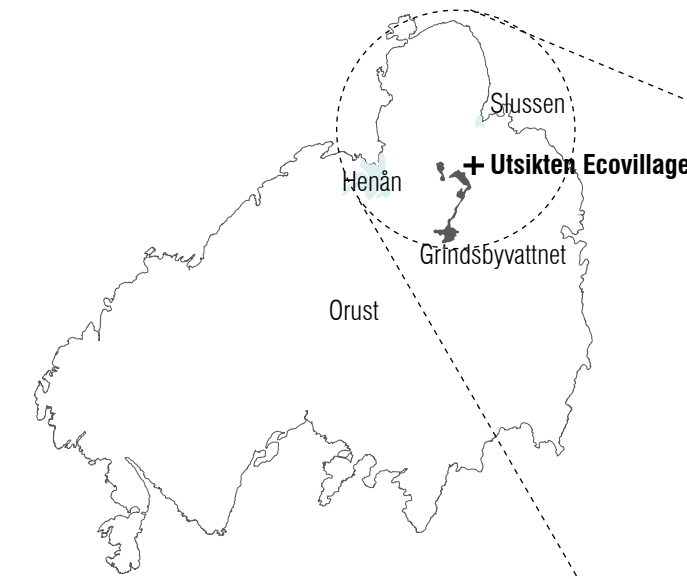
In the new wave of migration to rural communities, certain new demographic groups are observed in shaping the future of rural life. The housing market in rural areas needs to adapt to future trend, providing diverse living alternatives to different groups, especially young people without many assets but might bring dynamism to the rural economy. There should be **affordable** living alternatives and **rental accommodation** are also important as it gives different people a short time to experience the rural lifestyle.

Cohousing is a good way to suit an ageing rural society.

The rural area faces more severe ageing population than urban areas. Cohousing is an alternative to traditional options such as retirement homes and staying at their own homes without easy access to help. In a cohousing community, rather than relying on administrators, people can rely on each other to lend a hand when needed and provide much-needed social engagement. It is a way to tackle social isolation and loneliness in rural communities.



SITE ANALYSIS-UTSIKTEN ECOVILLAGE

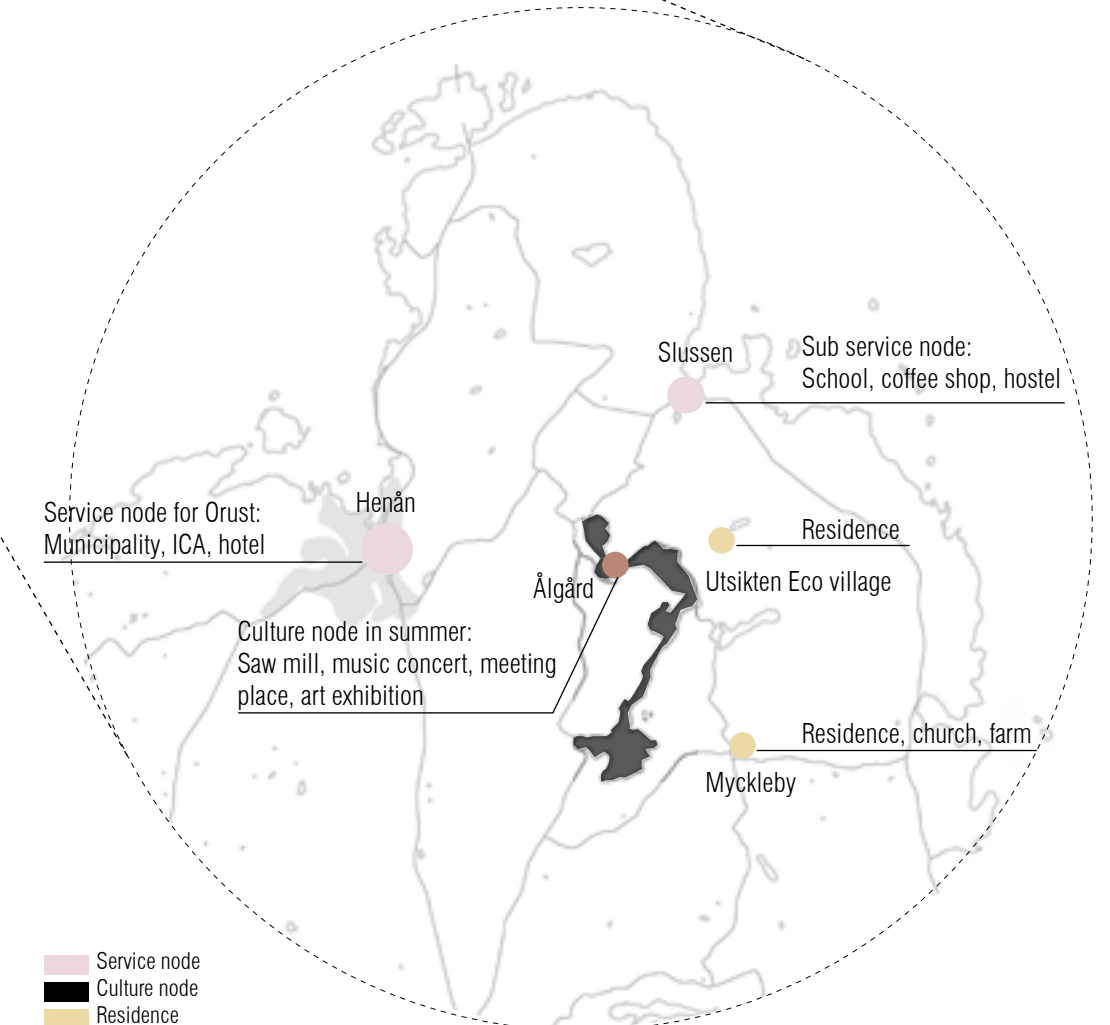


Location of Utsikten Ecovillage in Orust

WHY UTSIKTEN ECOVILLAGE? --SURROUNDING SETTLEMENTS

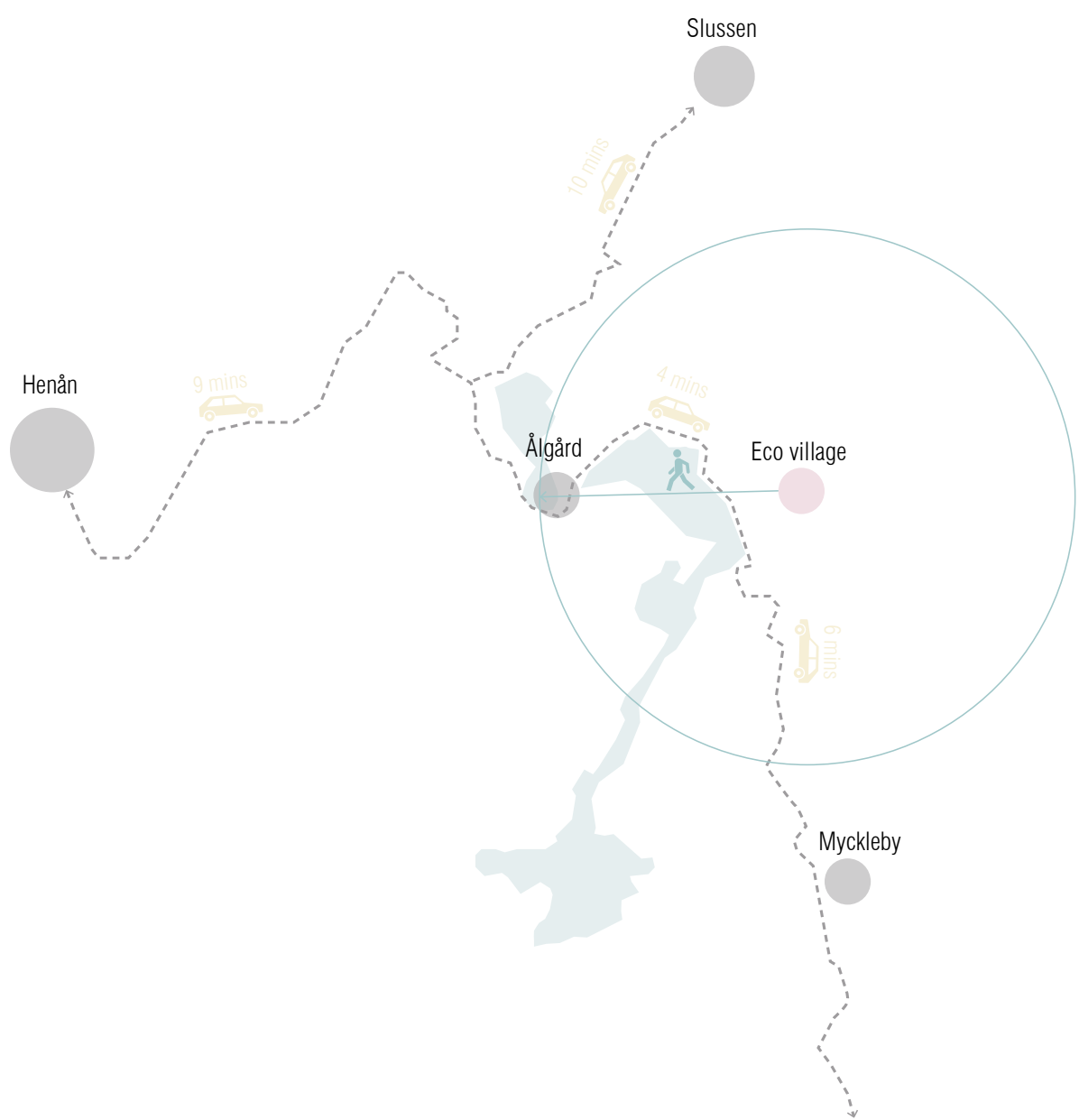
Utsikten Ecovillage is chosen as the design site. It locates in the northeast of Orust, by the side of Grindsbyvattnet lake. This area has been an attractive migration place for people who are interested in rural lifestyle, due to its relatively convenient transport connection and beautiful natural environment.

As the illustration on the right side shows, in this area, Henån and Slussen act as service nodes; Ålgård is an important culture node of this area in summer; Myckleby a village with a few scattered settlements, there is also a church and several interesting animal farms; Utsikten Ecovillage and surrounding villages are more for residence.



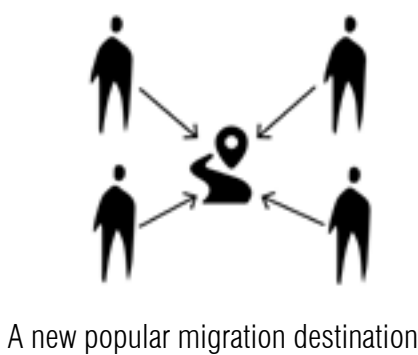
WHY UTSIKTEN ECOVILLAGE?
--TRANSPORT CONNECTION

Utsikten Ecovillage has good connections to surrounding settlements by car. It takes around 10 minutes to the service nodes Henån and Slussen, 4 minutes to Ålgård and 6 minutes to Myckleby. It is in the walking distance to the Ålgård and it has a good bus connection to Henån, 10 minutes to Henån by bus. However the public transport situation on Orust is generally not frequent and many lines do not operate on weekends.



WHY UTSIKTEN ECOVILLAGE?
--SUMMARY

In summary, Utsikten Ecovillage is chosen as the design site for two reasons. First, it has been a new popular migration destination of Orust. However, it is different from other conventional migration hot spots in the west coast of Orust, which are full of seasonal summer houses with high housing prices. The Utsikten Ecovillage represents the grassroots innovation, which is motivated by people's desire for a sustainable rural lifestyle. Secondly, this area has a better connection to the service center Henån and the mainland. Considering the commuting needs, it is more attractive for young people to live here if they still need to work in Uddevalla or Göteborg.



A new popular migration destination



Convenient connections to services and the mainland

SITE PICTURES



Grindsbyvattnet Lake



Sauna and road



Utsikten Ecovillage



Previous barn



Fertile land and road



Children's palyground in forest



BUILDING PROCESS

The idea of Utsikten ekoby was started by a group of interested gardeners in Gothenburg in 1998. The association Utsikten Ekonomisk association was formed in 2000. In 2001 they found Lilla Krossekärr in Orust to carry out this project ("Byggandet av ekobyn," 2018).

Firstly, the ecoby was planned through a detailed plan (2002-2004), then roads, water, electricity and telecommunications systems were built (2004-2006). From 2006 onward, individual houses and common buildings had been built ("Byggandet av ekobyn," 2018).

The members of the eco-association have been involved in shaping Utsikten Ecovillage. The individual landowners are responsible for the construction of their own houses, while the association is responsible for common projects, such as a meeting room, a brewery, and a sauna, etc. ("Byggandet av ekobyn," 2018).



Figure 11. The construction of Utsikten Ecovillage ("Byggandet av ekobyn," 2018).



Figure 12. The construction of Utsikten Ecovillage ("Byggandet av ekobyn," 2018).

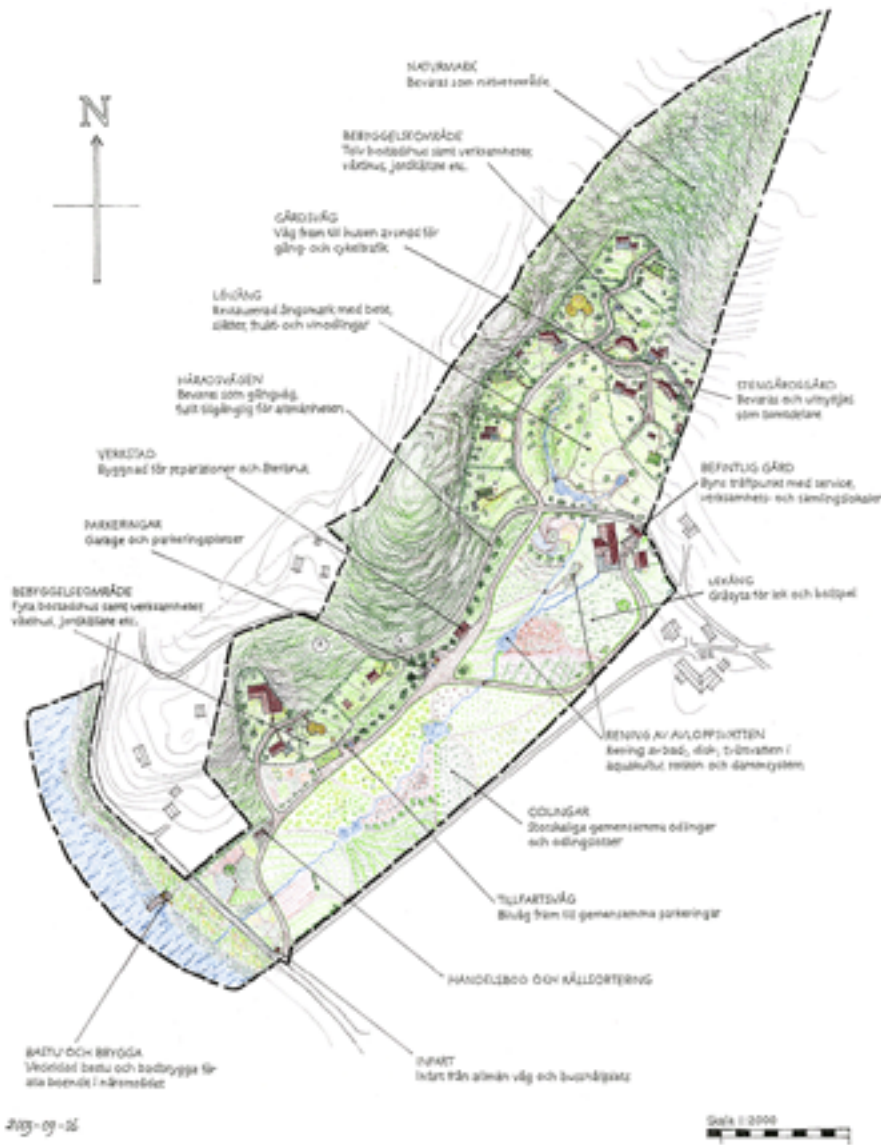


Figure 13. Illustration of Utsikten Ecovillage ("Illustration över Ekoby", 2018).

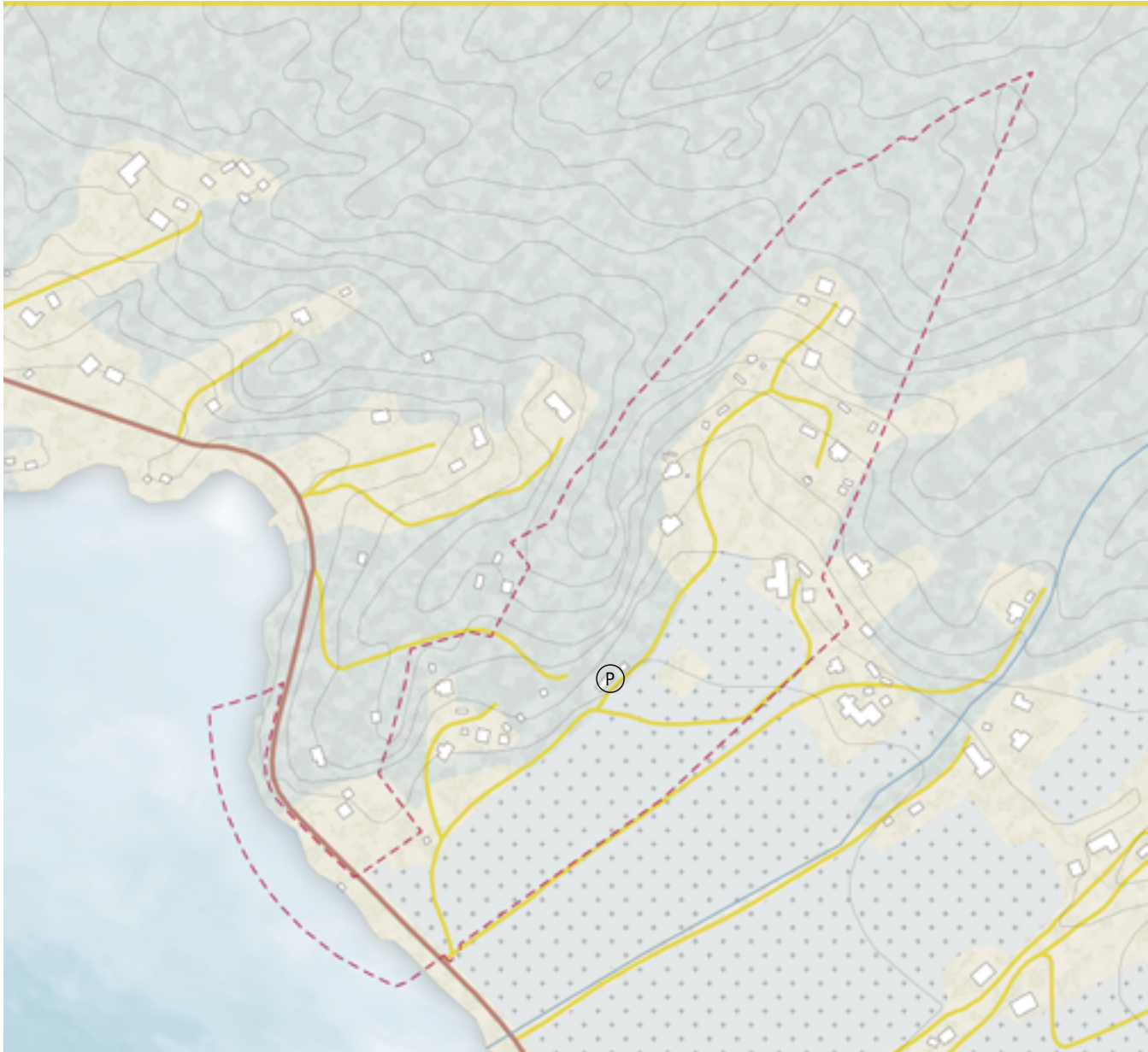
VILLAGE STRUCTURE

The entrance of Utsikten Ecovillage is by the main road along the lake. Houses are distributed along the road, most of them are located on the slope to get a good view. In the lower part is the fertile land and planned orchard in the valley. A small stream passes through the middle of the fertile land. A sauna and wooden deck for swimming are built along the lake.



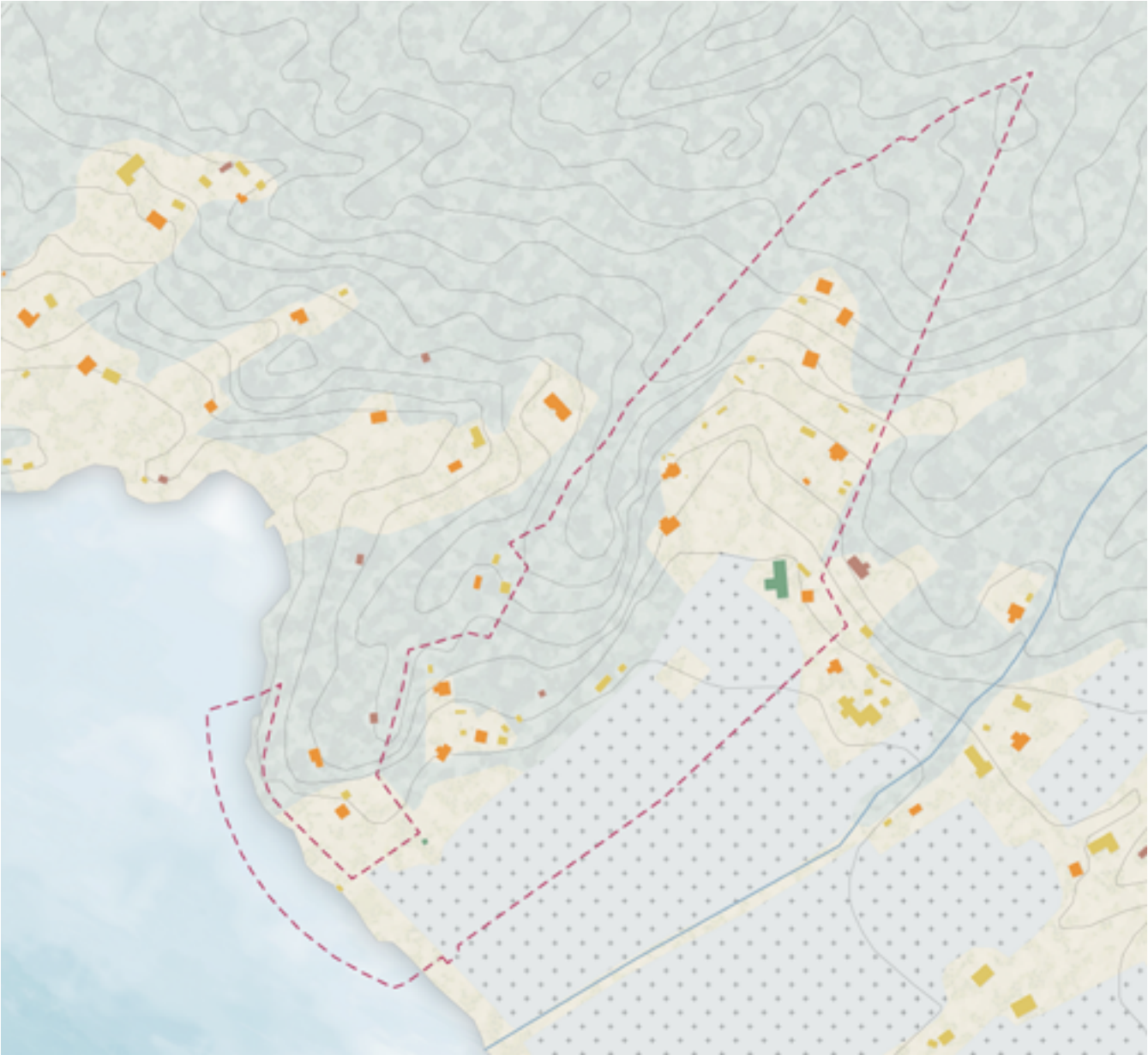
SITE ANALYSIS --EXISTING ELEMENTS

- Forest
- Residential land
- Farmland
- Main road
- Path
- Parking
- Ecovillage boundary
- Water



SITE ANALYSIS --BUILDING CLASSIFICATION

- Housing-villa
- Housing-not specified
- Complement building
- Other buildings



HOUSES

In Utsikten Ecovillage, there are 17 properties right now. They range from size and style. Houses are required to be low-impact to the environment. The materials must be energy-efficient, and if possible to reuse materials. Meanwhile, colors, surface layers, fittings, and installations may not harm people’s health or nature’s cycle. Houses are built with different technics, some are built with straw and mud, some are traditional wooden houses, and some are log houses ("Våra hus," 2018).



Figure14. Houses in Utsikten Ecovillage ("Våra hus", 2018).



1	2	3	4	No.16 in construction Figure 15. House 06 ("Hus 06", 2018). Figure 16. House 07 ("Hus 07", 2018). Figure 17. House 12 ("Hus 12", 2018). Figure 18. House 14 ("Hus 14", 2018). Figure 19. House 15 ("Hus 15", 2018).
5	6	7	8	
9	10	11	12	
13	14	15	17	

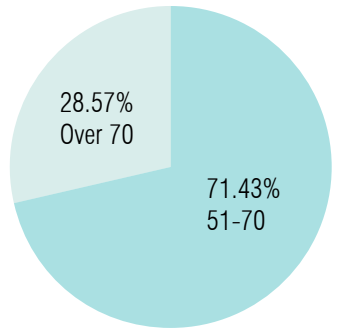
SURVEY

The survey is sent out online to existing residents in Utsikten Ecovillage, 7 households answered the questionnaire. The results are shown as below:

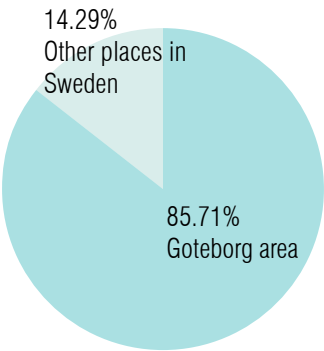
EXISTING INHABITANTS’ PORTRAIT

- The inhabitants living in Utsikten Ecovillage area are mainly middle-aged and elderly people.
- Most of them come from Göteborg region. From the interview, it is also told that some people from Stockholm are also interested in moving here.
- Most people moving here are highly educated and work in culture-related area, such as artists, designer, journalist etc.
- Most of them are couples without children or retired couples, there also some elderly people living alone here, and they say they would live here until they could not manage their life anymore.

What is your age?



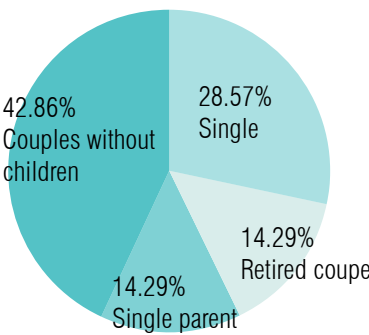
Where do you come from?



What is your profession?

Photographer
Computer specialist
Numera pensionär
Speech pathologist
Preschoolteacher
Musician, University lecturer
Designer
Planner
Journalistst

What is your household situation?



SURVEY

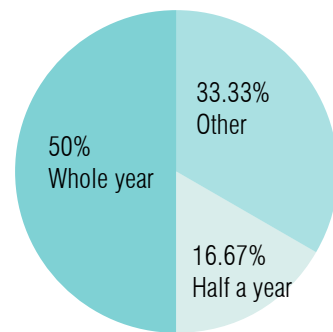
LIVING SITUATION

- People move to Utsikten Ecovillage mainly to get close to nature and enjoy the rural lifestyle.
- 50% of them live here all year round, but others still need to commute between Orust and other big cities, especially those who live or work in Goteborg before, they still need to come back to Goteborg now and then for the labor market connection or other personal social contacts.

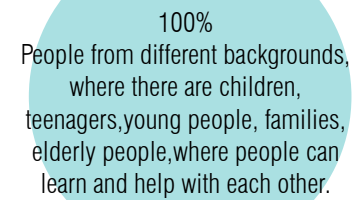
VISION

- All the people answered the questionnaire hope the village to be an open community, which includes people from different background, where there are children, teenagers, young people, families, elderly people, where people can learn and help with each other.
- Meanwhile, the community can have some spaces opening for other outside people
- All the responders hope to grow food by themselves here.

How long do you think you would stay in Utsiktens Ecoby?



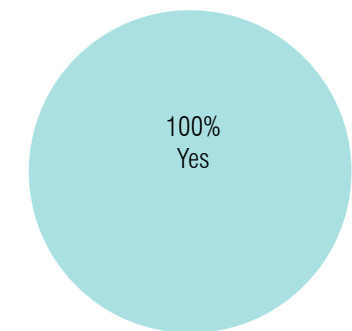
Imagine if you live in a co-living community, who would you like to include in your community?



Imagine if you live in a co-living community, would you like it to be:



Would you like to grow food by yourself in Utsiktens Ecovillage?

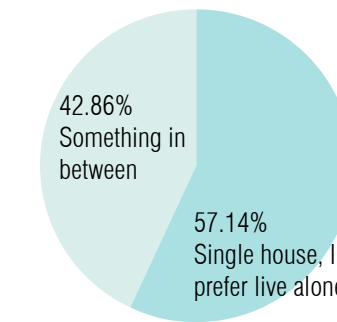


SURVEY

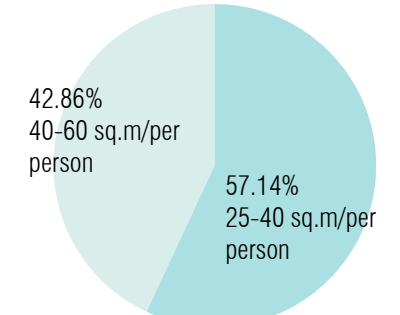
LIVING PREFERENCE

- 57.14% households still choose to live in single houses, no one showed interest in traditional co-living, but there are still 42.86% people are searching something in between single houses and traditional co-living.
- 57.14% people think 25-40sqm is enough for per person, and those who insist on living in single houses prefer larger space per person, around 40-60 sqm per person.
- 71.43% People would like to get more private space by sharing some spaces with others, but people also think it's important to have their own kitchens even if there is a common kitchen.
- As for the scale of a sharing community, 42.86% people prefer to share with 10-25 people.
- People's preferences for programs and functions are shown in the chart.

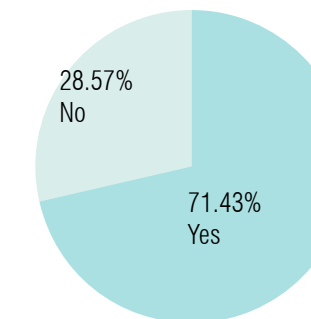
Which kind of living condition do you prefer?



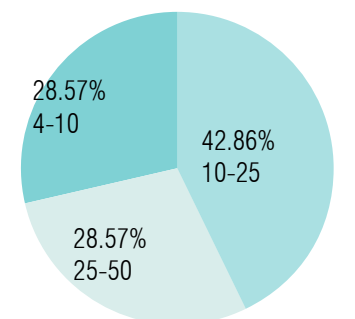
How much space do you think it is enough for you?



Do you prefer to get more private space if you share some space with others?(like kitchen, working place etc...)

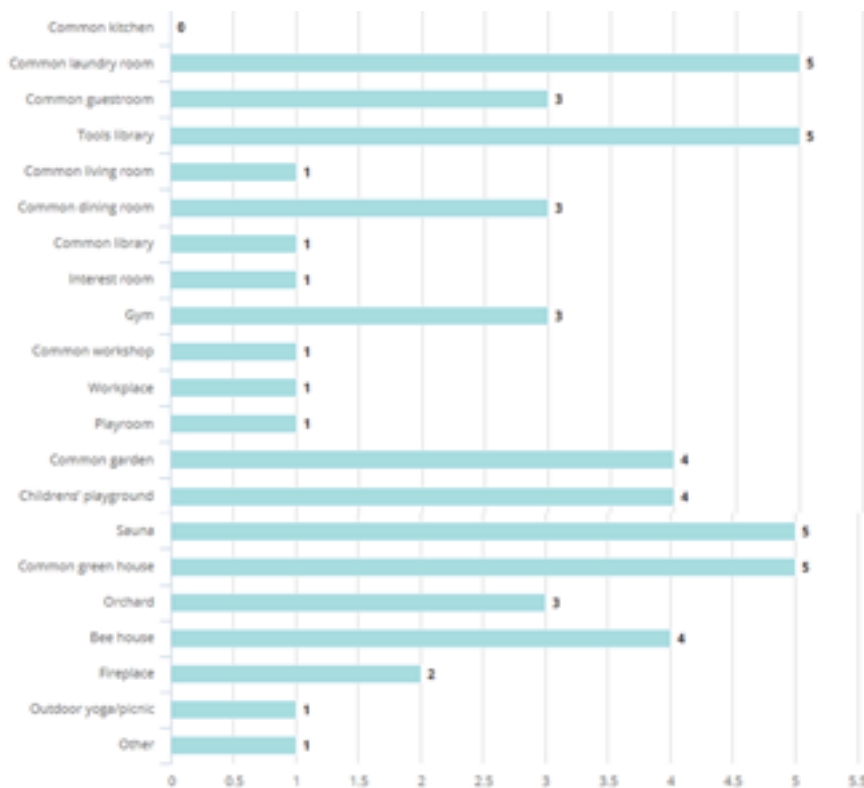


If you share some space and facilities with other households, what is the right amount of people do you like to share?

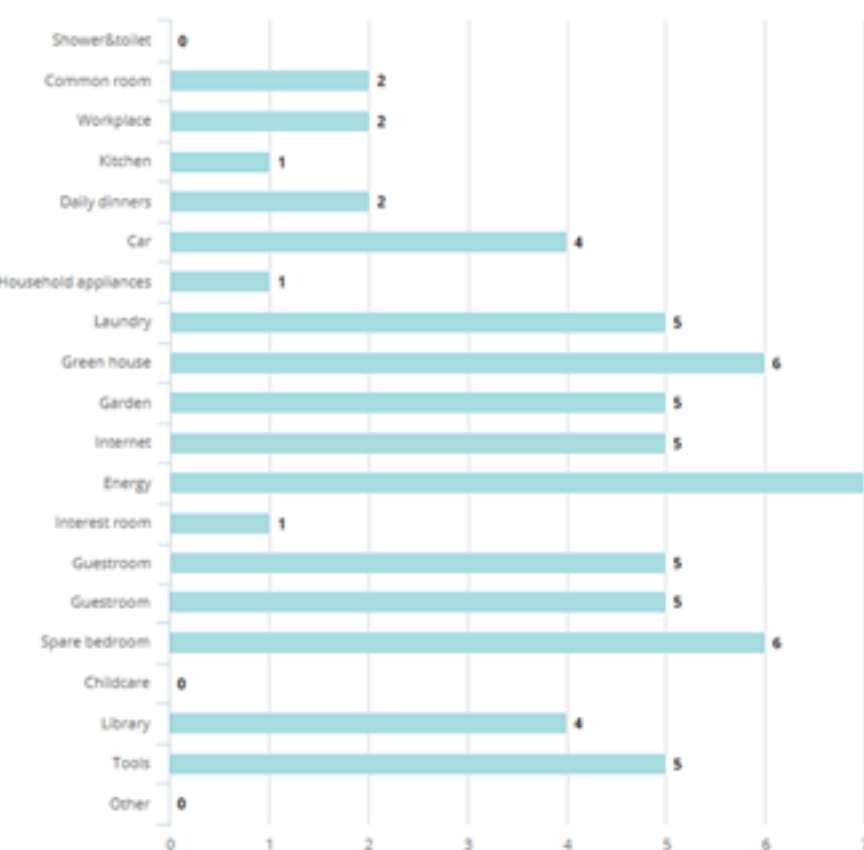


SURVEY

Which functions would you like to include in your co-living community?



which of these items are you comfortable to share?



SURVEY

RENTAL PREFERENCE

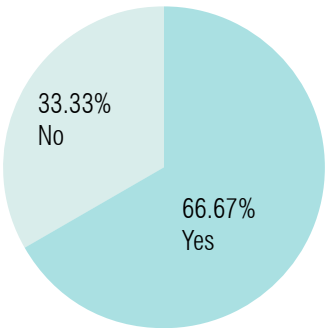
As many people don't live in Utsikten Ecovillage all the year and the general seasonal problem on Orust, many houses are empty in a certain time, therefore the survey also investigated their preference to rent their spaces.

- 66.67% people prefer to have some of their space to be rentable.
- Even their private rooms they are willing to rent out(71.43%) when they are not home.

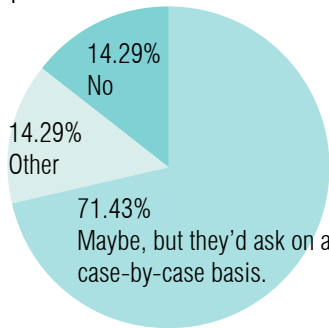
PARTICIPATION PREFERENCE

- 50% people show interest in participating in building process, cause it's interesting, 33.33% people prefer something between self-building and hiring a construction company.
- 57.14%people think they would leave some space for future expansion.

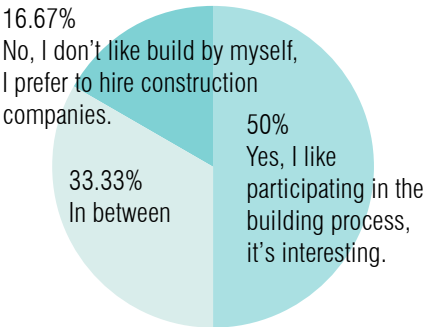
Would you like to have some of your space to be rentable?



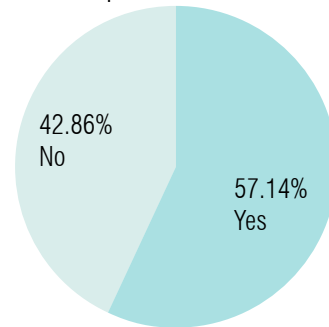
when you are not home, are others allowed to use your private room?



When building a new house in Utsiktens Ecoby, would you like it to be self-building?



When building a new house in Utsiktens Ecoby, would you like to leave some space for future possible expansion?



CONCLUSION

Ageing community, lack young people

Compared to a natural village, Utsikten ecovillage lacks young people, although it does attract some families. In the village and on the whole island, it lacks facilities and activities for children and young people. The high housing prices and homogeneous housing type also make young people unaffordable to live here.

Look for a mixed and open community

From the survey, it clearly shows everyone answered the questionnaire is welcoming an open community which mixes people from different background, the existing villagers are showing a positive attitude to a sharing community, they would like to establish a close relationship with their neighbors, and get help from each other.

The rural lifestyle is the most important

People come here because of the rural lifestyle, therefore the development should put the local environment in the first place, low impact to the local environment is a must and keep a rural lifestyle is important.

Potential to rental accommodation

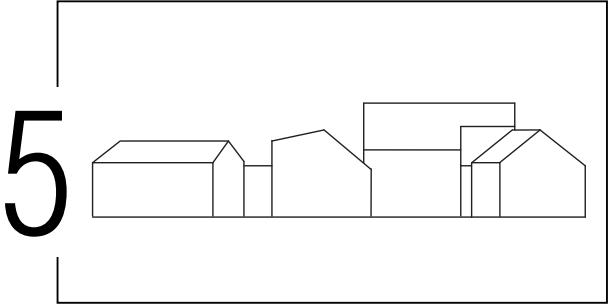
As for the seasonal problem on the island and most people shift between Orust and surrounding cities, their properties have the potential to rent to other people when they are empty. Also, the rental accommodation gives more people the chance to experience the rural lifestyle for a short time.

Look for a new type of co-living form

People show a positive attitude to a sharing lifestyle and an open community, but they also hope to have their private spaces, therefore they ask for a new type of co-living, which is between single houses and conventional cohousing community.

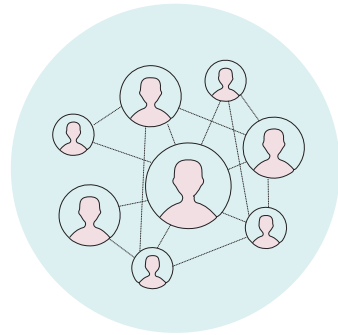
Active local engagement

Most of the newcomers are highly educated, they have different lifestyles, values, and expectations about the countryside compared to original villagers, both in terms of its landscape and its social relations. As most of them are working in areas related to culture, they are active in engaging in local development.

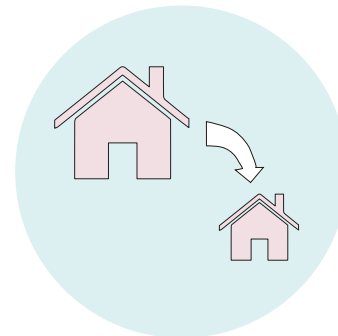


PROPOSAL-PLUG-IN MODEL

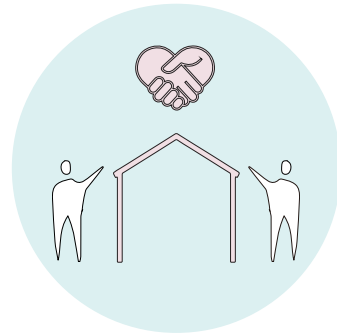
DESIGN PRINCIPLES



Mix different people, promote **diversity and intergenerational inclusion**



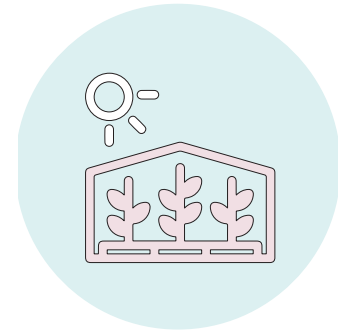
Advocate **smaller homes** that satisfy basic living needs



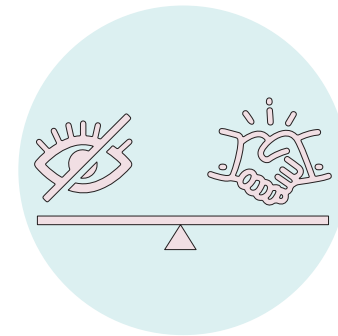
Promote **sharing lifestyle** and **mutual caring** from the neighborhood



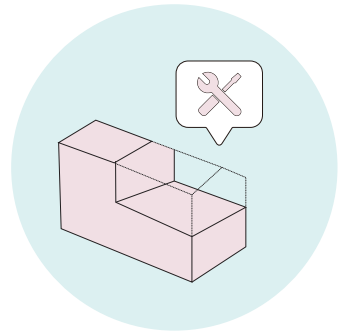
Affordable for most people



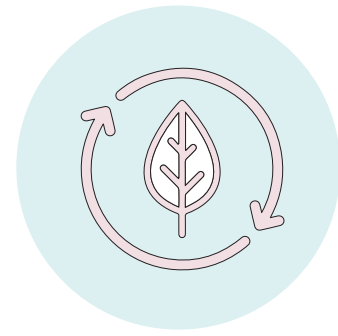
Promote small-scale **food production**



Balanced private and shared spaces



Part of the house is **customized** with different needs



Low-impact to the environment

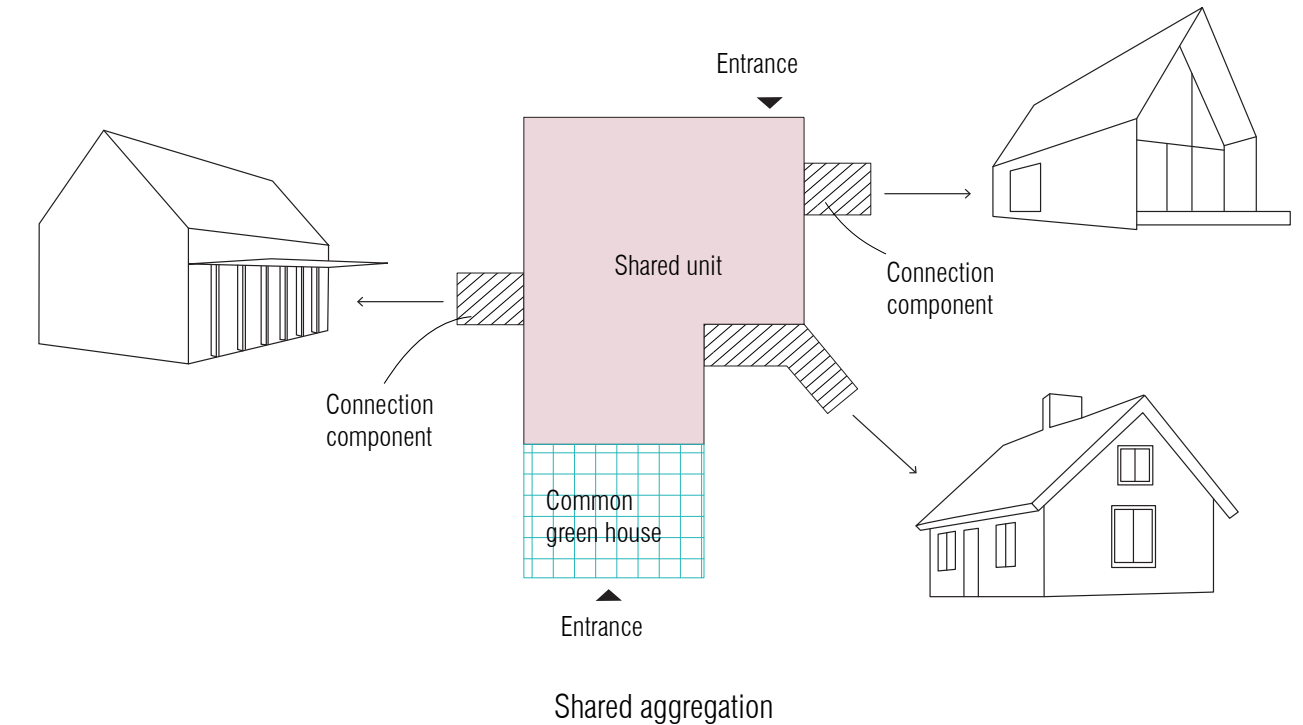
PLUG-IN MODEL

-SHARED AGGREGATION

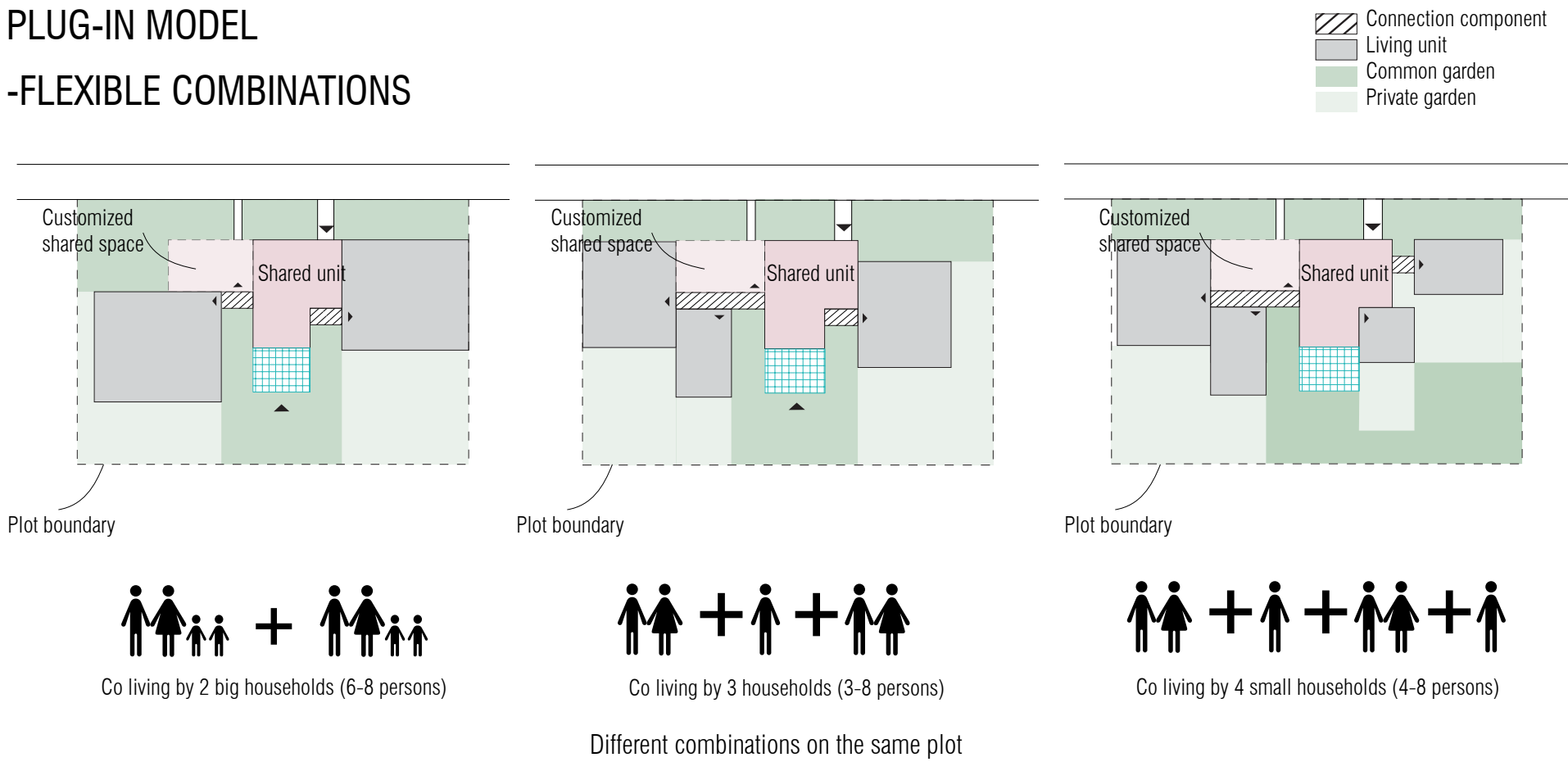
The innovative co-living community is made up by several "Shared aggregations".

"Shared unit" is the core of a "Shared aggregation". With openings in different directions, "Shared unit" can be connected to different "Living units" through simple "Connection components". In this way, it can realize co-living simply and easily.

"Living unit" can be a new building or a removed building. For a new building, through sharing facilities and spaces in "Shared unit", it can reduce needed space size, therefore reduce the construction cost. For removed building, through connecting to "Shared unit" and transforming to co-living form, it can release more private spaces for other uses.



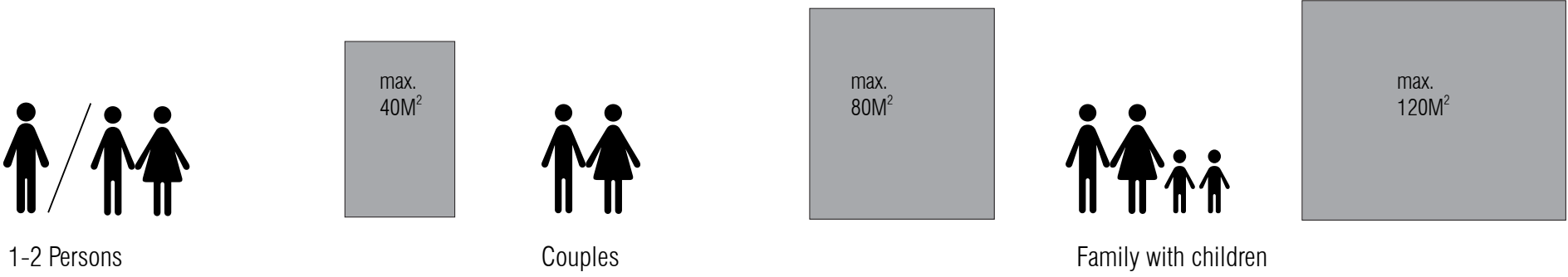
PLUG-IN MODEL -FLEXIBLE COMBINATIONS



One "Shared unit" is suggested to be shared by 2-4 households, varying from 4 to 8 persons. Which is a proper scale to promote sharing lifestyle but also guarantee a good living quality and privacy. As a result, in the same plot, there can be different combinations. The idea is to shape the final design after residents are confirmed rather than providing a unified product to unknown residents. The diagrams above show how different combinations can be shaped on the same plot boundary, which makes the community full of diversity and flexibility. In this way, it also empowers residents to participate in the building process and reduce uncertain financial risks of conventional cohousing development.

PLUG-IN MODEL -LIVING UNITS SIZE CONTROL

The current building size in Utsikten ecovillage varies depending on different household situations. To control the building size is one of the design principles. Because scaling down the building size can reduce the building cost and the environmental impact, it is also a shift of consumerism and mindset. In the case that 2-4 households share a shared unit, private living spaces can be reduced to a large extent. In this proposal living unit for 1-2 persons is controlled below 40m²; living unit for a couple is below 80m²; living unit for a family with children is below 120m².

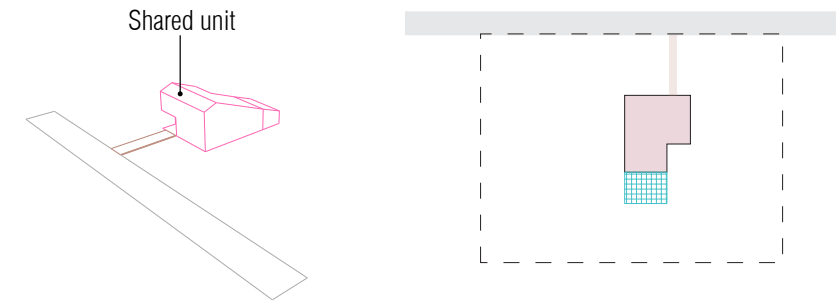


DYNAMIC BUILDING PROCESS -OPTION A

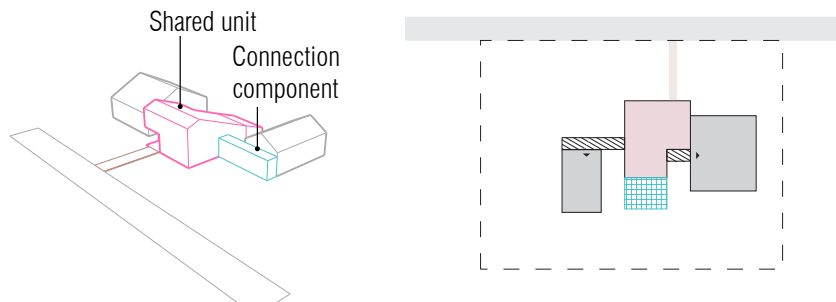
The Ecovillage association can build the "Shared unit" first, it can be operated as a hostel, a common meeting place, or just a sample to attract potential residents. After new residents are confirmed, they can plug their individual houses to the "Shared unit", decide the design and expansion of shared spaces by themselves.

OPTION A: FROM SHARED UNIT TO SHARED AGGREGATION

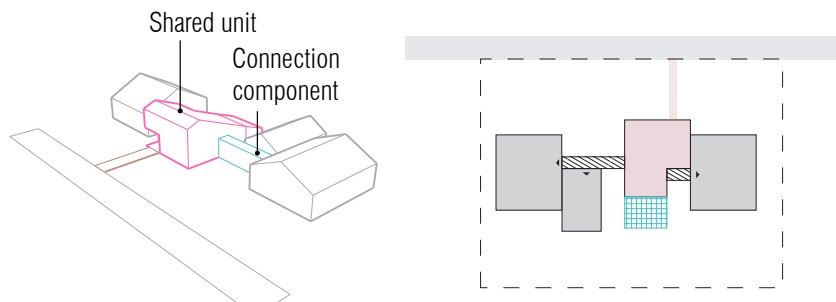
Step 1: Build "Shared unit" which leaves openings that can be connected to "Living units" later.



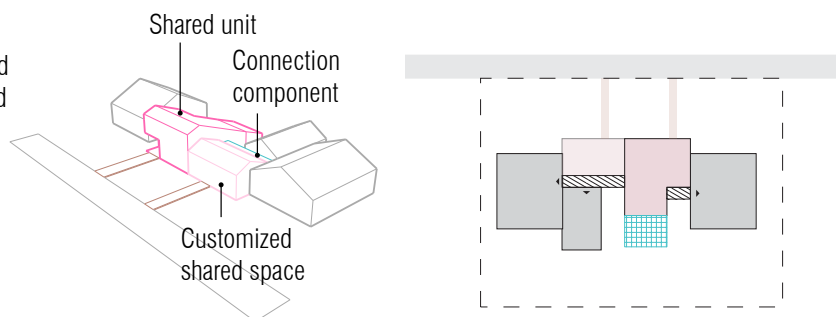
Step 2: "Living units" are placed around "Shared unit" and connected to it by "Connection components".



Step 3: More "Living units" are plugged in.



Step 4: With more "Living units" are plugged in the "Shared unit", there might be the need to expand the shared space depending on different residents' needs.

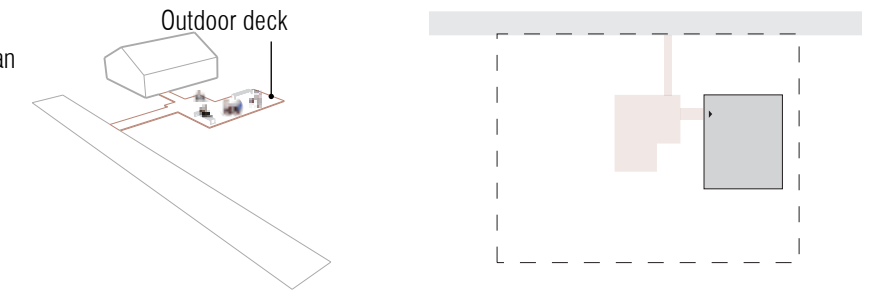


DYNAMIC BUILDING PROCESS -OPTION B

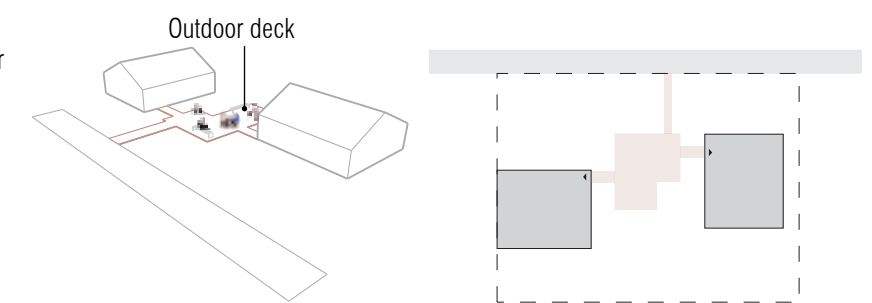
If residents are not ready for a sharing lifestyle at the beginning, they can build their individual houses on proposed plots first. The plot for the basic shared unit can be left as an outdoor deck which connects different households first. And there can be full-scale floor plan on the ground to encourage people to imagine a sharing lifestyle. Once residents decided to build shared space, it is easy to build and connect to previous individual homes. In this way, it can give people different choices but also keep the potential to transform to co-living form in future.

OPTION B: FROM INDEPENDANT HOUSES TO SHARED AGGREGATION

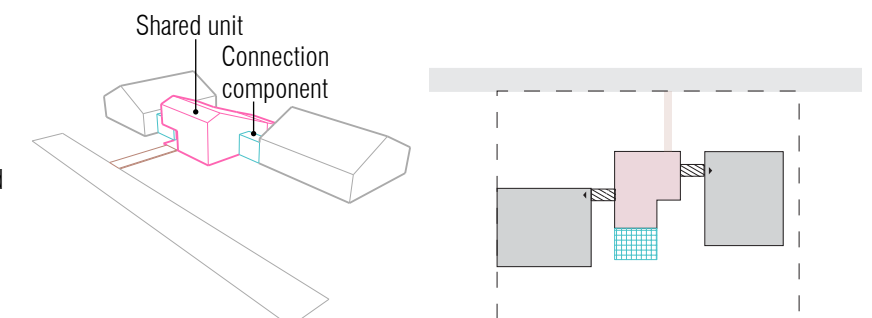
Step 1: Houses are built in the proposed plot, the space for "Shared unit" is left as an outdoor deck.



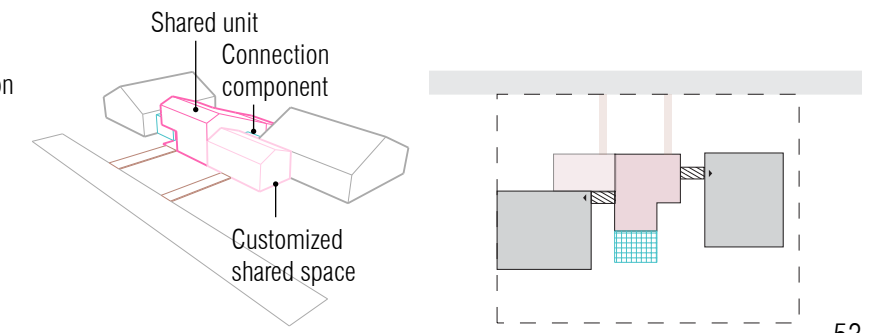
Step 2: More houses are built, the outdoor deck works as an outdoor living room.



Step 3: Once the households agree to share some spaces, the "Shared unit" can be built on the previous deck. Connection components can cover previous paths and transform them to indoor corridors.



Step 4: Expand shared space depending on different residents' needs.








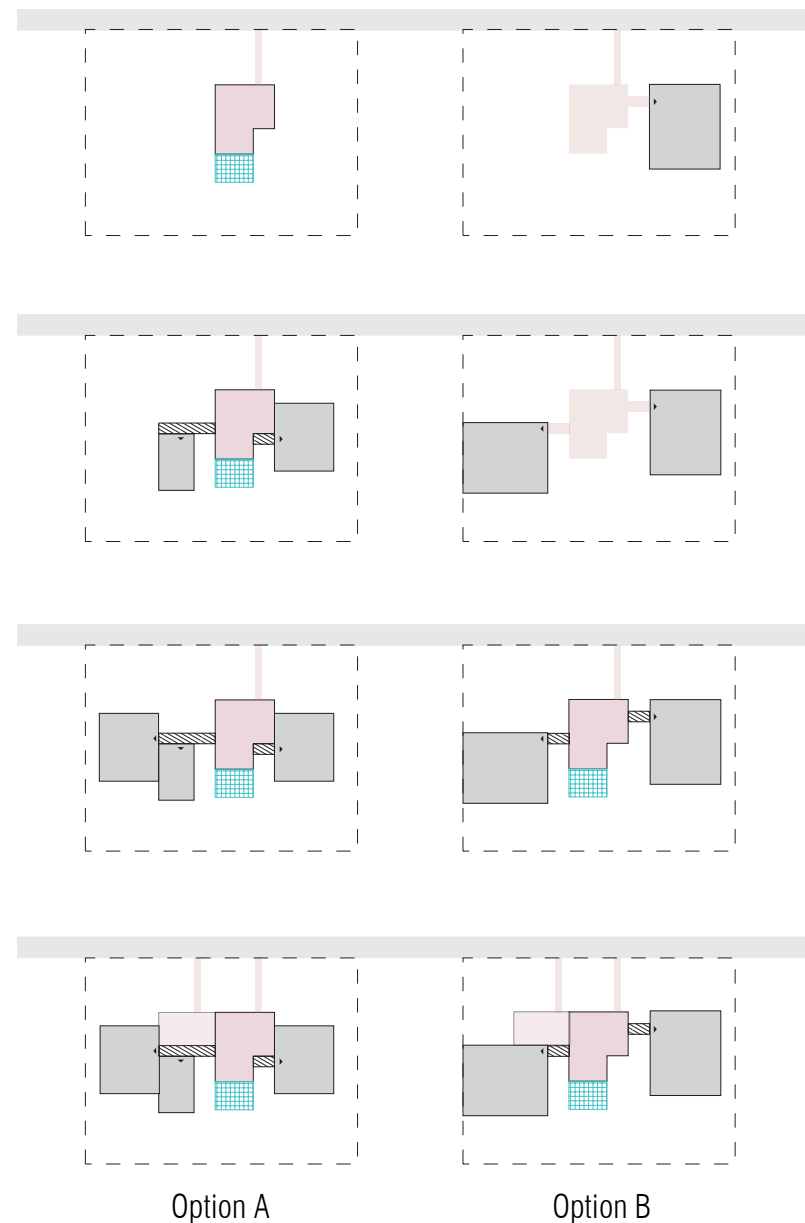
DYNAMIC BUILDING PROCESS

-OPTION A & OPTION B CO-EXIST

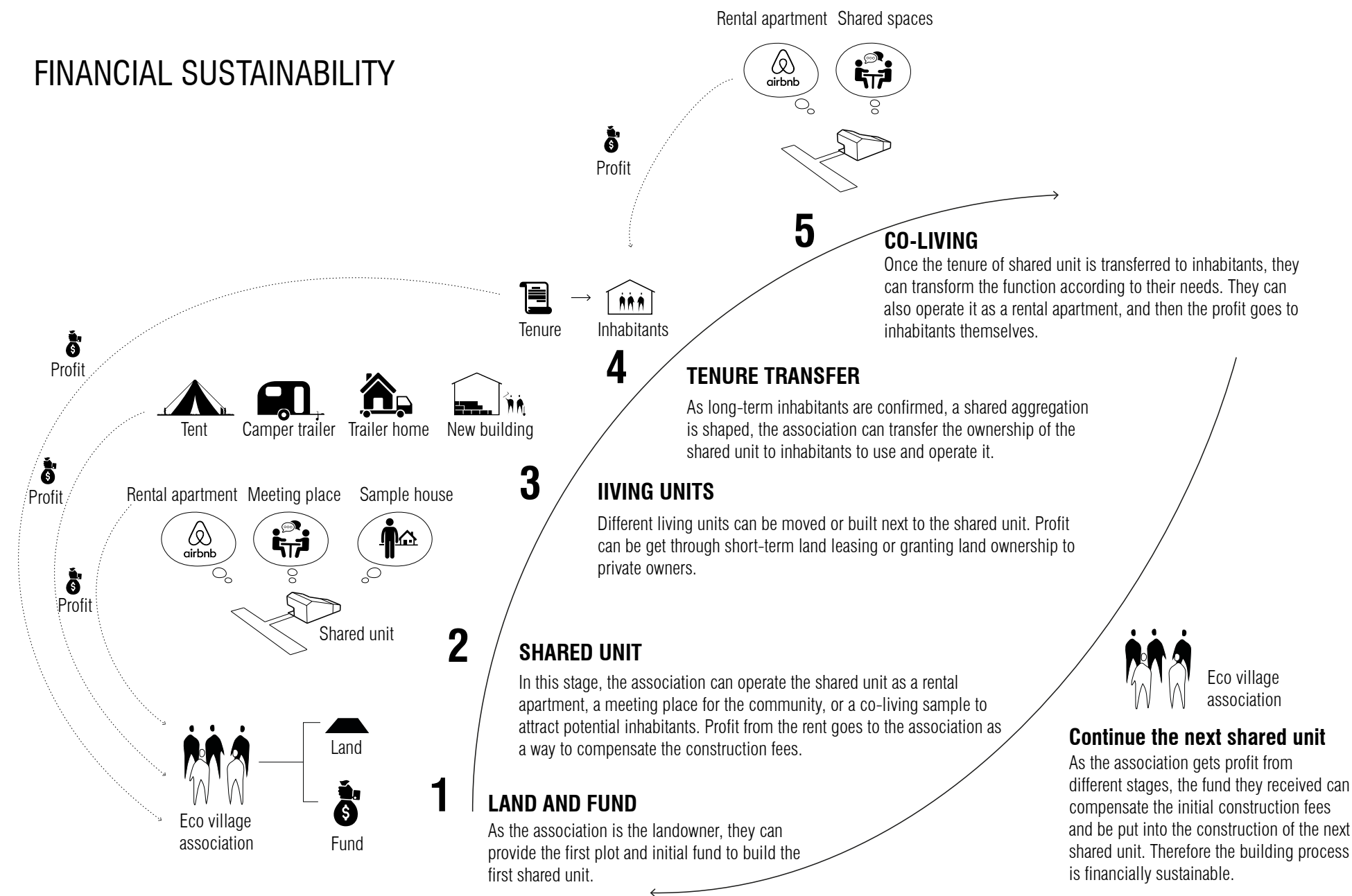
As option A and option B growing paths can co-exist, therefore, the concept is to only **define the layout and design of the "Shared units"**. Under the framework of the site plan, living units can be plugged in "Shared units" later. **Living units are defined by residents themselves** on designated plots. Based on the different combination of residents, they can also choose to expand shared spaces with their different needs. Therefore, the development of the community would be very **flexible, diverse, and dynamic**.

The idea is to **shape the final design after residents are confirmed** rather than providing unified products to unknown residents. In this way, it can **empower residents** to participate in the building process and **reduce uncertain financial risks** of conventional cohousing development.

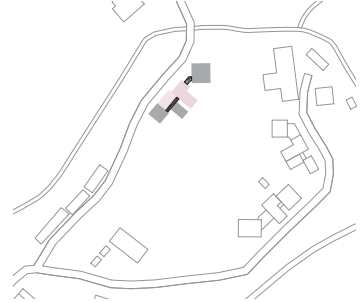
-  Basic shared unit
-  Customized shared unit
-  Living unit
-  Connection component
-  Outdoor deck



FINANCIAL SUSTAINABILITY




SHARED AGGREGATION EXAMPLE
 -ACTORS




Imagine this shared aggregation is shared by one young people, one retired couple and one family with children.

I am a digital nomad, I work from home, so I can work anywhere I like. I enjoy the natural environment here, that's why I prefer to live here. I travel a lot, when I am not here, I hope my room can be rent out.




ALEX
Age: 28 years old
Move from: Stockholm
Profession: Computer engineering
Interests: Sports, Music



We are local Orust residents, we move here because the housing price is affordable compared to the westal coast, and the sharing community is so interesting! Our children can grow up in an open atmosphere, where they can learn a lot from our different neighbors.

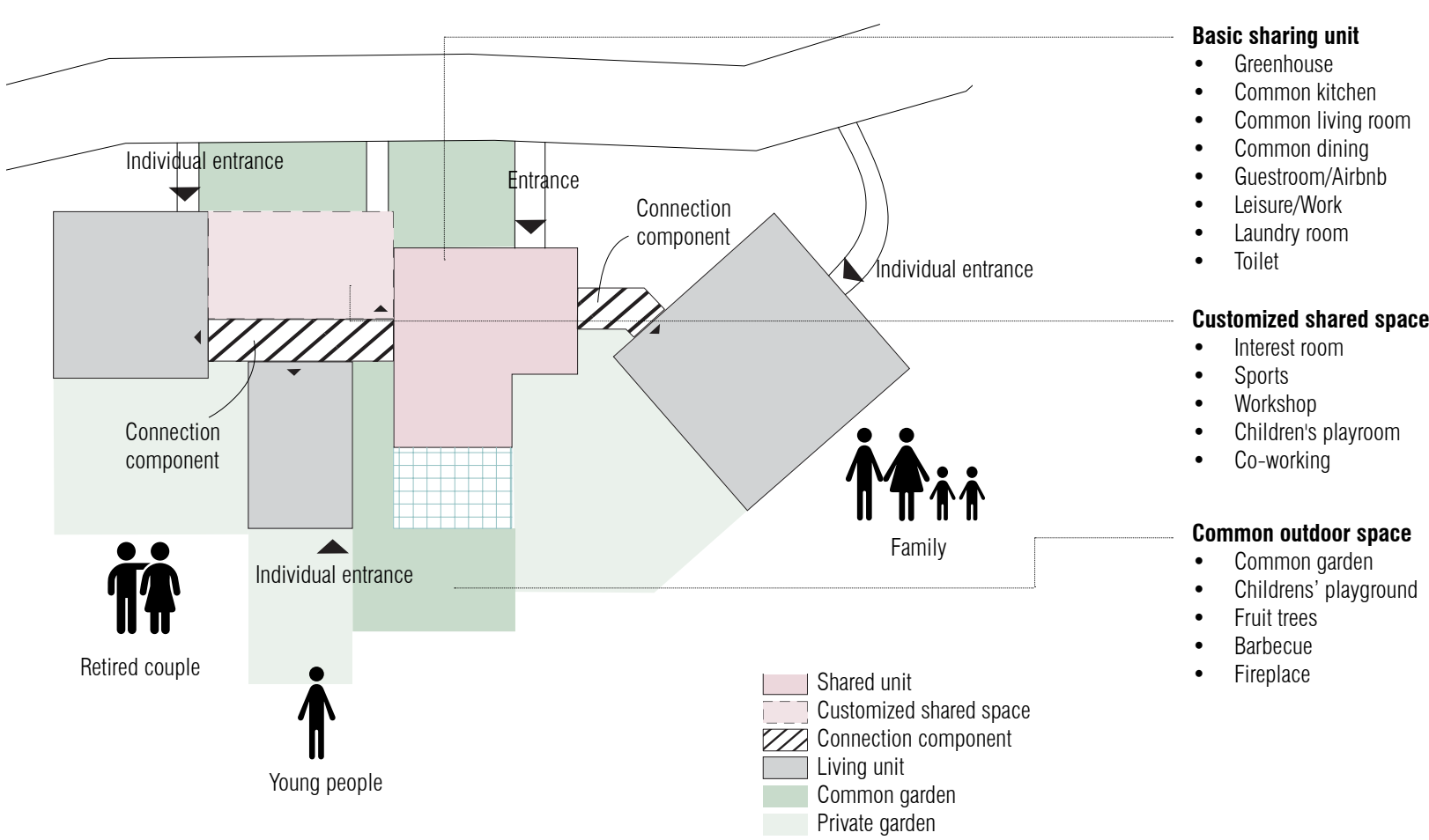
JOHN, MARIA & KIDS
Age: 4, 7 and 40
Move from: Local Orust
Profession: Municipality employees
Interests: Music, Cooking, Sports

We would love to move out to the countryside to spend our retiring years in a calm environment. We have lived in an apartment in the city for 30 years working. Now we look forward to having nature just outside the door, being able to work in the garden.

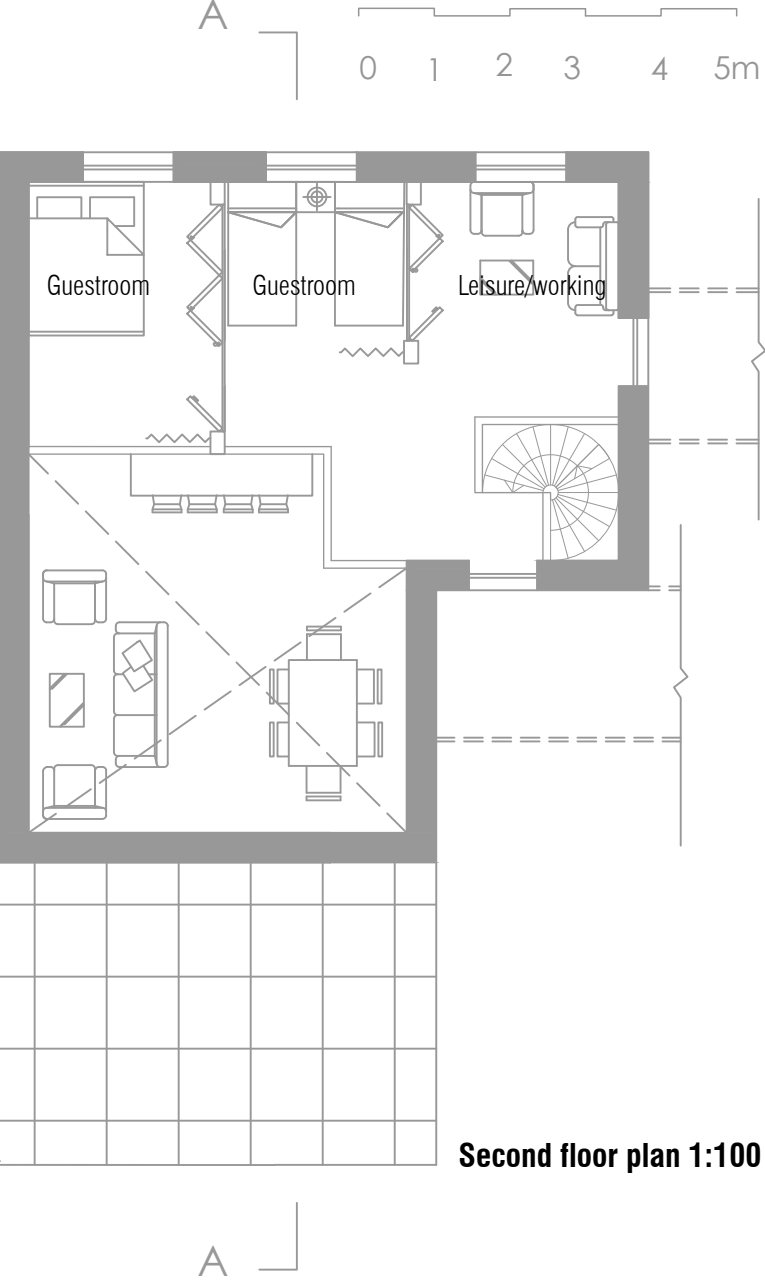
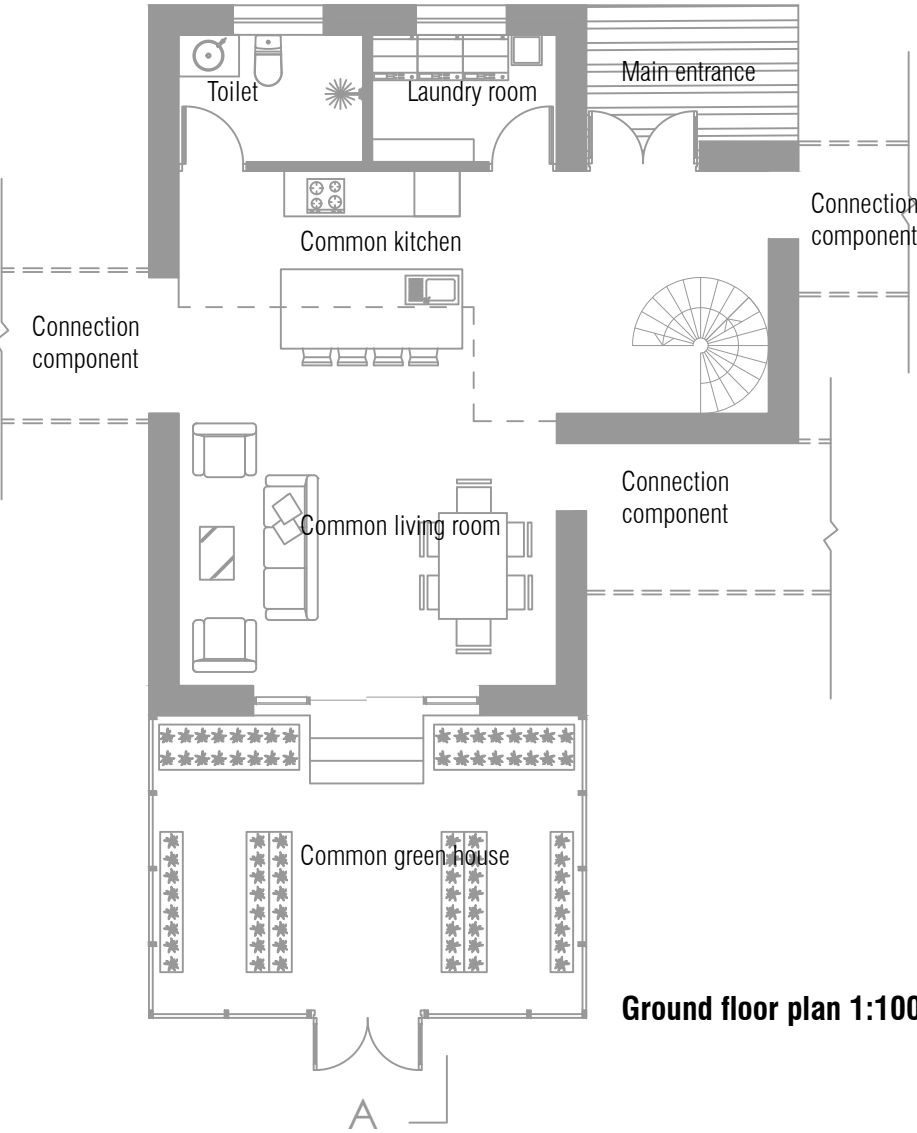


BERIT & KARL
Age: 65 years old
Move from: Göteborg
Profession: Retired, former architect and professor
Interests: Gardening, Woodwork, Crafts

SHARED AGGREGATION EXAMPLE
 -FUNCTIONS



SHARED AGGREGATION EXAMPLE -SHARED UNIT

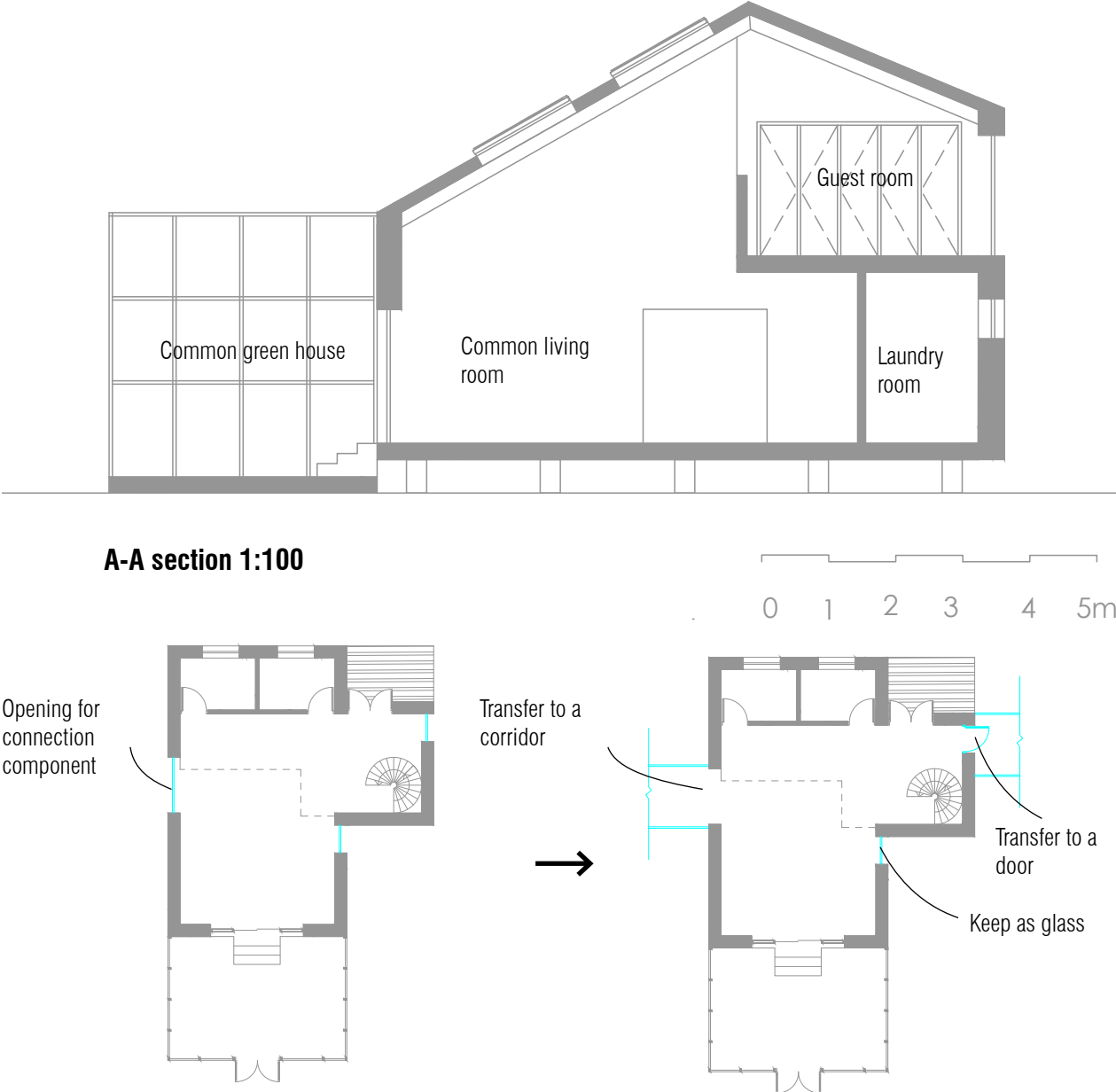


SHARED AGGREGATION EXAMPLE -SHARED UNIT

HOW TO CONNECT LIVING UNITS?

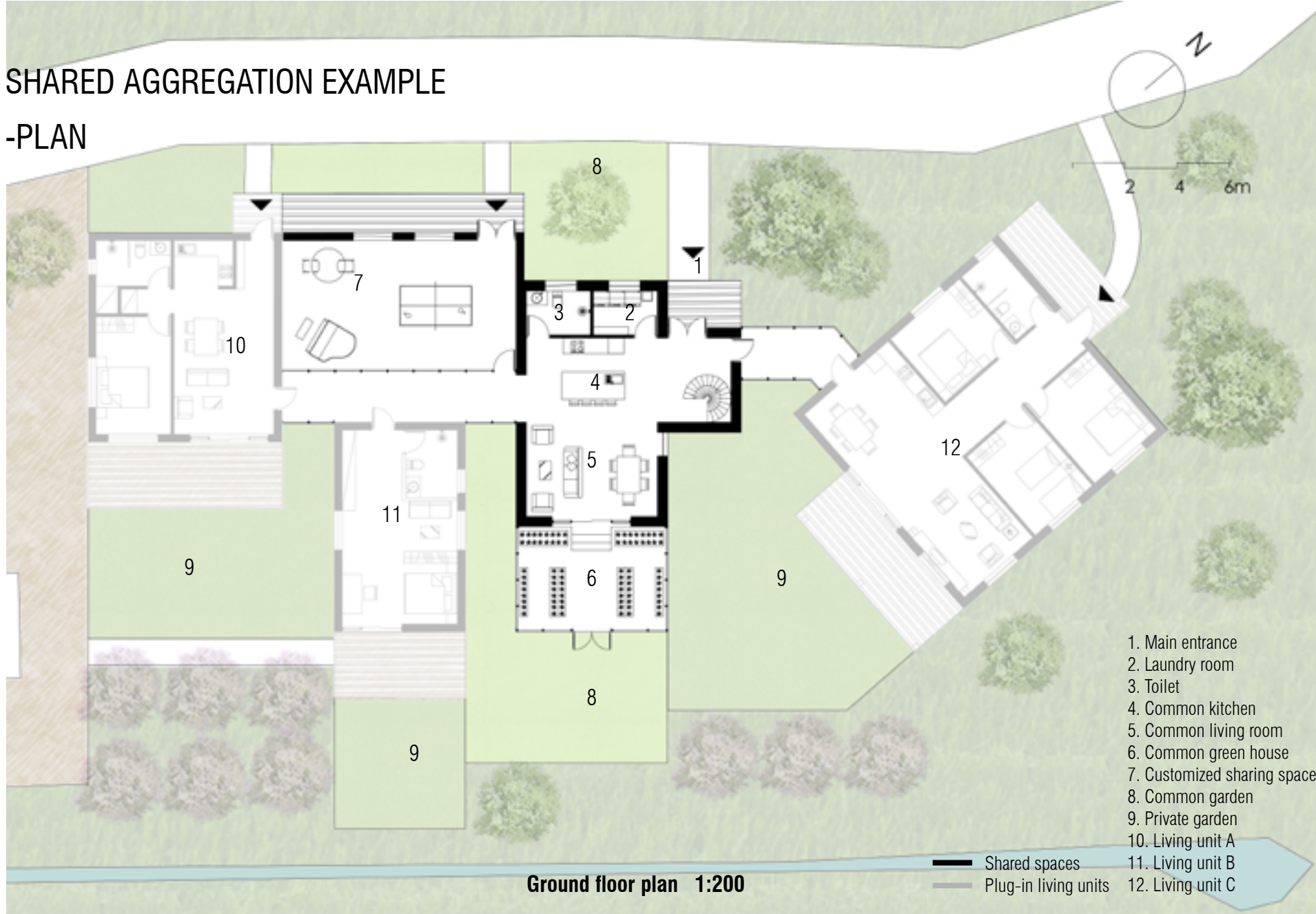
In the first stage, the openings for future connection components are left as glass in advance. Once different living units are placed, which openings will be used can be known.

The openings for connection components can be transferred to a corridor or a door. The openings that are not used will be kept as glass.



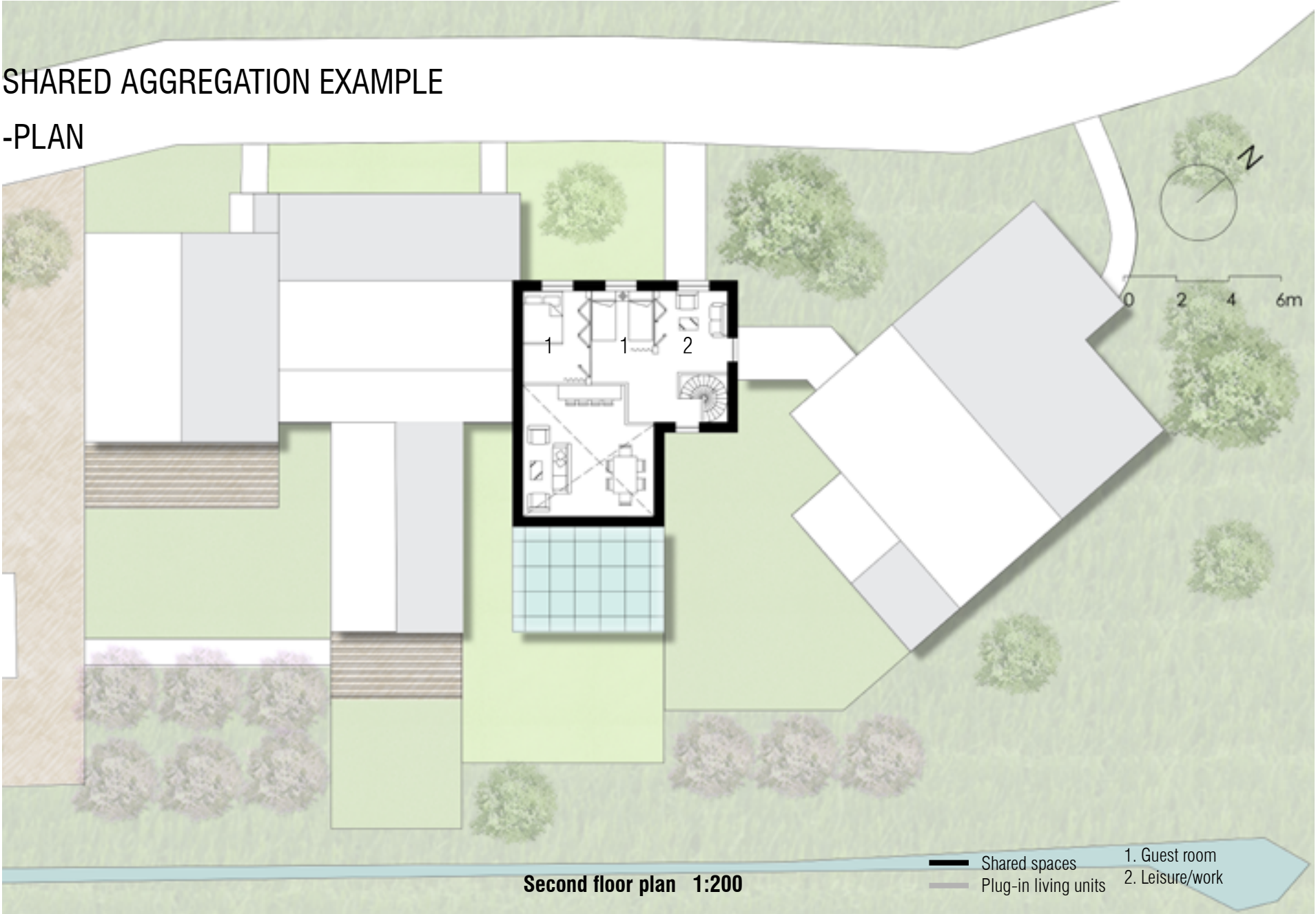
SHARED AGGREGATION EXAMPLE

-PLAN



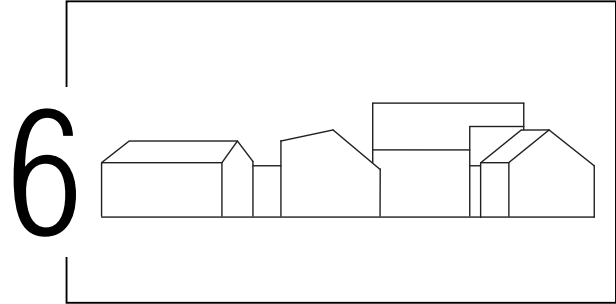
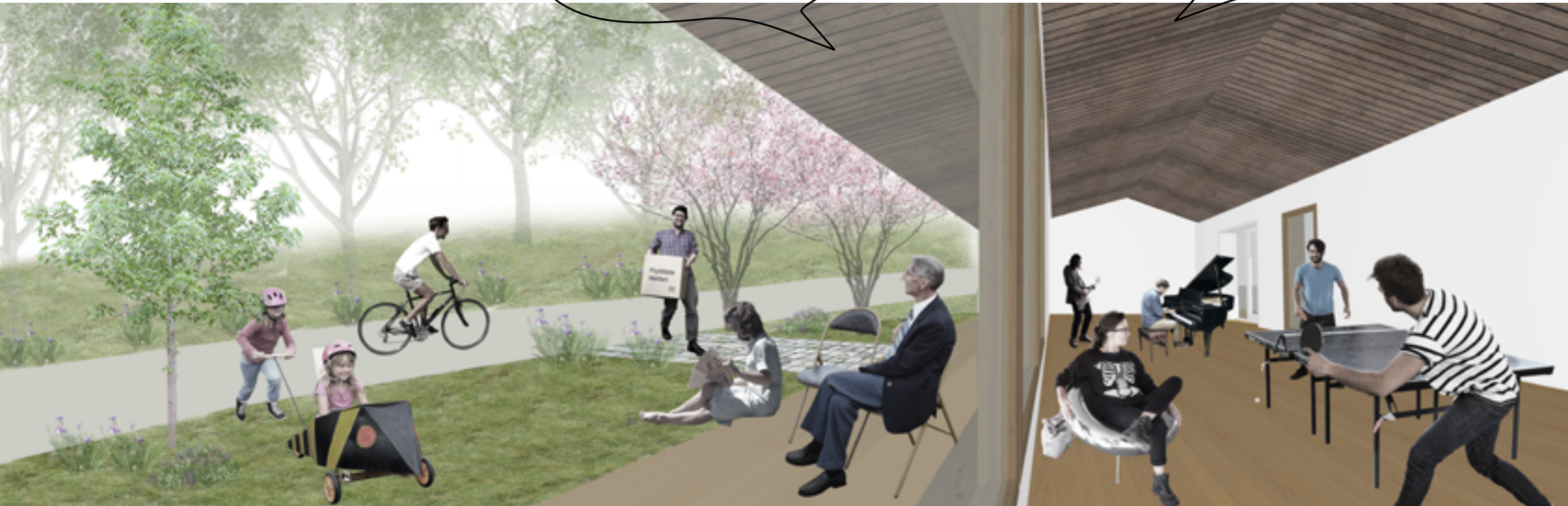
SHARED AGGREGATION EXAMPLE

-PLAN





Scenario from customized shared space



PROPOSAL-COMMUNITY PLAN

TRADITIONAL SWEDISH VILLAGE STRUCTURE

Traditional farming landscape in Sweden is influenced by its own natural environment, topography, climate etc. For sedentary farms or farm villages in Scandinavia, they adopted the infield/outland system, or infield/outland landscapes (Berglund, et al., 2014).

The illustration shows a scheme of an Iron Age hamlet. Settlements are placed beside cultivated lowland areas. Infield is on fertile soil with meadows and is protected from animals' grazing by main fence. Outland is a half-open wood pasture with a swidden field, where farmers can obtain forest products (Berglund, et al., 2014).

This kind of land use system creates the unique characteristics of Swedish traditional farming landscape:

A mosaic landscape favored high biological diversity. The village consists of arable land, meadow, grassland, forest.

A close relationship between crop production and animal husbandry—cattle, sheep, goats, and horses. Crop fields and hay meadows were situated close to the farms, collectively forming the infields (Berglund, et al., 2014).

The land use utilized a soil nutrient circulation

system based on organic fertilization (compost and dung) and field rotation that was sustainable for sedentary settlements. The arrows in the illustration indicate transport of hay and leaves from meadows, straw fields to the barn, manure from the barn to the fields, and cereals from the field to the farm house (Berglund, et al., 2014).

Spaces to store winter fodder and keep animals in winter is important because of the cold climate in Sweden.



Figure 20. Infield/outland in southern Sweden, a reconstructed landscape image from Late Iron Age ad 500-1000 (Berglund, et al., 2014).

TRADITIONAL SWEDISH VILLAGE STRUCTURE

The illustration below reflects the expansion of a village on the coastal plain in the south of Sweden and the change of agriculture. In Bronze Age ab. 1000 bc, a double farm with fenced infields was surrounded by grazed outlands. In Late Iron Age ab. ad 1000, a hamlet had expanded to five farms and a large infield area surrounded by a vast outland pasture. Today, this hamlet has grown to a small village, houses are placed along the road, fences are disappeared, and the former outlands have been drained and cultivated in large scale to suit modern industrial farming method (Berglund, et al., 2014).

However, as the result of industrialization, afforestation, depopulation, it can be seen the small-scale traditional farming system has been replaced by large-scale industrial farming. Study shows this agricultural landscape transformation has reduced the biodiversity in rural areas.



Figure 21. Landscape reconstructions in southernmost Sweden, nearby the city Ystad (Berglund, et al., 2014).

TRADITIONAL SWEDISH VILLAGE STRUCTURE

Another land use division principle influenced farmland pattern in Sweden is the sun distribution of land (solskiftet). Since the early Middle Ages, the farming of land in the villages in the countryside of Sweden was regulated by Solskifte system. In this way, the fields were divided into strips and distributed so that each family in the village usually received access to equivalent portion of good and bad fields ("Solskifte",2018). The regularity of farmland strips can be observed particularly in southern and central Sweden, where there are lots of plains and transitional plains.

The map below shows a linear village in southern Sweden. Houses are placed along the road, facing the regular strips of farmland in the south.

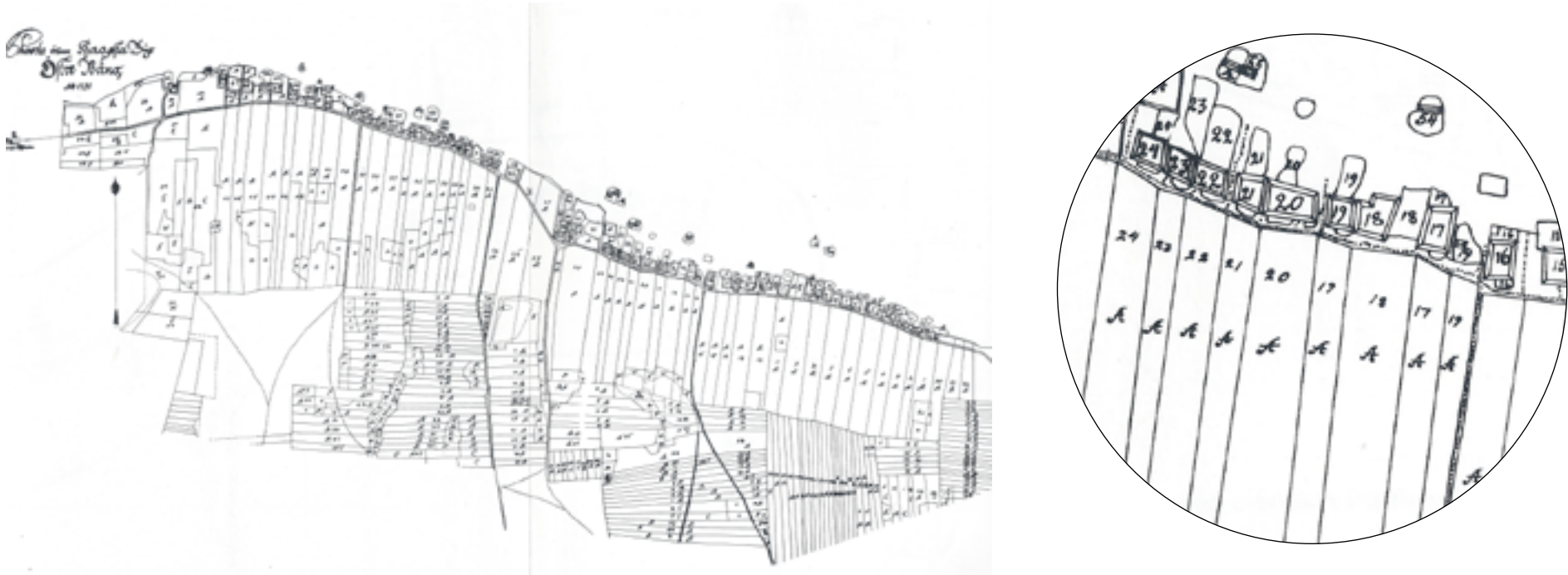


Figure 22. Hagestad 1731 ("Bevarandeprogram för byar i Ystads kommun", 1985).

PLANNING CONCEPT

From the inspiration of traditional linear village structure, village grows along the road, the road is an important element that connects all the individual houses. Therefore, the concept is to transform the road from an infrastructure element to an important socially shared spine, which connects common facilities, open spaces, shared spaces; Living spaces can be seen as plugged in the shared spine and facing the fertile land for food production. This structure also realizes the transition from public spaces to shared spaces, private spaces, and agriculture field.



Transform road from an infrastructure element to an active shared spine which connects different households, different common facilities, open spaces, and shared spaces

PLANNING CONCEPT



POSSIBLE SITE PLAN

- 1. Sauna (Existing)
- 2. Swimming spot (Existing)
- 3. Detention pond
- 4. Water treatment (Existing)
- 5. Children's playground
- 6. Sharing space
- 7. Plug-in living units
- 8. Fruit trees
- 9. Beehouse
- 10. Seasonal garden
- 11. Garage
- 12. Tool storage
- 13. Seats
- 14. Compost
- 15. Warm greenhouse + Aquaphonic
- 16. Garage (Existing)
- 17. Waste
- 18. Barn
- 19. Meadow for animals
- 20. Community house (Converted)
- 21. Beehouse (Existing)
- 22. Orchard (Existing)
- 23. Trampoline (Existing)
- 24. Yoga platform

Existing buildings

New buildings

Plug-in living units





View 1

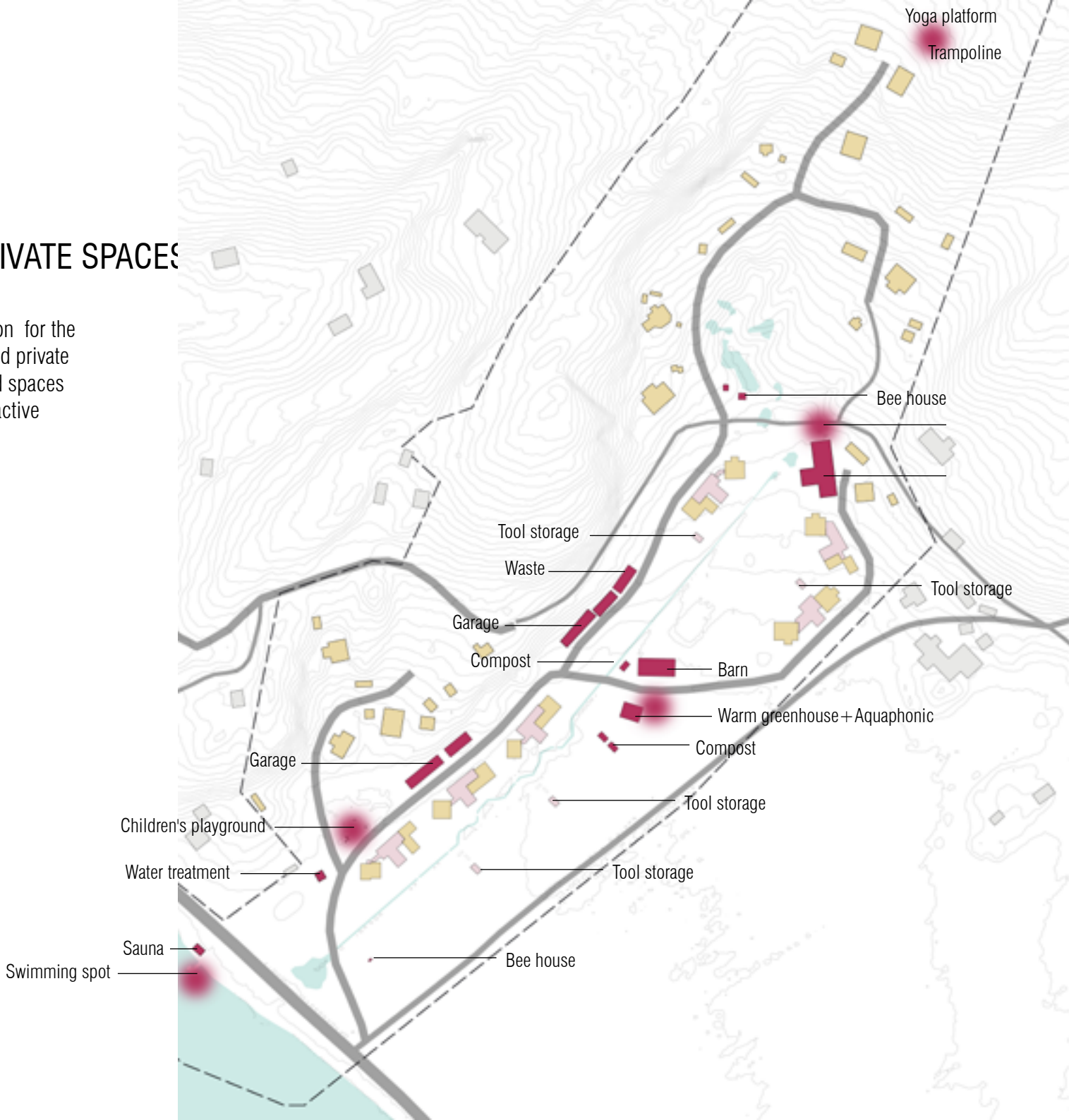


PLANNING FRAMEWORK

-SHARED SPACES AND PRIVATE SPACES

Spaces are divided into three levels: common for the community, shared between households, and private living spaces. Common facilities and shared spaces are placed along the village road, to create active social spaces.

- Common for the community
- Shared between households
- Private living spaces

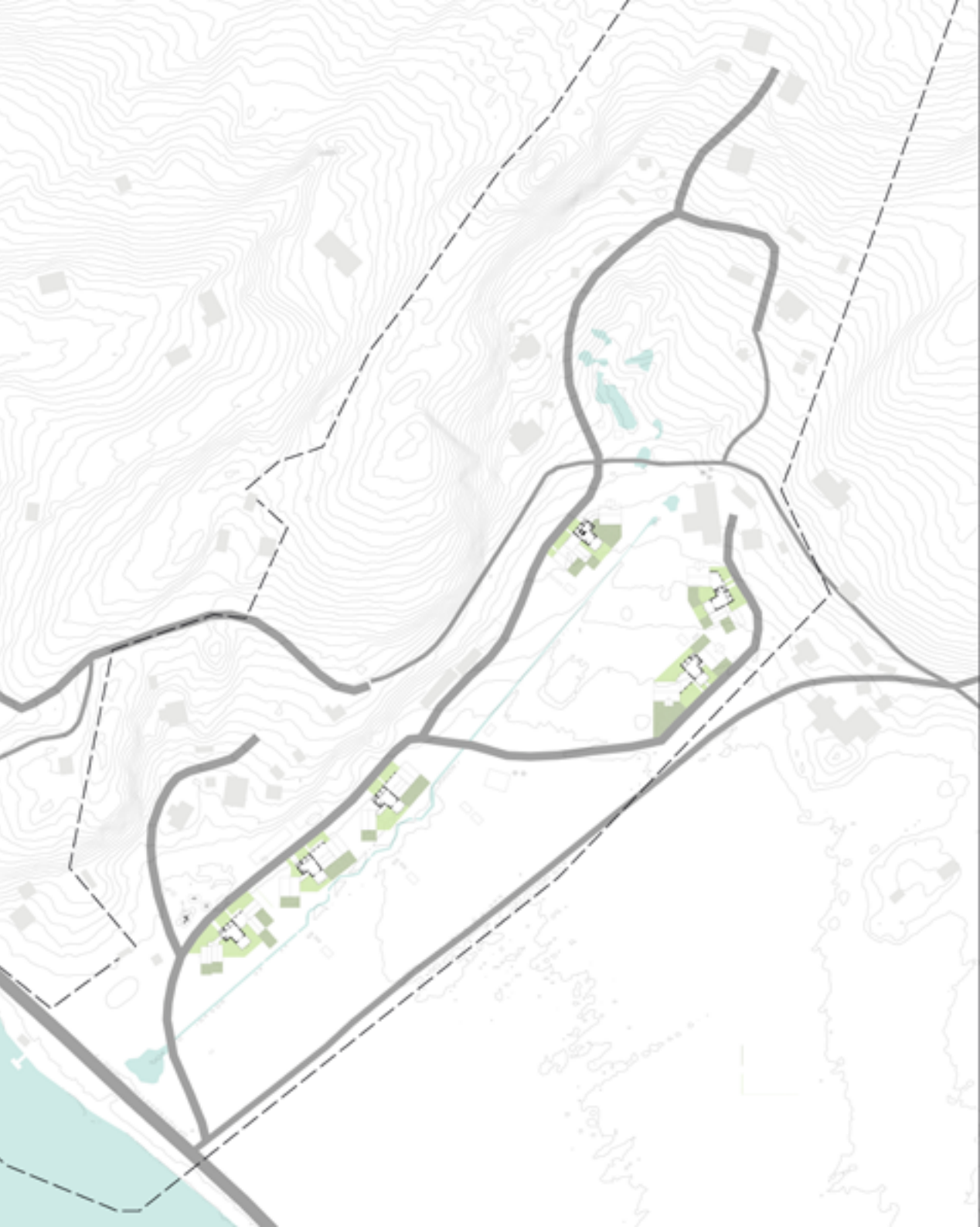


PLANNING FRAMEWORK

-GARDEN

Shared garden belongs to co-living households, and is placed along the road and in front of the cold greenhouses, being part of the main social spaces, while private gardens are placed to the south facing the agriculture landscape, which is more private.

- Private garden
- Shared garden



PLANNING FRAMEWORK -SOCIAL SPACES

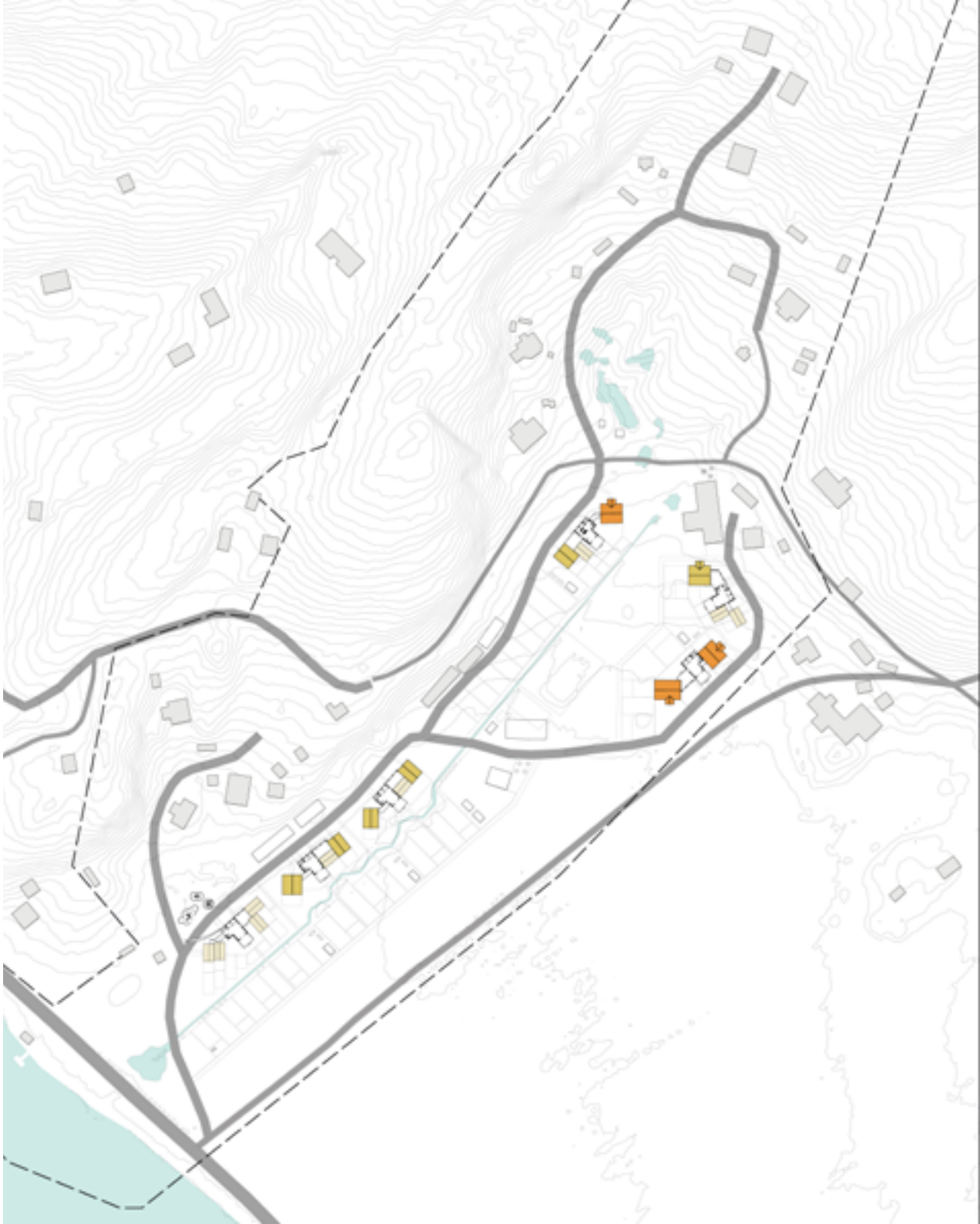
- Outdoor social spaces
- Indoor meeting places
- Shared gardens
- Customized activity room
- Communal farming
- ← - - -> Main activity route



PLANNING FRAMEWORK -MIXED HOUSEHOLDS

The layout shows possible combination of different households, the actual combination can be different, but the vision is to mix people from different ages and background together.

- 1-2 persons
- Couples
- Family

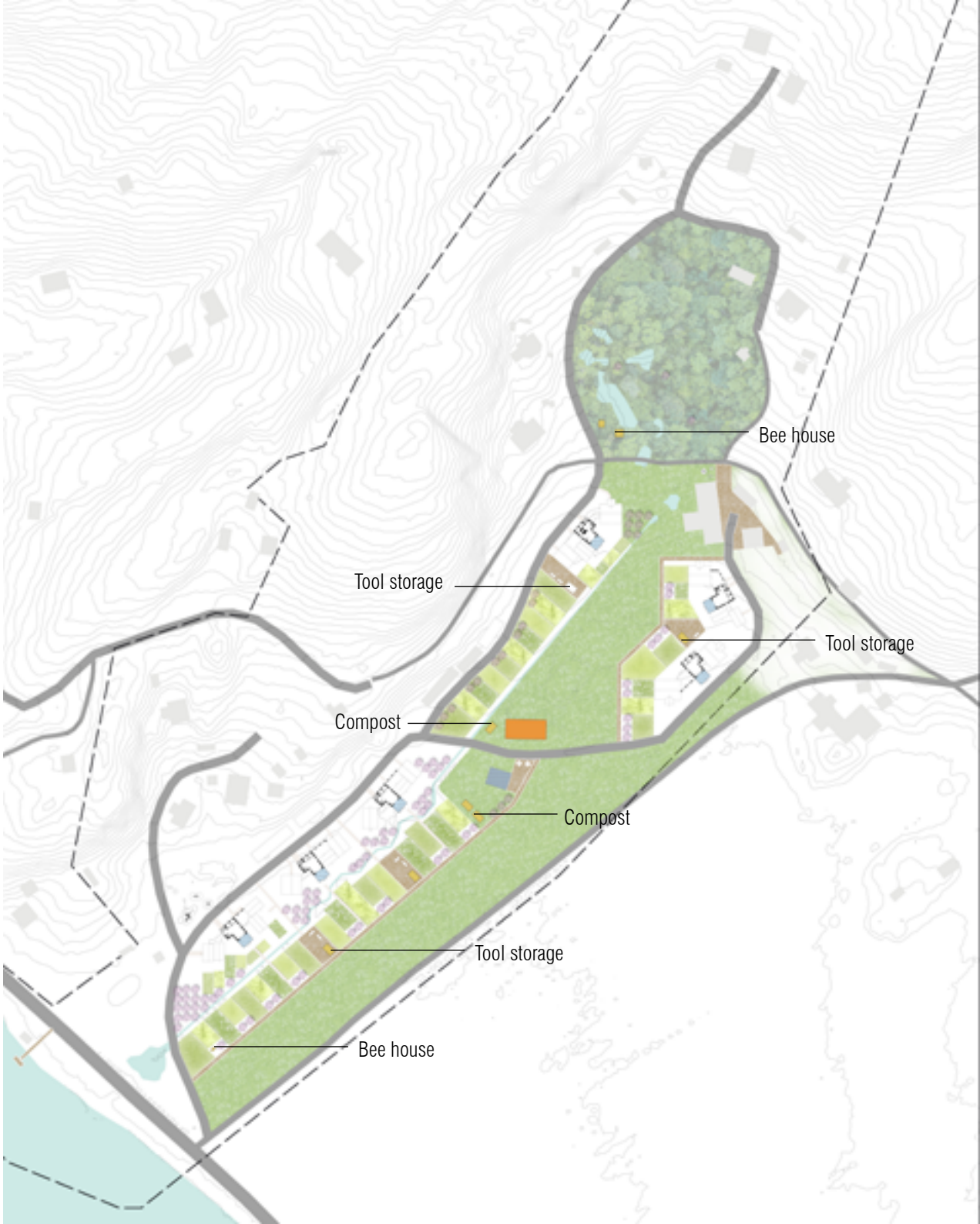


PLANNING FRAMEWORK
-FOOD PRODUCTION

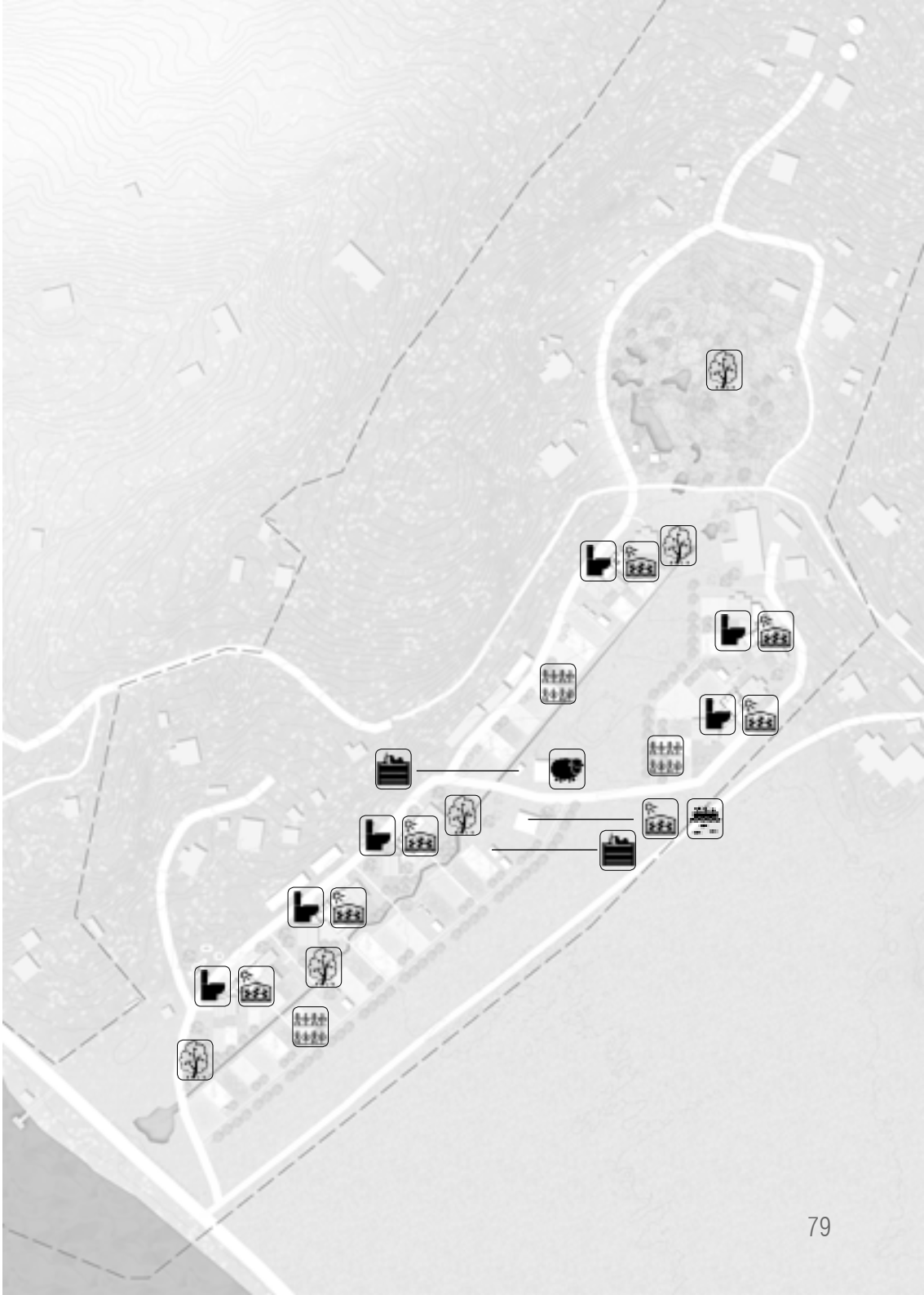
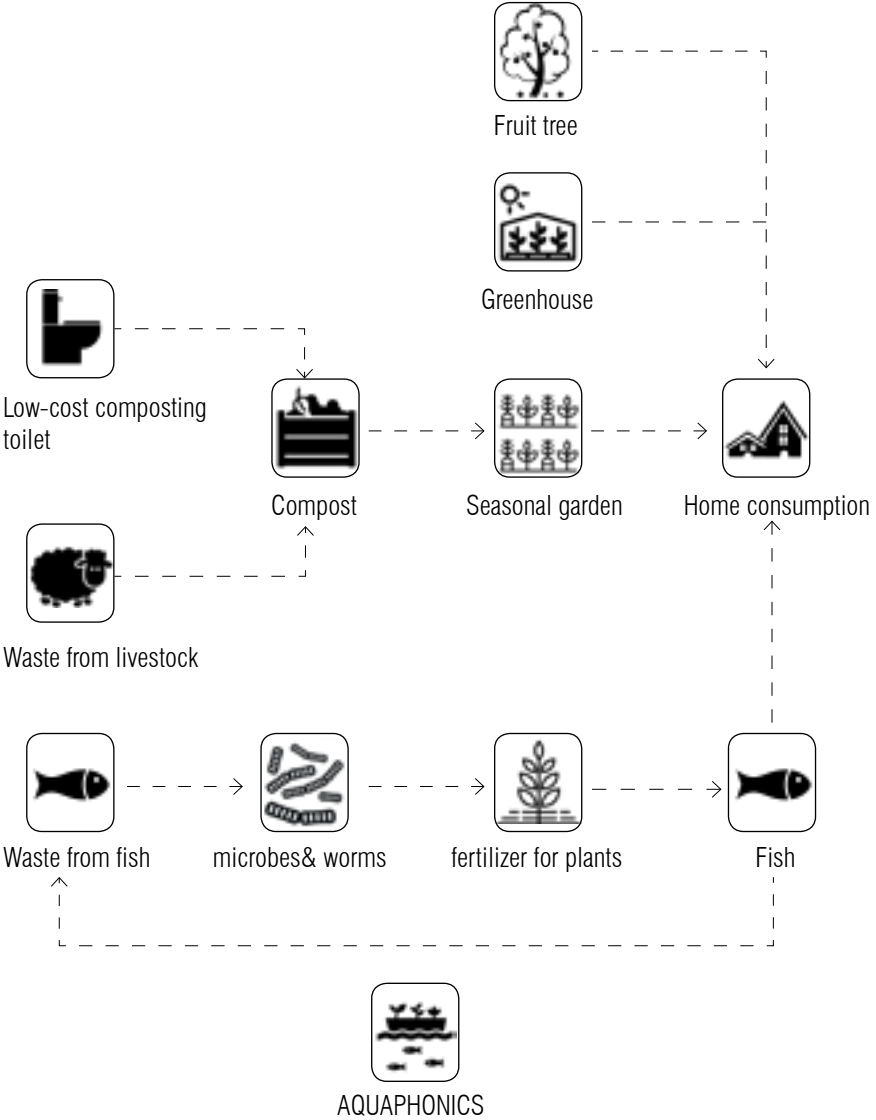
Based on the study of traditional Swedish villages and their farming landscape, the proposal is aimed at restoring traditional small-scale food production and increasing the biodiversity. Meanwhile, It considers the farming characteristics influenced by local weather.

It combines crop production and animal husbandry together; The mosaic landscape including grassland, forest, seasonal garden, orchard, meadow will increase the biodiversity; Every cluster shared a cold greenhouse, and the whole community shared a common warm greenhouse and barn.

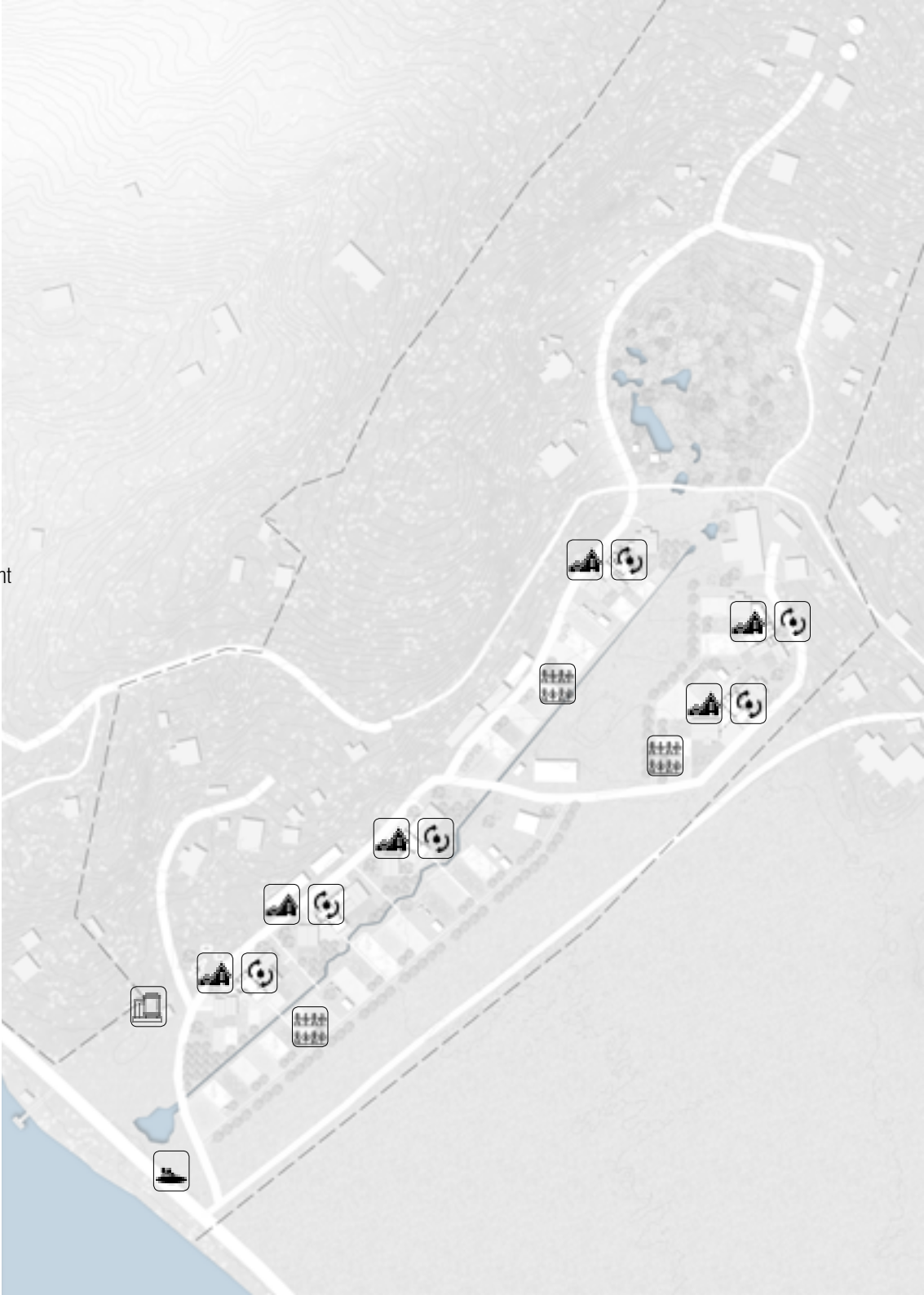
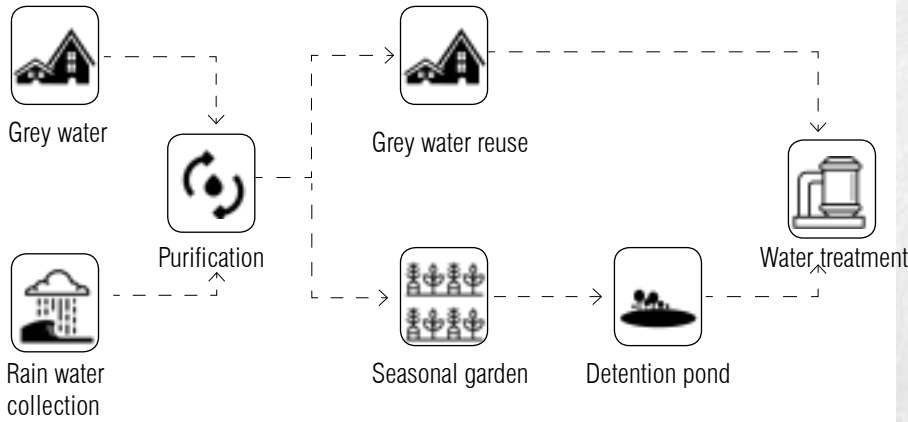
- Seasonal garden
- Orchard
- Meadow for animals
- Cold greenhouse
- Warm greenhouse + Aquaphonic
- Fruit trees
- Barn + winter fodder storage
- Agriculture infrastructure



SUSTAINABILITY
-WASTE AND FOOD PRODUCTION



SUSTAINABILITY
-WATER MANAGEMENT



7
CONCLUSION AND REFLECTION

CONCLUSION

Back to the starting points of this thesis, it focuses on rural housing unaffordable problems, homogeneous housing choices, and rural social isolation. These problems exist not only in west coastal rural areas of Sweden, but also rural areas adjacent to urban areas in many other developed countries.

To solve these problems, the author believes that it is important to providing diverse housing alternatives for new groups, especially the grasp of young people is essential, as they might bring dynamism to the local rural economy. The other point is that intergenerational housing solution is also a way to balance aging population in rural areas and promote social sustainability. Based on these principles, this thesis brings the co-living concept back to rural areas. It provides a new land use development mode and plug-in rural co-living form.

By plugging private living units into a shared unit, private living spaces can be controlled into a small size, which can reduce construction expenses to a large extent. By sharing spaces and facilities this co-living form can also reduce living expenses and give more people the chance to move back to the countryside.

In this attachable co-living form, residents are

empowered to define their own living spaces. They can make different decisions based on different needs and financial situation; it is also possible for them to remove their houses from other places and attach to the shared unit. It provides different living alternatives to different groups. This adaptable, flexible and dynamic mode gives diversity to a community rather than providing unified products to unknown residents.

Meanwhile, the plug-in mode mixes different households together and promotes an intergenerational sharing lifestyle while guaranteeing private spaces at the same time. By living together like a family, bottom-up mutual caring between neighborhoods is encouraged and social isolation can be reduced.

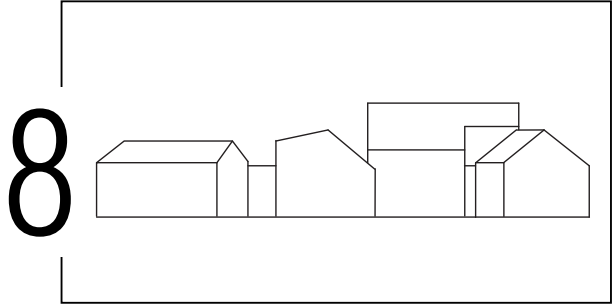
With the development of culture movement and technology improvement, the author believes that living in rural areas will be more people’s choices in the future and it will bring great potentials and opportunities to rural development. Therefore, these emerging problems this thesis focuses on should be concerned. Otherwise, they might be obstacles for rural revivals. This thesis combines the latest research and studies in related different fields and contributes a solution to solve these problems.

REFLECTION

This thesis gives insights into the emerging problems and envisions future rural co-living form. It is more a concept development which provides a new imagination. As a revolutionary way relating to land use and development mode, putting this concept into practice still faces many practical challenges and technical details to be solved, although in the process, I have considered as many practical issues as possible to make this concept more practicable.

The design proposal responds to the Swedish rural context, but as we can see the plug-in development mode is not limited to a specific site, but can be adopted in any other places, which gives it a universal application value.

However, as the world normally focuses on urbanization, the problems this thesis focuses on are not the mainstream or the most urgent urban or rural issues that need to be solved. In the study process, I find related projects or studies are quite rare in the professional field, or they exist in their own different fields and there is a lack of integration. I hope there will be more studies focusing on future rural housing and rural co-living, as the shifts of culture, value, and technology might fundamentally change the way we live tomorrow.



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IMAGES

All images taken by the author if no reference is given.

Fig. 1 [p. 15]

Björling, S. (2016). Housing types on Orust [Chart]. In Program för Bostadsförsörjning (p. 15). Orust kommun.

Fig. 2 [p. 16]

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Fig. 3 [p. 16]

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Figure 4. [p. 16]

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Fig. 5 [p. 17]

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Fig. 6 [p. 17]

Västra Götalandsregionen (2017). Fakta Västra Götaland [Map]. Retrieved September 29, 2018, from https://app.powerbi.com/view?r=eyJrljoiYTlyMmlyOTktODBhOS00NzhILWl4ZmMtM2M5OGU2ZGQwZDdiliwidCI6ImZjNjJhMjU1LTQyMjAtNDdINC05YjVhLTQxOGVIZTMxZGE1ZiIsImMiOjh9.

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Fig. 12 [p. 36]

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Fig. 13 [p. 36]

Illustration över Ekoby. [Online image]. Retrieved July 5, 2018, from <http://www.utsikten-ekoby.se/wp-content/uploads/2010/03/plankartaGrande.gif>

Fig. 14 [p. 40]

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Fig. 15 [p. 40]

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Fig. 16 [p. 40]

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Fig. 19 [p. 40]

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Fig. 20 [p. 66]

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Fig. 21 [p. 67]

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Fig. 22 [p. 68]

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