

RURAL ELDERLY

ARCHITECTURE RESPONDING TO A SUPER-AGING JAPANESE SOCIETY



**BACHELOR
THESIS**

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By

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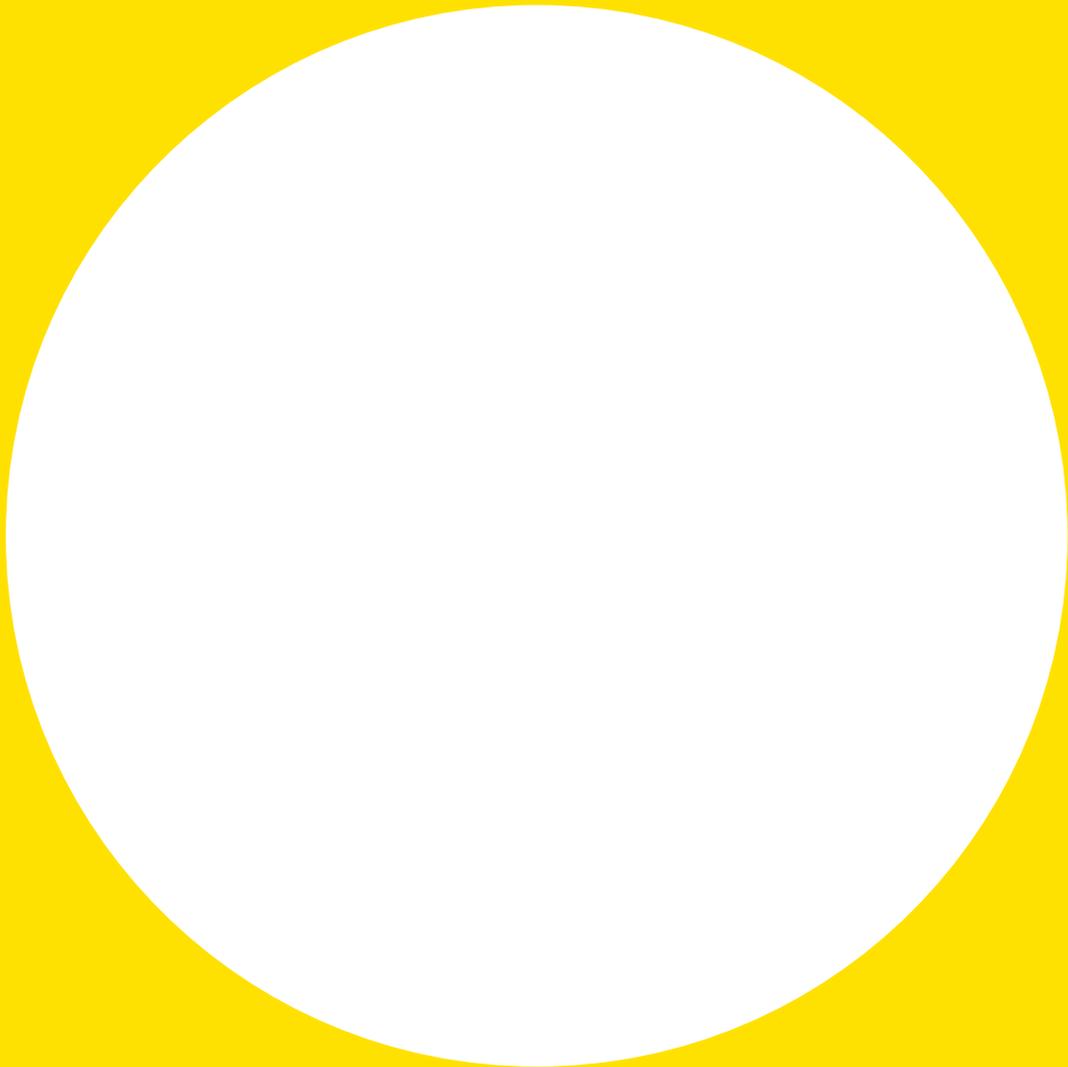
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This paper is the result of a unique opportunity of working in the absolute inspiring surroundings of the Frontofficetokyo firm and the fascinating country I was able to get to know a little better. This experience surely broadened my perspective on life, and especially on design and architecture.

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And not to forget the client and their relatives who had a substantial input within the process.

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person (unless writer is mentioned), nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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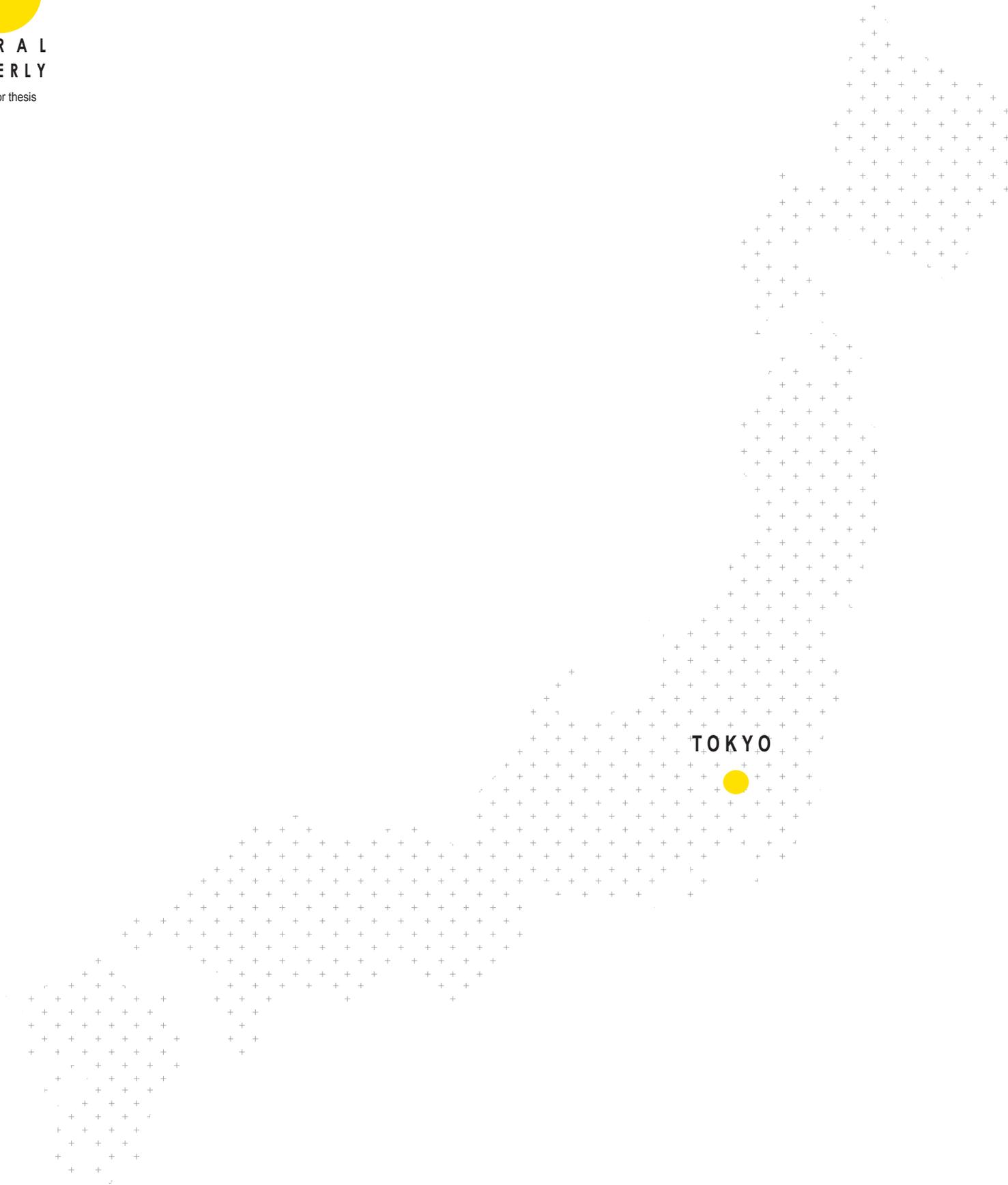
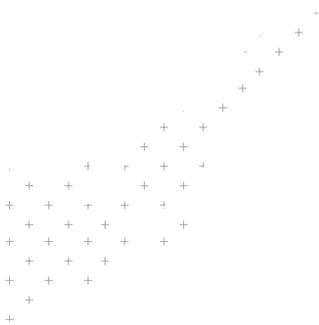


Figure 2: Map Japan, Tokyo.



This study has two major purposes, on one hand the analysis on the situation of rural Japan (including depopulation and community disappearance) and on the other hand Japan's super-ageing society and the way to continue living a safe and graceful life despite the disadvantages of ageing.

This study was conducted in Tokyo, Japan, where I got the opportunity to spend 3 months working at the architectural firm: Frontofficetokyo. Data for this research was collected through the help of literature on this topic, conversations with actors involved in similar studies and interviews with the client and the target group.

On the bases of the results coming from the pre-research (chapter 1 and 2), it can be concluded that Japan is certainly facing an ageing population, because of lower birth rates (caused by mental change and the introduction of birth control) and health care improvements.

This increasing elderly part of society and shrinking younger generation also affect the countryside of Japan. Elderly remain living there, whereas the younger ones move towards the bigger cities. Which is understandable, because of the loss of facilities such as shops and schools and the distance to your job or working place in rural areas.

The aim of this study is to bring together the above findings and relate this to the specific request of the client in the form of a conceptual ageing-resistant home design.

The main question of the paper is the following: „To what extent, can redesigning an ageing-resistant home lead to a more attractive, at this time, depopulating countryside of Japan?“ With the following sub-questions to be answered in order to justify the final part: the case study:

1. Which societal circumstances and changes affect the rural areas and in what way?
2. What does 'ageing in place' mean for elderly living in the rural areas (compared to the urban parts of Japan)?
3. What is the effect of community disappearance on Japanese rural towns?

Ageing in place is a common situation in rural Japan. Research brought up the fact that elderly rather remain living in the same place (even in times of depopulation which means isolated living) than moving to a residential institution in another environment (chapter 3).

Another conclusion is the impact of community loss (chapter 4). Even though this term can be interpreted in many ways, the most crucial aspect is for elderly not having a neighbour watching over you and being there for you in time of need.

The case study (chapter 5), based on the specific request of a new home for the client of Frontofficetokyo, has its main focus on 'community development'. Data gathered from interviews with local residents and the client, support the view that forced (direct) interaction with neighbours is no interest in.

The home design, therefore, has its main focus on a different kind of community approach: 'family community'. Family is, traditionally, very important in Japanese life. Based on the changes of 'importance' and other societal changes such as health priority instead of over-working, family (also in terms of family care) slowly start to become more important.

At first the home will focus on 'family bonding', where children move back into their former home to take care of their parents and as a get-away from the hectic urban life. But when (as written in the scenario) the '3 generation home' will take its place, community development will be noticed as well. For instance, (grand)children will practice sports at the newly opened sport club and gather with other children at playground. An attractive life within the countryside slowly occurs.

This lead to the recommendation of further research on how rural life will be more and better promoted. Especially for the people who currently have no relationship with rural Japan whatsoever. They also have to be reached. For example, governmental or estate agency initiatives, might attract people toward rural Japan.

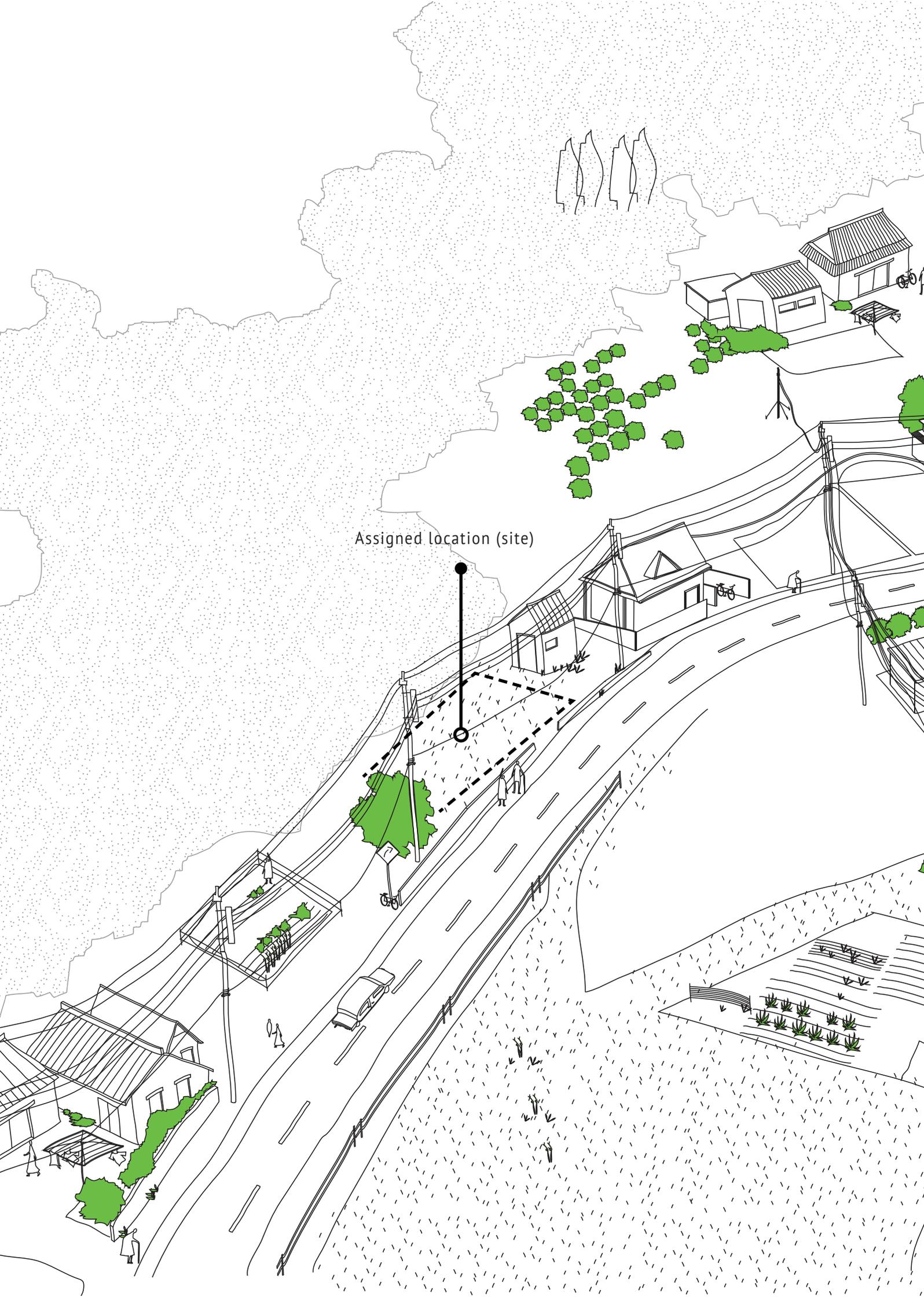
For instance, introduce subsidies for buying a new rural piece of land or building costs on rural land. Or organise attractive get-away activities for urban residents to de-stress in rural surroundings. In order to put rural areas of Japan back on the map.

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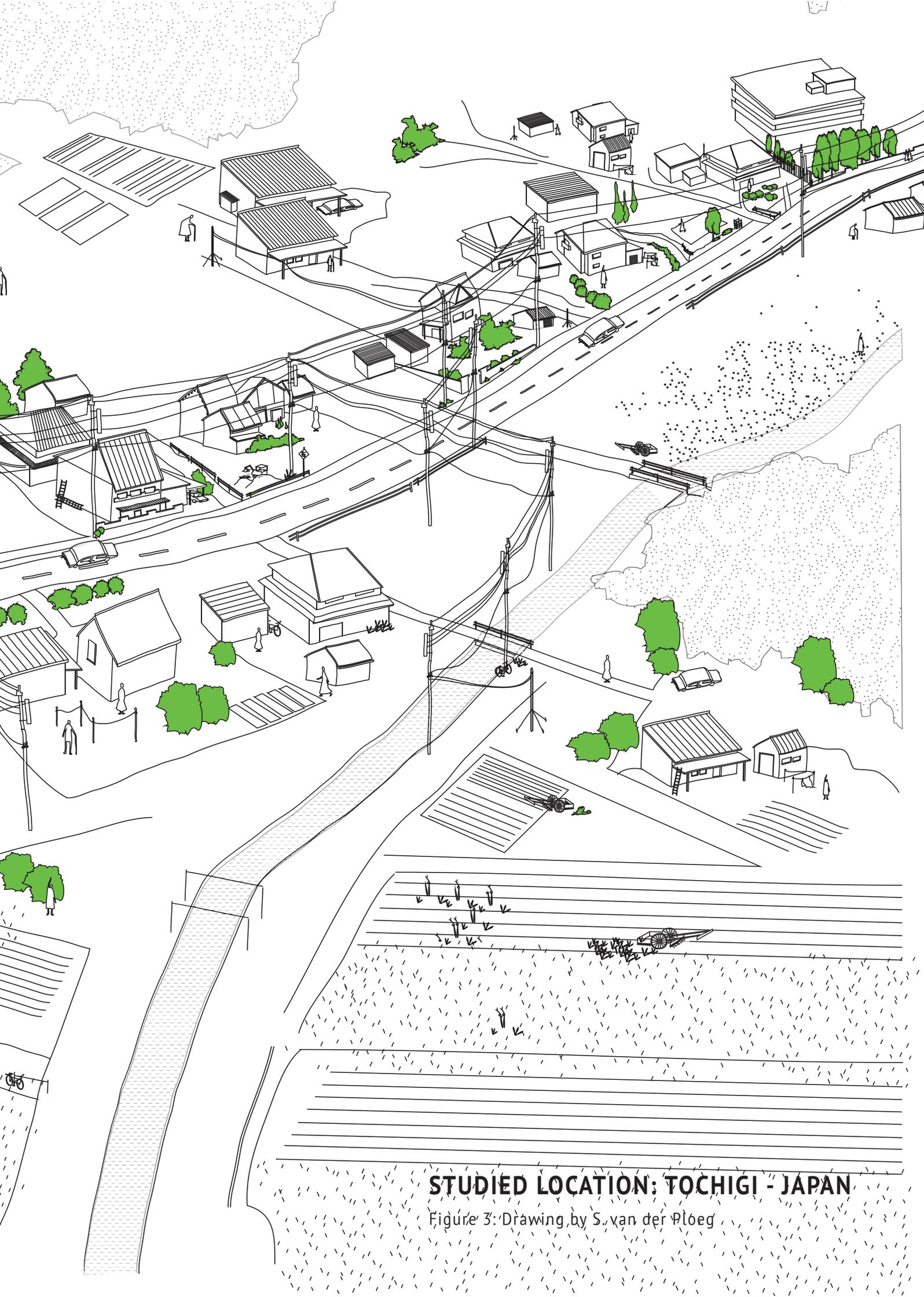
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Assigned location (site)



STUDIED LOCATION: TOCHIGI - JAPAN

Figure 3: Drawing by S. van der Plöeg

1. TASK DESCRIPTION

1.1 General introduction

People are living longer and societies are growing older. You hear about it all the time. You hear about it so much that you might feel the concern of the acceptance of longer life in a rather negative way. Can't aging be seen as a new opportunity, instead of being defined as a major problem?

In order to let the reader understand this study, I am most likely to express my opinion and thoughts throughout several questions. These questions not only bring you to the answer of the case its purpose, but also will give an indication of what to expect while reading this paper.

1.2 The essence

The essence of writing this paper has been related to a specific elderly couple (60+) which is a current client of Frontoffice Tokyo. This couple will later be referred to as 'the client'.

Momentarily, the client is living in an urban dense city (Saitama) planning to move to the countryside of Tochigi (*fact sheet page 5*) where they happen to be the owner of a piece of land. Many people know this area because of the onsen baths, the locally brewed sake and ski resorts in the area.

Their home in Fujimino is a 80m² apartment with two bedrooms, of which their own bedroom a tatami floor includes. The brother of the client, who will be 'living next door', owns an old farm and the land the new house will be build on.

While simultaneously, the ageing Japanese society is already affecting its rural areas. The elderly, aged over 60, will not move away anymore, whereas the younger ones will move to the more attractive suburbs or cities.

With this knowledge and 'specific request' the aim of the project came into being.

Basically, there are two major aspects within this paper that lead to the main question. At first the usability of an elderly home for the longer term. How to react to both short- and longer term needs? Moreover, the unattractive emptying countryside (because of the Japanese ageing society, lower birth rates and urbanisation).

1.3 Objectives

The main research question of this paper will be the following:

„To what extent, can redesigning an ageing-resistant home lead to a more attractive, at this time depopulating, countryside of Japan?“

In order to answer this question the following sub-questions will be pointed out:

1. Which societal circumstances and changes affect the rural areas and in what way?
2. What does 'ageing in place' mean for elderly living in the rural areas (compared to the urban parts of Japan)?
3. What is the effect of community disappearance on Japanese rural towns?

In contemplation of getting a better view on what the current situation in Japan is, the following sociological themes will be marked out: the depopulation of rural Japan, the population growth and the social position of the elderly. In the past few years Japan had to deal with an enormous population growth, which then turned into a major shift (*fact sheet page 2*).

Research on a super-ageing society population is very complex because of its effects on many levels. Therefore, this paper will only be focussing on the demographic changes. The consequences of this issue are actually more important. This will be pointed out in chapter 2.

Chapter 3 points out the aspect 'ageing in place' in both rural and urban areas, but focussing on the countryside. And the role of the Japanese family within the ageing process and the changing patterns.

Chapter 4 addresses the effect of community disappearance on the countryside. The term 'community' will be explained, as well as a scenario written on the assigned location its community life. In this chapter also the term 'rural' will be more defined and marked out. The last chapter (5) will point out the case study: a home design for the elderly couple, as a respond to the findings on the above.

The aim of this project is developing a correct design for the client, as a practical conclusion on the above research topics. Within the paper there will be referred to the ageing process of the client. To help define the actual design specifications a research on the above subjects is needed.

1.4 Research method

This is a quantitative research because of its subjective interpretation on the findings and results. Qualitative data has been gathered by taking interviews, doing literature studies, field research and actor research. The figure, on this page below, shows the used research method. The linear continuation of steps does not necessarily mean that these steps do not follow each other up in a specific order. Despite, the order shown in the figure allocates a useful guideline in the matter of the research process.

At first, the research problem had to be defined, by analysing the current situation of Japan. This led to a specific research problem.

Phase 1: review on literature

In order to review on the findings about the current situation in Japan, marking out the most relevant has been very important. The pre-research focused on 'the ageing population' in short, but more importantly the consequences, which is depopulation on the countryside and community disappearance. The problem definition and review on these findings are written in phase 1.

Phase 2: Analysis on findings

Phase 2 points out the smaller scale research about the assigned location and the client. This paper will be based on field research, such as location visits, interviewing the family and client, visiting the local town and library and contact other actors involved in this case study.

Phase 3: Scenario writing

After defining the actual general problem in Japan and combining these findings with the assigned location, scenarios on what will happen in the next 20-30 years can be written.

Phase 4: Design research

Based on the findings, a concept-proposal scenario will be written. After discussions with both supervisors, the concept proposal will be further developed as a practical interpretation on the main question. This process also brought up new questions, which meant that new data had to be collected and reviewed on.

Phase 5: Combine findings, evaluate and make proposal

After this back-and-forth process a final interpretation on a conceptual design will be proposed. With this proposal the former hypothesis can be 'tested' and a future-scenario estimation can be made.

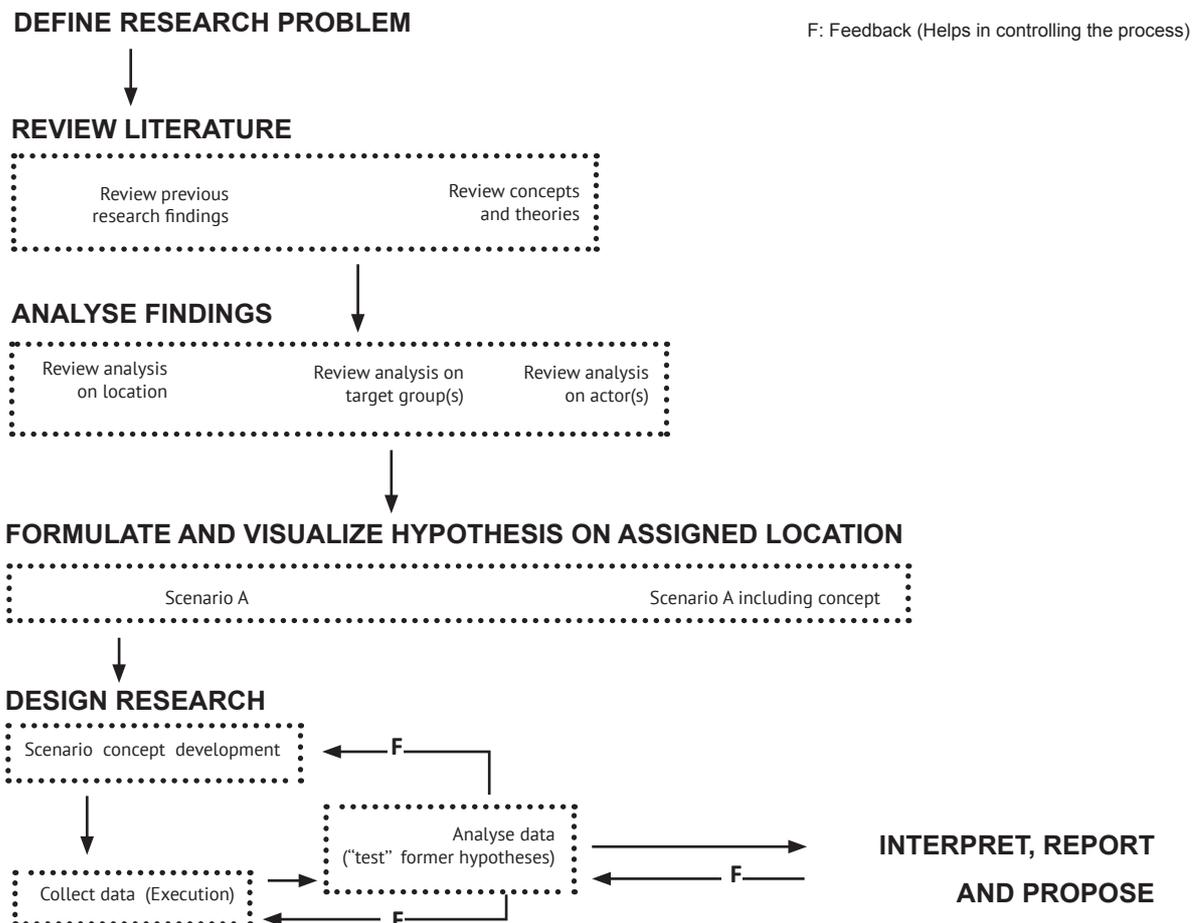
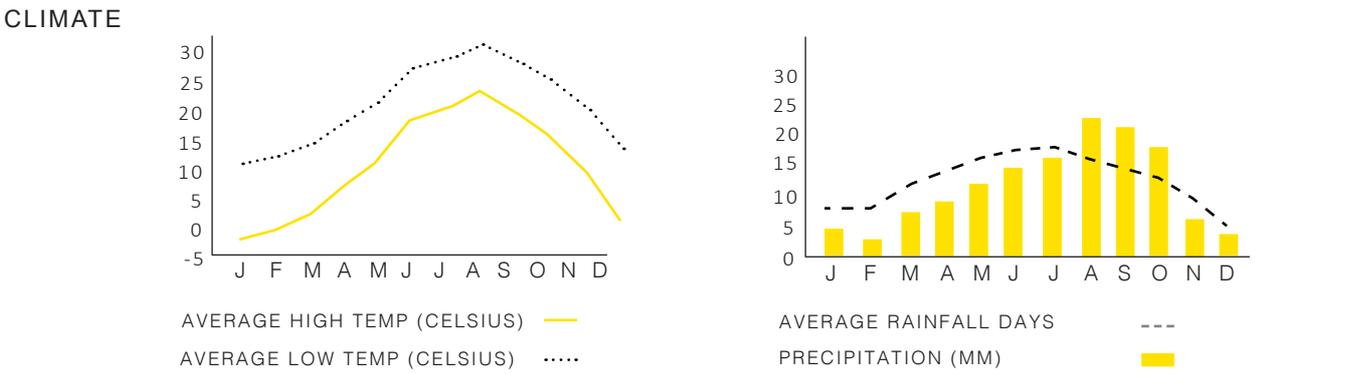
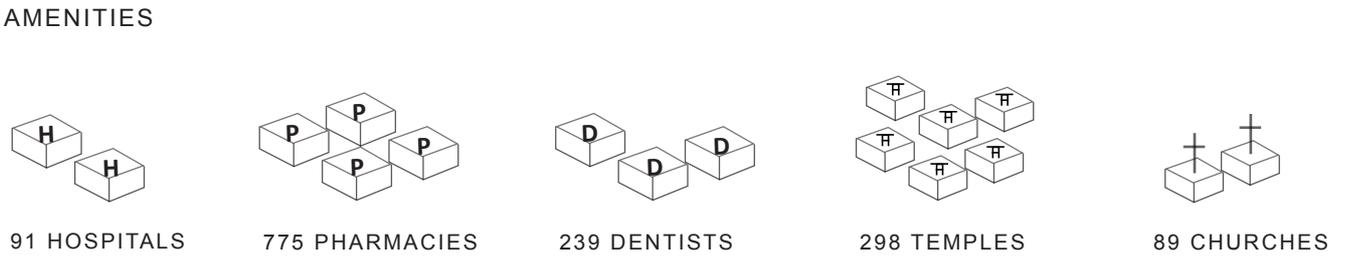
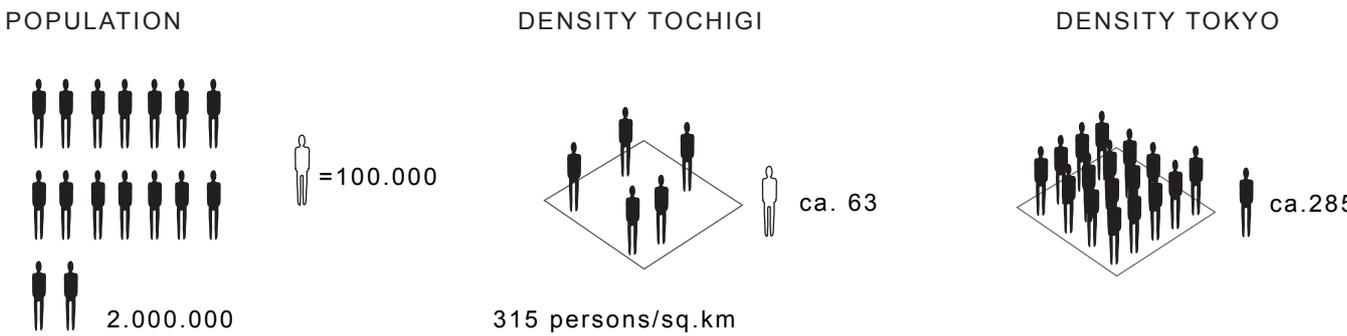
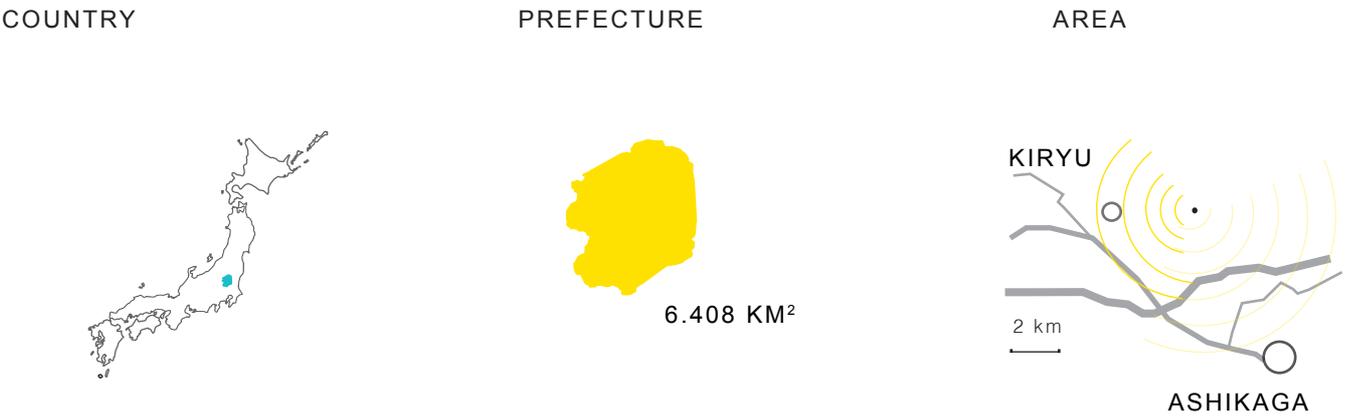


Figure 5: FACT SHEET: TOCHIGI



1.5 Demarcation

In order to write a clear and compact paper (thesis) and not to get lost in this relatively large topic, some demarcations had to be made.

At first, rural Japan facing the urban cities. This study will be focussing on the countryside of Japan. At some point urbanisation will come to notice, but the main focus will be on the rural parts. As for the case study, one specific area nearby Kiryu city.

Due to the time of analysing this subject, the case study will be related to this certain area of the prefecture Tochigi, which will be taken as an example of rural Japan. However, distance does play an important role, when demarcating a location its boundaries. Figure 6 (page 7) will show you the defined area boundaries that will divide the area which is related to the case study and which is not. This is all based on logic thinking and subjective assumptions. Chapter 5 will also refer to zone 4 and 5. The influence of the case study its 'action or change' will effect directly zone A (within 300 m.). This will be noticed and maybe 'taken-over' by B (within 600 m.) and maybe even zone C (within approximately 1 km).

The case study will be developed into the SO-stage, which is a design draft. This includes a floor plan, with an indication of material use and well considered measurements that can be justified. There will be one Photoshop impression. During the final presentation a architectural model will be used to clarify the plan and specifically the changes through the years (later explained in chapter 5).

The 'aged' people within the paper are limited to the group aged over 60 who are already living in rural areas or planning to move. The final concept, will in fact be focussing on a much larger group as it must become more attractive to families of different ages who have their parent living in rural areas. The families who have been living in the bigger cities and have no relationship with rural Japan whatsoever are taken into account.

Moreover, as mentioned in the objectives, research on a super-aging society is very complex because of it's effects on many levels. Therefore, this paper will only be focussing on the demographic changes. Other aspects influencing this ageing society will be shortly introduced in order to get a better overall view.

The client (and relatives), even them speaking for the other habitants, have declared not to be interested in specific community bonding activities such as extra meeting. Supposing that this applies to most rural habitants, the concept has its focus on a different interpretation of community development. There are examples, mostly rural areas hit by nature disasters, who are open for community bonding and interaction with others. But these are taken into account. Also confirmed by frontofficetokyo, the statement of the client will be considered as an example of the thoughts of many rural elderly.



Figure 6: Demarcation area

1 km

Zone 1

Kiryu city centre. All facilities within walking or cycling distance. Most building lined up next to railway. From there on further grown towards zone 2. Diagonal of approximately 1 km, not much height differences.

Zone 2

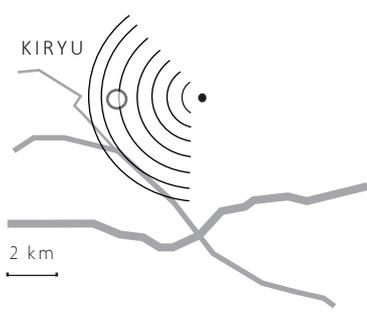
Outside neighbourhoods, still part of Kiryu city. All facilities within cycling distance and otherwise a few minutes by car. Also many option for public transport. Height differences are starting to appear.

Zone 3

Within zone three much height difference will be noticed, up till +150 meters. It looks like the distance between the assigned location and Kiryu might be about 3 km, but in fact, because of the height difference, it is around 7 km. The concept will be focussing on zone 3. And in particular the mountain valley (as shown in chapter 5). The assigned area is still 'quite' dense. Most houses are located just aside the main road.

Zone 4

When looking at zone 4, less and less homes will be found and distances are getting larger from main facilities (8+ km). When realising and creating interaction within zone 3, this will possibly be noticed by zone 4. At least the ones located at the 'border'. They might pick up changes and move along with new developments. However, zone 5 will be to far away. Most houses are very much isolated and not even having a neighbour around within 500 m. They are even more dependent on themselves and their own farming in order to have a sustainable life. Zone 6, will already bound for another city located in the east direction. Going through all the mountain passes will be too much fuss.



2 km

2. THE JAPAN SCENE

WHICH SOCIETAL CIRCUMSTANCES AND CHANGES ARE AFFECTING THE RURAL AREAS AND IN WHAT WAY?

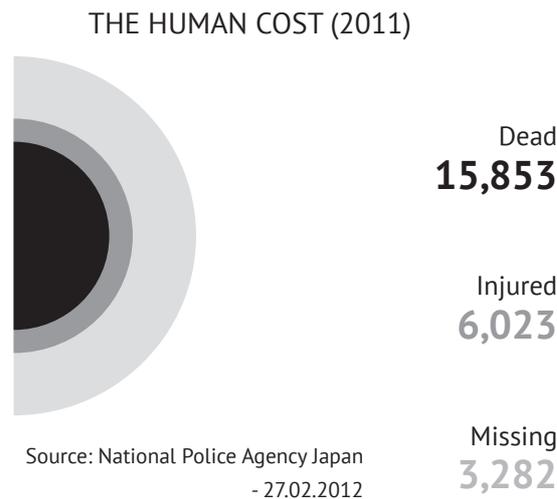


Figure 7: Numbers tsunami disaster.

2.1 Introduction

When strolling around Tokyo, the world's largest urban area with over 30 million inhabitants, you will find many elderly people working around you. Either an elderly lady who serves you at a restaurant, or an old man cleaning the pavement in the late hours will grab your attention. That the older generation remains longer in the workforce is due to the fact that they won't have sufficient retirement savings. They need to, even after their pension, maintain working to make sure they can live comfortably at that age and the following years.

In Japan you will find the highest percentage of people aged over 65 in the world. The primary triggers for most diseases can be controlled, enabling people to remain productive well into their eighties, nineties, and beyond.¹

The improving health care reflects in longer life expectancy. This super-aging population does bring along its negative effects on society. The elderly are growing in number, while the working-age population is decreasing in amount. This trending topic directly leads to the next one, which is the depopulation of the countryside.

The following part will look at the current situation in Japan in general when it comes to population decrease, aging and depopulation of the countryside. On top of that several societal circumstances will be pointed out. The comparison with the countryside (Tochigi) on a more detailed level will be made later on in this paper.

¹ Metropolis Magazine - (January 2015) - "How will baby-boomers shape the future of our cities?".
www.metropolismag.com

2.2 Demographic changes

When visiting Japan you might feel invisible in the enormous amount of Japanese people swarming around you. You won't believe that the population is actually shrinking. Well, in fact it is. Even the biggest city in Japan, Tokyo, its population is decreasing.

The Japanese economy was growing very fast after the Second World War had ended. In fact, a period of industrialization had started. Both economic and urban growth caused pollution problems. From the 1970's the economical growth continued. Because the urban population also kept growing the suburbs started to form, as an expansion of the urban areas. At the same time a decline in population density occurred, especially in medium sized cities.

During the economic bubble in the 1980's, Japan experienced high economic growth numbers. This caused a problem within the urban policy, in terms of managing soaring prices and urban land. The sub urbanization continued on together with migration into the Tokyo area. Since the late 1990's an economic recession had started which caused lower birth rates.

By taking Tokyo, used to be known as Edo, as an example that grew out as one of the megacities in the world the number will be more clear. In the year 1720 Tokyo first passed the 1 million people. The growing continued, and in 1940 Tokyo became known as a metropolitan city of more than 7 million people.

When looking at the population of Tokyo, in just the past few years, you notice the strong increasing inner city while the suburban countryside is clearly decreasing (*figure 9*). Recently, the Tokyo times published an article estimating on the population decrease. They mentioned Tokyo prefecture its population is being halved from the year 2010 till 2100. By 2100, 3.27 million of the 7.13 million residents in the city will be over the age of 65. ¹

Figure 8 shows the population of entire Japan divided into 4 groups of age. What immediately occurs is the biggest group, known as the working age, where the age of 35-64 decreased 225.000 to 170.000. Whereas, the age above 65 increased from 9% of the population into 20% of the population.² This is the fact many people are concerned about; the elderly are increasing in amount, whereas the young ones are outnumbered.

1 "Tokyo population swan dive predicted" - Wendell Cox (09.06.2012)

2 "Population 2015-WPR" (09.10.2014) - World population review

2.3 Societal circumstances

The fact that the Japanese are far ahead of the Western population when it comes to the 'who gets the oldest'-competition is well known for quite some time. Many people already complain about a wrinkle in the greying process. However, politicians have more important things to concern about, such as pensions, health- and long term care.

What does 'aging' actually mean? In short, economically, the ratio of people above the age of 65 is growing while the number aged below 65 is decreasing.¹

The super-aging society isn't that positive at all. This has been brought up more since two major disasters happened. The earthquake of March 11 (2011) together with the tsunami and nuclear power disaster appeared to be a real wake-up call for Japan.

2.3.1 Unexpected disasters

The most unlikely to happen to the East Coast of Japan, had happened. A sudden earthquake (magnitude 9) had shaken up the northeast of Japan. This unleashed a disastrous tsunami.

Japan is still recovering from the consequences. According to the government are there still 300.000 people living in temporary housing because of the loss of their own homes.²

Figure 7 shows the numbers of death, injured and missing persons caused by the earthquake and the tsunami.

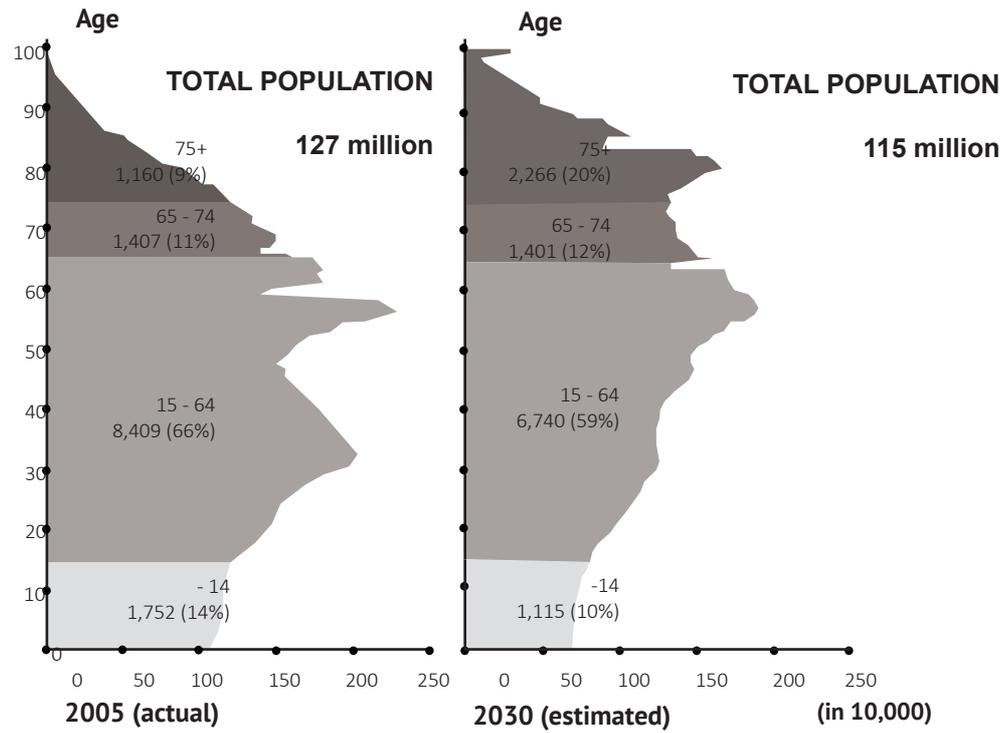
You could say that these numbers won't stop increasing because of the continuing 'after-shock'. As in most cases, the elderly (aged above 65+) were hit the hardest in the above-mentioned disasters.

Most of them died while drowning in the tsunami, but the 'after-shock' also took and still takes many lives. The situation damaged their health and the most vulnerable group still has to deal with the after affects the most.

1 "The changing balance between age groups" - World population ageing 1950-2050 (United Nations)

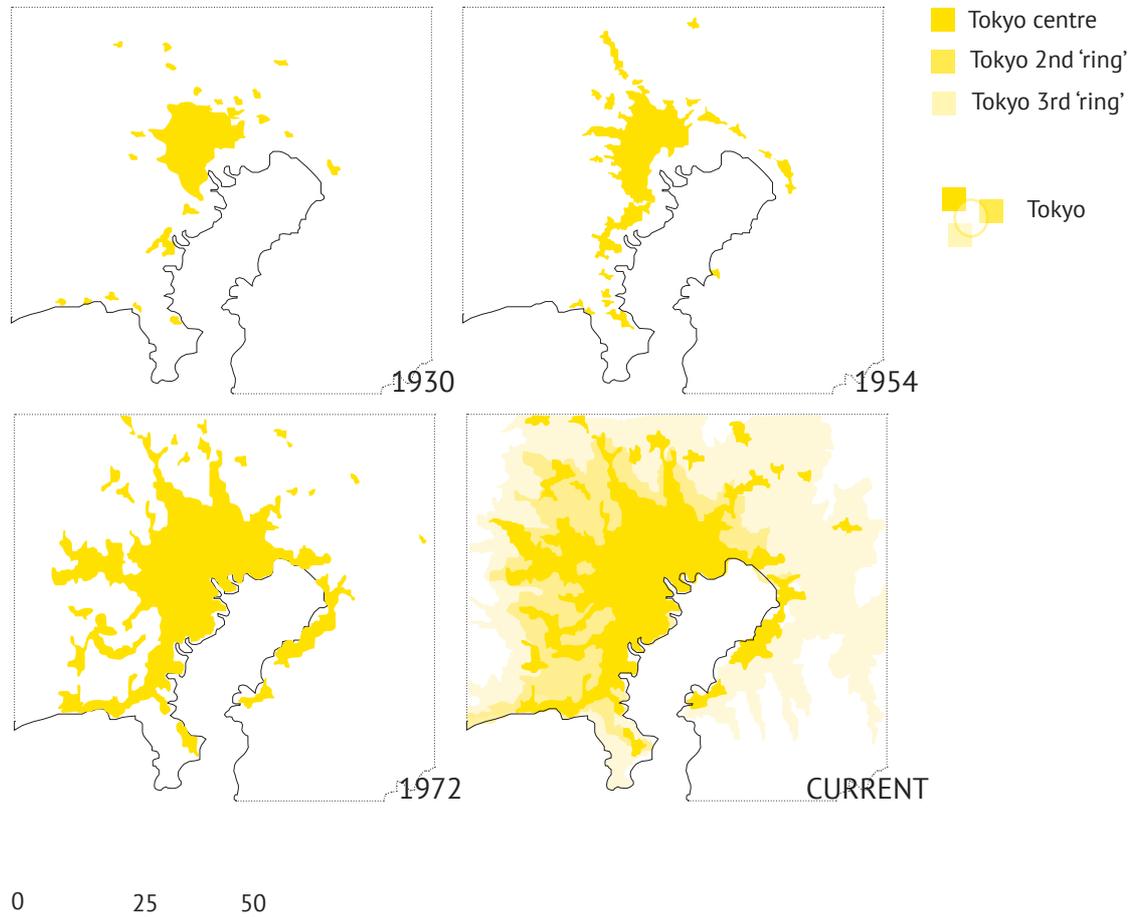
2 "Fukushima Radiation Leak: 5 Things You Should Know" - (Tanyo Lewiss, august 21,2013)

Figure 8: Total population Japan



Source: National Institute of population and social security research

Figure 9: Demographic changes within Tokyo.
From a rather small city growing into an exploded large city in 2015.



2.3.2 Declining birthrates

Another contributor on the aging-issue in Japan is the declining fertility. After the first baby boom (1947-1949) the population got encouraged to use birth control, to prevent overpopulation. After a high rate on fertility the number decreased and stayed low since the late 90's. With a current rate of 1,37 per woman, the ratio on 65+ compared to the working part is rising rapidly.

Appendix 8 and 9 show the population in- and decrease divided into child population (aged under 15), the working-age population (15-64) and the elderly population (65+).

Most concerning is the fact that there will be more people becoming old, as shown in the graph in 2005 there were about 25.000 elderly, which will be about 40.000 in 2035. This is a 60% growth in 30 years, while the working-age is decreasing from 85.000 (in 2005) to 60.000 (in 2035).¹

Because of the disinterest of the younger people in living in the countryside, the depopulation starts. The elderly will pass away and houses remain empty.

2.3.3 Social isolation elderly

Traditionally the men, within a Japanese family, worked long hours, while the woman stayed home to care for the children. They used to stay in the same house for a long time.

This part of the population, now 70+, is dealing with an isolated life in the urban areas.

The mentality and situation the future older people will have and live in is a world apart from the elderly now (the baby boomers). They have known the enormous workforce before the economic bubble, which was from 1986 until 1991. Currently they are retiring. The disastrous earthquake actually reminded everyone of the social courage, of which the elderly saved lives with their 'adults' wisdom'.²

2.3.4 "Care by society"

Traditionally, the eldest son is taking care of its parents by moving in with them. This traditional way of caring is changing though; because of the expanded long-term care services within the tax-based social security system.¹ Care, pension and health systems are going through constant changes, because of change within the economy, population and social situation.

The "from care by family to care by society"-policy made a variety in home, community-based, and institutional services for the 65+-aged population. Which also caused a number of elderly moving into these institutions, and leaving their own home.

2.3.5 Work-life balance

One often used term in Japan is WLB (Work-life balance). Slowly, caused by the economic recession, Japanese people are starting to realize that they basically don't have a private life because of the high working pressure.

Currently, work is on the highest priority of most Japanese men. One often used term in Japan is WLB (Work-life balance). Slowly, caused by the economic recession, Japanese people are starting to realize that they basically don't have a private life because of the high working pressure.²

Currently, work is definitely on the highest priority of most Japanese. There is not enough balance between work-life and private-life. This situation got more attention throughout the country, also because of the health problems caused by 'over-working'.

One of the main reasons why they have such long working hours is, besides the pressure of qualitative work, the overtime payment. This policy is working negatively on the quality of the work that will be done, because all they end up doing is working even longer hours to achieve target sales.

¹ "Japan's demography - The incredible shrinking country Mar 25th 2014, (D.M.) - Article from: The Economist
² Japan: Super-Aging Society Preparing for the Future" - Naoko Muramatsu, PhD (www.gerontologist.oxfordjournals.org)

¹ Campbell & Ikegami, 2000; Tsutsui & Muramatsu 2005.
² "Work-life balance more important than ever", by Taro Fujimoto - (March 9th, 2009) - Article: Japan Today

They still seem to think working long hours is the normal thing to do for their companies. They even feel more comfortable staying in the office than being at home. They work negatively on their role as being (becoming) a father, taking care of its parents and health situation.

This imbalance between work and life is on speakable terms but not much changing yet.

2.4 Depopulating countryside

Traditionally, the central government was responsible for the management and urban planning. They focused on the improvement of infrastructure rather than focusing on urban environmental development and improvement. In the end, there were no urban plans realized, and even local authorities did not manage urban development.¹

Since the 21st century Japan is dealing with depopulation and economic slowdown. This depopulation is hollowing out cities and is affecting the rural areas.

2.4.1 Causes of depopulation

The low immigration number, a rapidly aging population and a very low fertility rate, results in a continuously population decrease. The super-aging society reflects negatively on the countryside. Apart from the urban areas where elderly are living isolated from the community, the countryside is suffering from depopulation.

At first, several factors have led to a decline in employment in rural areas. The mechanization of agriculture means less people are needed to work on the land.

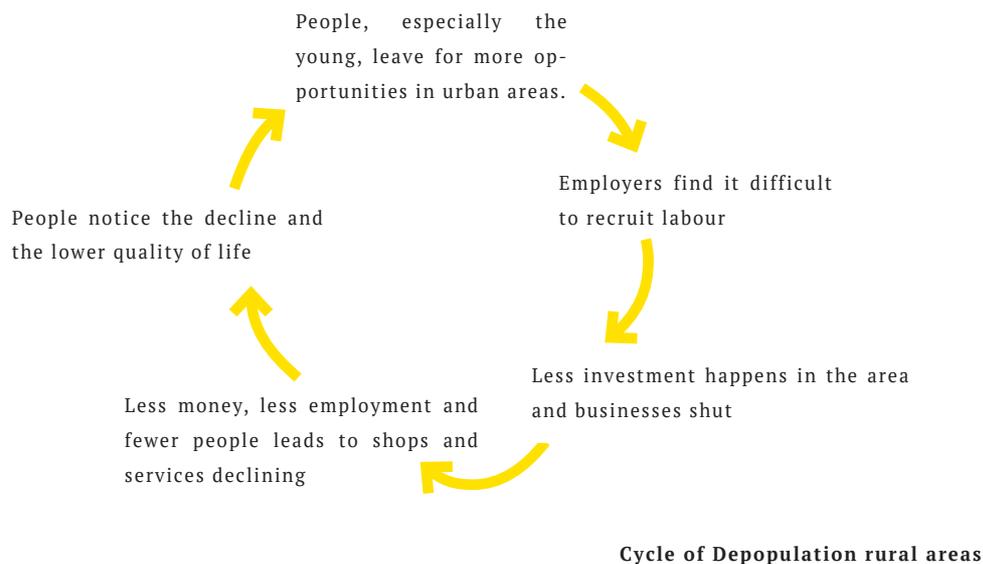
Imported food and raw materials also decrease the demand from the countryside. In the less accessible rural areas many of the younger population move out, because of the shortage of jobs and a lack of social life.¹

The depopulation in remote areas means the local services decline. Independent stores and post offices become less profitable because of rural depopulation. Bus services may decline leaving the elderly cut off.

2.4.2 SWOT- analysis

The figure on page 13 sums up the strengths, weaknesses, opportunities and threats of rural Japan as it is in general at the moment. Later on in this paper a similar figure will be shown about a more detailed scale on the assigned location in Tochigi, Japan.

The figure points out both strengths and weaknesses as opportunities and threats Japanese rural areas are facing nowadays. Developing a fuller awareness of the situation helps with both strategic planning and decision-making later on when forming a conceptual design.



¹ "Study of Japanese Experiences on Sustainable Urban Development" - (02.2011) - ALMEC Corporation <http://siteresources.worldbank.org/INTURBANDEVELOPMENT>

¹ Changes in rural areas - MEDCs. Article BBC. http://www.bbc.co.uk/schools/gcsebitesize/geography/rural_environments/changes_rural_areas_medcs_rev1.shtml

	HELPFUL	HARMFUL
INTERNAL	<p>Strengths</p> <ul style="list-style-type: none"> • Lower land costs • More housing volume • Surrounded by nature • Better air quality • Farming possibilities • Local culture 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Less accessible • Facilities and services not within walking distance • Dependant on car • Less developed as urban areas • Lack of social life when living far from others • Burden for relatives to visit
EXTERNAL	<p>Opportunities</p> <ul style="list-style-type: none"> • Less density • Free growth of nature and wild life • Get-away from urban chaos • New initiatives on community development, sustainable living and rearranging rural parts. 	<p>Threats</p> <ul style="list-style-type: none"> • Local services decline (shops, schools, public transport) • Younger population will move away • Elderly will eventually pass away • Mechanization of agriculture results in less jobs on the land • Elderly age isolated and alone • Community loss and/or disappearance

2.5 Conclusion

The Japanese population has the highest life expectancy worldwide, with on the other hand a major decrease in population number of the younger part. When passing the age of 65 and you are in the need of health care you are able to receive long-term health care in Japan according to the insurance system, although most elderly will age in place (isolated) in rural areas. The elderly homes are not prepared for the aging process, especially not when living alone and isolated. This aspect definitely has to change and will be kept in mind when developing a new conceptual design in chapter 5.

Another major concern is the work-life balance of the average Japanese male. This has been brought up more since the recession, but changes really have to be made in order to prevent health problems and even future complications.

This does not only effect the male person itself, but also his family and the care and attention for his parents (in law). This is slightly changing already and brought up more. It would be interesting to respond on the future scenario on how this will be in 10 or 20 years from now.

People do get more aware on the fact that depopulation of the rural areas will result in disappearing communities.

This has put some already in the direction of thinking how to change the exciting communities in sustainable ones. Where an active and healthy lifestyle, which is aimed for by this generation, is supported.

Another approach might be not to focus directly on rebuilding the community but to maintain living in the same home by being able to support themselves in their own living.

3. THE AGEING

WHAT DOES AGEING IN PLACE MEAN FOR ELDERLY IN RURAL AREAS SUCH AS TOCHIGI?

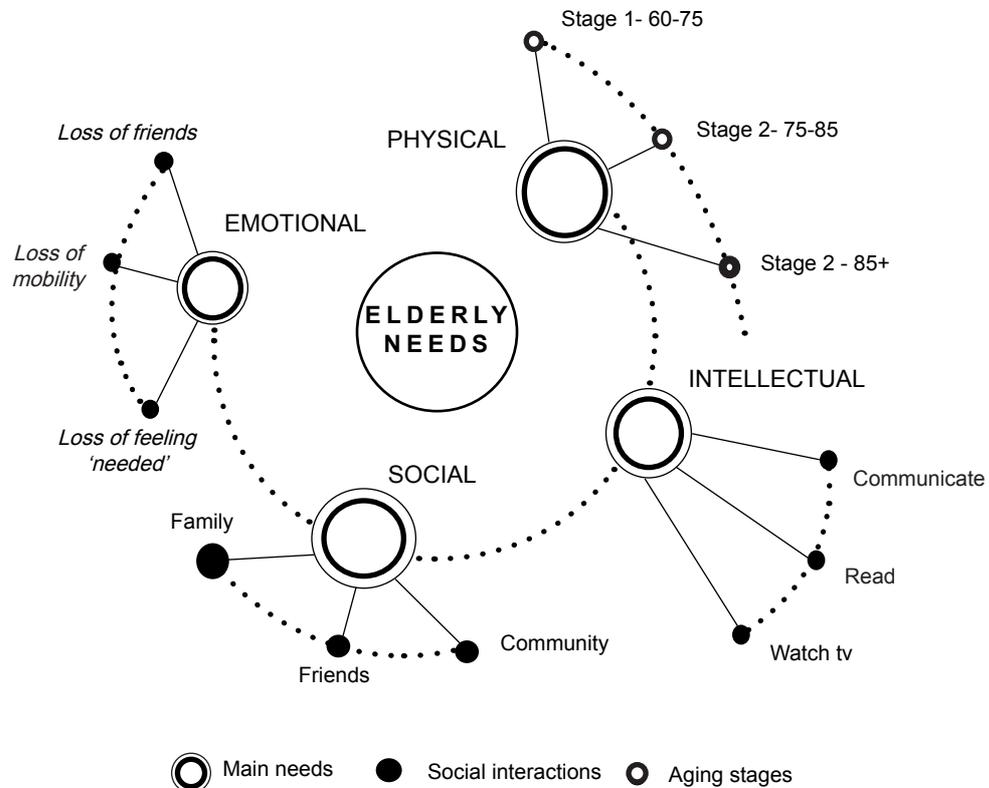


Figure 10: Elderly needs

3.1 Introduction

When asking elderly what they most prefer, aging in place or somewhere else, almost all of them in most countries will answer “in my own place”. They rather stay in their environment than moving into a new place, senior community or care facility.

Even the elderly, that are currently facing the depopulating shift within the rural areas, do not consider moving away from the ‘problem’. Most of them have lived at the same place for many years and their are not willing to give up this relationship and familiarity of the environment (and people).

This brings up many challenges for designers to change their (current or newly build) home in a way that they can safely age gracefully in the environment they are familiar with. *How do you respond to both short-time desires and their longer-term needs?* Which is one of the 2 major aspects within the aim of writing this paper.

When creating a living environment for elderly you must keep in mind aspects such as safety, ease, access, mobility, comfort and enjoyment. In order to do so, some knowledge about the aging process is required.

This chapter will focus on ‘aging in place’ in general, the changing needs of elderly throughout the ageing process and the related design criteria.

Furthermore, the family importance within Japanese culture will be explained. This will be related to elderly in the ageing process.

These findings are the base of the design, in order to come up with a conceptual design, it has to meet the client its needs and lifestyle not only at this age. This chapter will also refer to the assigned location Tochigi as an example.



3.2 Elderly housing

3.2.1 Ageing in place

Aging in place could be defined as *‘remain living in the community, with some level of independence, rather than in residential care’*. People who live as long as possible in their own home will prevent themselves from having costs for institutional care. Besides, independence, autonomy and connection to social support will be maintained.

But what is the link between the term *‘community’* and *‘a private dwelling’* within the definition from above? When you remain living at the same place, you remain part of a certain community. But what does this community involvement really mean? It depends on the people and place of course, but in general you can speak of specific characteristics of communities in rural Japan, which will be pointed out in chapter 4. Generally, the elderly that *‘ages in place’* independency is preferably to community participation.

However, the complicated process of *‘ageing in place’* is not only about home adjustments in order to age safely. It is merely about where the older person is continually reintegrating with places and renegotiating meanings and identity in the face of dynamic landscapes of social, political, cultural and personal change.¹

When focussing on the elderly within Japan you will notice at least 61% of the 65+ will own a home, instead of renting it. Even the ones that are in need of special care choose for a caregiver or nurse at home. Only 20 % are moving into an institution in order to continue living with caring facilities around them. Figure 10 shows you recent numbers on elderly housing possibilities.

3.2.2 Residential care

In Japan it is very common to live at the same place for most part of your life. Because they are very attached to the home itself and the environment.

On the other hand, it is also quite difficult to sell your home on the market. On one hand, because people don’t like to move into someone else its place of former home. And on the other hand, the land prices are decreasing which means that people rather build a new home then taking over the home of someone else. Besides, the housing prices are increasing and the demand for rural houses/land is less attractive.²

¹ “Types of housing and their suitability for older people” - ILC - Japan, Paper by Dr. Yasuyuki Shirakawa.
² “Japans property prices continue to rise” - may 15, 2014 www.globalpropertyguide.com

According to the statistics of the ministry of health, as shown in the figure at page 34, at least 93% of people aged over 65 live at home. However, the elder care institutions are struggling to accommodate the rapidly aging society.

Over the past few decades the Japanese government has formulated and implemented various housing and transportation policies for older Japanese, in order to make it easier to remain living in the same place.

- Housing Plan for Senior Citizens in the Local Regions: This policy mandated every local government to establish a plan for housing older people.
- Housing loans at low-interest rates
- Silver Housing program: subsidies for the construction of senior housing for widowed elderly and elderly couples.

- *Design Guidelines of Dwelling for an Ageing Society: universal design for all ages.*

(Will be explained in § 3.5)

Even though more elderly are choosing for elder care at an institution, most of them have an entry list with long waiting time assured. Which basically means you will end up aging in place. Moreover, still 66,4% of them aspire to continue living at home and age in place.¹

3.3 Elderly needs

Even though every human being is unique, we all do have certain needs in common and share a nervous system that works the same way. Someone living on the countryside in Japan might live a very different life compared to a New York citizen in the very centre of this urbanized mega-city. Even these two absolute extreme opposite people do share the basic needs, maybe a little different interpreted.

The assigned location focuses on an elderly couple now in their 60’s. Figure 10 shows the physical, social, intellectual and emotional needs in and around the house in an abstract figure.² The figure in Appendix 1 focuses on the physical decline of elderly divided into male and female. You immediately notice that women in general grow older and age more gradually than males.

Appendix 2 includes a diagram connecting both figures and relates them to their needs and the ageing process. This will give a good view on the changing needs and the different losses throughout the years.

¹ “Types of housing and their suitability for older people” - ILC - Japan, Paper by Dr. Yasuyuki Shirakawa.
² “Day to day needs” - <http://everydayneedsms.weebly.com/elderly1.html>



83.4%

OF HOUSEHOLDS WITH AN OLD MEMBER OCCUPY A HOUSE THEY OWN

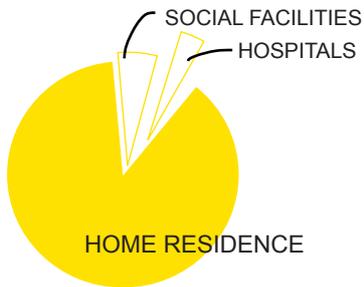
61.1%

OF ALL HOUSEHOLDS, WITH AN OWNER OF 60+, OWN A HOUSE OR APARTMENT

35.8%

...RENT THEIR HOME

ELDERLY HOUSING



66.4%

ASPIRES TO CONTINUE LIVING AT HOME

79,6%

ELDERLY USING CAREGIVER OR NURSE AT HOME IN JAPAN (2011)

20,4%

ELDERLY USING CARE AT INSTITUTION IN JAPAN (2011)

Figure 11: Elderly percentages on aging in place and in a institution.



3.4 The role of the family

3.4.1 The Japanese family

As for many years, in Japan 'the family' is more important than the individual. The family is seen as the basic unit of society. Family ties are strong in Japan and bind not only the living extended family but also generations of ancestors.

However, the traditional family as it was in the past is not like it is nowadays. Due to socio-economic changes the family definition within Japanese culture shifted. Below, a short description of the 2 stages within family importance change is pointed out. On appendix 10 the role of family within the ageing process of their (grand)parents will be pointed out.

● TRADITIONAL FAMILY

- Family responsibilities take over individual desires.
- Growing up in an intact household promotes mature character development.
- A strict gender-based role division with a hierarchy by birth.
- One child (usually the eldest son) remained in the household to take over the family business and care for his aged parents.
- Daughters marry into other families, and the position of the bride of the eldest son was the lowest in the household.
- She was also expected to engage in the family business and ultimately to be the primary caretaker for her aged parents-in-law.
- Main role: preserve the household resources and pass them on to the next generation.¹

● MODERN FAMILY

- More identical to American family
- No strict family norms
- Husbands are perceived as the primary breadwinners and wives as primarily responsible for the home.
- Care of the aged is still a family responsibility. There is no clear-cut solution, although for those who can afford it a variety of options including retirement villages and two-generation housing are being marketed.

- Desire to provide more private rooms within the home.
- Work as main priority, high pressure.
- Children grow up without seeing their father much.
- Extreme individualism

Some already say that this trend will continue. Which means the past situation, where family was much more important, will repeat itself.

Some Japanese men are already beginning to spend more time with their families.

Especially the health aspect for all family members is getting more attention lately. The wish of many Japanese is to create a more reasonable work-life balance which is a lot healthier.

3.4.2 Family care

The traditional Japanese family would have had one child (usually the eldest son) which would be taking care of his aged parents. This means that he would be moving into his parents home or they move into his place. Ageing elderly would not go to a caring home or elderly institution. Not many existed by then.

The modern family, nowadays, is taking less care of their parents. They are mostly focussing on their job or their children. They visit rarely, especially when living far away from the elderly home. This means that the parents will age lonely and not having their family around as much as they would have in the past.

Following the pattern of the past, the family of the near future should draw on its traditional strengths, keeping the elements that are suited to the contemporary world and modifying or rejecting those that are not. They will be focussing more on their parents, so they would age gracefully both stimulated physically and intellectually by having their (grand)children around.

Relatives will make sure they are making more free time to interact with their parents. This will also result in a better bonding process with both the family as the place of ageing.



¹ Japan culture - Family - <http://www.everyculture.com/Ja-Ma/Japan.html>

3.5 Design criteria

In Holland you have to meet several requirements when it comes to building a home for elderly or making adjustments to a home in order to create a livable space for seniors, in Holland you have to follow basic restriction such as setting up the threshold of door opening up to the exterior up to the maximum of 20 mm.

On top of that you must reassure nonskid floor finishing in the bathroom and toilet. Apart from comfort and convenience, safety might be the most important. Changes in terms of safety additions could be slip-resistant surfaces; better lighting levels, wheelchair movability and round corners of furniture and surfaces are needed.

Preventing injuries is crucial when designing an elderly home. The above adjustments are just a few examples.

Apart from the safety, both optimal acuity, decrease noxious noises and promote cognitive abilities are essential. In Japan however, within the design guidelines for specialized dwellings, they rather kept handicapped residents in mind than elderly needs.

Many surveys and medical papers end up with the same conclusion though. Which are two basic requirements of dwellings for a growing elderly population that elderly would allow to have less inconvenience in life.

In order to let the elderly residents move freely within the home without much risk of getting injured, the following to requirements are essential:

- 1) Eliminating height differences
- 2) Providing handrails

In Japan you will find many conceptual requirements, these are mostly described in performance terms and not permitted. These requirements are to be found in the “Rehabilitation manual of dwellings for the needs of the aged, basic guide lines compiled by Japan Housing Reform Center (1990)”¹. It is hoped that elderly might receive subsidies for the essential adjustments.

Appendix 13 shows you the general adjustments that will be integrated in the final design. Based on both Japanese and Dutch sources.

¹ EDRA 23 - Environment Design Research Association
“Capability of daily living of the elderly and their accident experiences.” - Satoshi Kose

3.6 Conclusion

In Japan, like in most countries, elderly aspire to remain living in the same house and environment when growing older. However, the conditions are not very good. These homes are not designed in a way to meet elderly needs within the ageing process. Apart from that, the depopulating countryside also makes it more difficult because of the emptying rural areas. *These isolated living conditions, negatively affect the ageing process. People no longer are 'looked after' by their neighbours because they either pass away, move away or loose contact.* This will be a design principle, integrated within the concept (chapter 5).

Even though more elderly are choosing for elder care at an institution, you are most likely to end up at an entry list. And most of them would rather stay in their own home close to familiarity.

A striking aspect when considering elderly remain living in rural areas, are their physical, social, intellectual and emotional losses. This is not a linear process, but both unpredictable and personally attached.

Their home and their 'community live' must respond to their new needs and the loss on different fields. As for many years, in Japan 'the family' is rather important than the individual. When looking at this movement of behaviour and mentality, the scenario on how this will change is very interesting when looking at rural home and family situations. When their role will become more prominent, elderly health conditions will change too when interaction and movement is more present.

This is a huge opportunity where collaboration of both parties will lead to better living conditions for elderly in rural areas, and create a better living (and health) situation for the younger generation.

The TOWS-matrix on the next page puts the strengths and weaknesses in confrontation with the threats and opportunities of the situation at the assigned location in Omata - Tochigi.

This has resulted in a few approach methods to create a more attractive life for both elderly as their family in rural areas of Japan. This will be integrated in the conceptual design, which will be further explained in the next part (04).

TOWS - MATRIX

	STRENGTHS	WEAKNESSES
	<ul style="list-style-type: none"> Surrounded by nature More housing volume, less costs. Optional farming, fishing wood processing etc. 	<ul style="list-style-type: none"> Accessibility (work distance) Dependency on car and other transport Lack of social life
OPPORTUNITIES <ul style="list-style-type: none"> Get-away for family Sustainable living Strong community participation Home school, online shopping developments 	(OS) <ul style="list-style-type: none"> Nature conditions make it a perfect place for family to get away from urban life. (S1, O1) Sustainable living possible because of farming, fishing and own production of wood for example. (S3, O2) 	(OW) <ul style="list-style-type: none"> Sustainable living makes you independent of the accessibility and transport (school, shops) (W1, W2, O2, O4) A more attractive get-a-way for family stimulates the elderly socially. (W3, O1)
THREATS <ul style="list-style-type: none"> Disappearing facilities and services Isolated aging, no family coming over often Community loss 	(TS) <ul style="list-style-type: none"> The extra land and housing volume could make it more attractive for family to come over. (S2, T2) 	(TW) <ul style="list-style-type: none"> In order to maintain living there when growing old the home needs to be ageing proof. (W1, T2)

4. THE URBANISATION

WHAT IS THE EFFECT OF COMMUNITY DISAPPEARANCE ON RURAL JAPAN - TOCHIGI?

4.1 Introduction

As a major consequence of the aging society in Japan, the countryside is not only suffering from the depopulation, but also the community disappearance that comes along with that. The population is decreasing, which means that there will be less people living at the countryside eventually. There will not be a strong 'community feeling' left when houses around you are becoming empty and facilities are disappearing.

People are now aware of the situation and should intervene before it might be too late.

Not only Japan is dealing with depopulation issues, also in the rest of the world you find people responding creatively to shrinking populations. Mostly, the habitants itself come up with the creative thinking, even though its sometimes slaps into governmental rules and laws.

This part will focus on community typologies in general and the effects on rural areas when these start to disappear.

The assigned location will be analysed on the related typology and a scenario will be written about what will happen in the next 10-20 years. Together with its opportunities and threats.

The main question that will come up is whether 'rebuilding the community' is the right answer and in which way this should be interpreted.

The SWOT analysis on the location will be on a more detailed scale, confronting the opportunities and threats. This will lead to conclusions directing to the conceptual approach of the situation.

4.2 'The community'

Up until now, many concepts and theories have been developed when it comes to the well-known term 'community'. According to the dictionary 'community' is explained as a social group of any size whose members reside in a specific locality, share government, and often have a common cultural and historical heritage¹.

In 1915 C. J. Galpin had given the first definition. Since that moment, many other definitions and similar terms were followed up.

'Community' has a mostly area based strong meaning where needs resulting from exclusion can be satisfied. However, the focus could be at many different aspects. For example the more geographical area, like a group of people at a particular place or a community as an area of common life.

Or the focus may be on the health aspect or perhaps a community based transport system to maintain mobile, even at an isolated area.

In order to use a structural and underpinned approach on the question "what is the effect of community disappearance" at first a general profile will be written per typology.

¹ <http://dictionary.reference.com/browse/community>

The assigned location will be related to a particular 'approach of community base', such as place interest or communion (Lee and Newby 1983).

Territorial or place community is overall geographically understood. Secondly, community based on interest share a common characteristic other than place. Factors such as religious belief, sexual orientation, and occupation or ethnic origin are deriving the communities. At last, community in its form of being a 'communion'. This entails a profound meeting or encounter – not just with other people, but also with God and creation(nature).

A community could be seen as a particular type of social system distinguished by several characteristics, such as, recognition of the relationship with others and areas of common concern with other members, longevity and continuity combined with a geographical element.

In order to formulate a hypothesis of the location in Tochigi the site will be analysed on these characteristics. Followed by its strengths, weaknesses, opportunities and threats.

4.2.1 Community elements

How much do people feel that they belong to a community and share a common density with others?

Is there a sense of consciousness about what their community is? And where it actually is based?

Do they have shared values and/or interests?



A

B



C

D



Group norms?

Social control?

Group oriented or individual?

How often and with what number of neighbours do people visit and interact on the average?

What brings people together? (work, socialize, activities, social interaction)

How does the communication network work?

Contact with other outside the community?

How do they reach each other?

Are there links with externals?
Other villages?

Political links? Governmental influences?

4.2.2 Community typologies

I N T E G R A L - strong identity, integration and link ages - individuals are in close contact. Share concerns, participating in activities	1	P A R O C H I A L - strong identity - integration weak links - strong ethnic identity, independent position within area	2
D I F F U S E - things in common - neighbourhood where population change has been - often breaks up into clusters (new and old habitants) - little neighbourhood involvement	3	S E C L U D E - weak on all parts - a non-neighborhood feeling - no cohesion - social distance between people	4

4.3 Consequences for communities rural Japan

4.3.1 Integral, parochial, diffuse and secluded communities

Within Japan you will find different sorts of communities together with their own characteristics and specifications. In order to relate them to a certain group four typologies are defined. Rural Japan is currently facing the start of a slow disappearance of community life continuing the coming years (figure 19). This chapter gives you a general view on the consequences of their disappearance. The different typologies are analysed on the same elements, which are identity, integration, group norms and external links.

1

IDENTITY: People will definitely notice the loss of a strong identity. They slowly start to feel more isolated and no neighbourhood environment will be left. **INTEGRATION:** When interaction between habitants starts to disappear, they will loss contact and activities will not be arranged so often. **GROUP NORMS:** The loss of social control will especially effect the quality of life. Mostly concerning the elderly because they need someone that keeps an eye on them. **EXTERNAL LINKS:** This strong identity and close contact community is not very much reliable on external links and is not looking for them.

2

IDENTITY: A strong ethnic identity might disappear more slowly. Strong identity is their major characteristic. Especially letting everyone be part of it. They will maintain their contact till the end. **INTEGRATION:** People are getting together because of religious reasons, a strong meaning. Mostly in a religious building which creates a longer interaction home base than in a integral community. **NORMS:** Group oriented within group activities. When group declines, the interaction will do too. **EXTERNAL LINKS:** No external links, independent position.

3

IDENTITY: People will notice the decline and depopulation. Because they are already clustered the groups will soon decline critically. They slowly start to feel more isolated and no neighbourhood environment will be left. **INTEGRATION:** When interaction between habitants starts to disappear, they will loss contact and activities will not be arranged so often. **GROUP NORMS:** Social control will be regularly. They often share common interests which brings the people together and interact with each other. This will become less in time. **EXTERNAL LINKS:** Some links with other clusters.

4

IDENTITY: No strong identity. Only partly between several neighbours. Overall no cohesion feeling, no shared values and/or interests. In general, they don't feel like being part of a 'community'. The disappearance will be noticed, but not as much as 01. **INTEGRATION:** The communication program is mostly formal, just concerning neighbourhood topics such as road maintenance. People do not regularly come together and have no reason for it. In time these 'meetings' will disappear too. **GROUP NORMS:** A great example of individually oriented. There is almost no cohesion of social control. Only between direct neighbour perhaps, but not clearly. In 10 years or so this is a critical situation because people will age isolated with no social interaction. **EXTERNAL LINKS:** There are no direct links to external communities.

4.3.2 General scenario rural Japan

In the worst case, the process of rural community decline continues. This will mean a process of fragmentation, disaggregation and at last marginalization. During the fragmentation the economic breakdown will occur. Besides, the social and cultural environment will be impaired.

The second stage will be 'disaggregation'. Currently there are communities based on agricultural aspects or for example industrial employment. This means that the loss of population, services, business and jobs will affect the community.

The third stage will be called the 'marginalization', also known as geographic isolation. Besides the isolation from other areas and facilities because of the enlarging distances between both, there will also be political isolation. They will lose their political participation.

Some people call it "the post office doom" which will definitely mark the process and continue till the 'end'. Rail lines will eventually close, doctors will pack up and even schools will shut down. Medical services disappear, because of the difficulty to access them and to attract and retain medical staff. Consumer goods and services that are still there will become more expensive.

People who can afford it, will move away. The other, mostly elderly, remain living in the isolated area. Eventually, when they passed away, the area will be ruled by nature, with some abandoned empty houses.

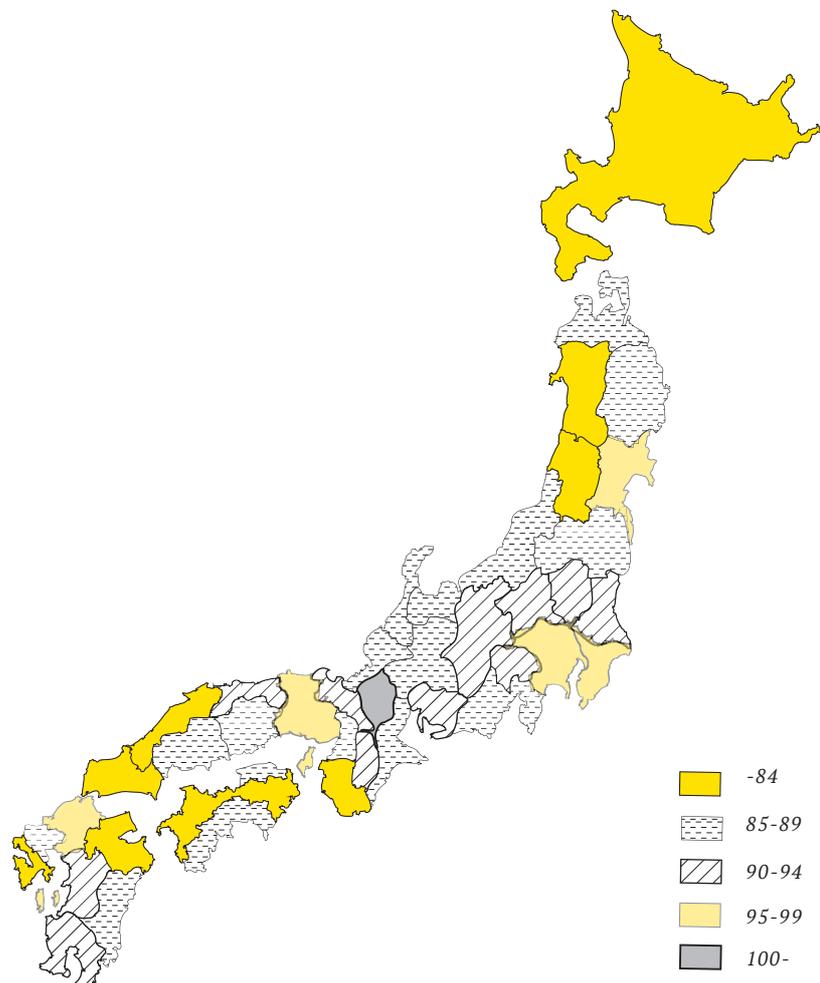


Figure 12: Projected population change Japan

4.4. Consequences Tochigi - Rural Japan

4.4.1 Current situation in Tochigi

At the assigned location, in the map shown on page 28, you will clearly notice ribbon development. All houses are scattered along the main road. The fact that these houses are not standing too far from each other, does not necessarily mean that they have much to do with each other.

According to field research, the neighbours know each other because some of them grew up together and never left the area. They do know the others by name, but what I noticed is that it does not get much further than that. They do not visit each other often or have activities held together. You could easily conclude that there is not much interaction between the ones living along this valley road.

Field research resulted in some interesting, unexpected findings and conclusions. At first, as an out-stander you might think this mountain valley with its disappearing facilities and habitants needs a well working community spirit. In order to watch out for your elderly neighbours and collaborate in the search for a fulfilling life.

The need for community-time did not really occur after taking the interviews in a forced way. They actually very much preferred the quite "isolated" living situation where family is the number 1 priority.

The answer to the question which might be mentioned as a weakness of living there was one particular, in my opinion surprisingly, tiny disadvantage. "The mountains do have a lot of mosquitos during summer time, which is very uncomfortable" - one of the siblings mentioned. The fact that the nearest shop or doctor is situated in about 10-15 km, which makes you dependent on the use of a car, is not seen as a weakness, at most a little inconvenient as they say.



Omata, Tochigi, Japan
Main road at assigned location
Average age: 65+.



SECLUDE

4

The assigned location is clearly related to typology nr. 4: secluded community. A good example of a *diffuse* community on its way to get *secluded*.

- *It 'scores' weak on all parts.* No clear identity, group norms, external links and interaction. The families are very individually oriented and focusing on their own living.

- *a non-neighborhood feeling*

You could see the cluster of homes as a neighbourhood, but not one which is very coherent. They don't interact very often. Just once in a while during a neighbourhood meeting to discuss practical area related topics.

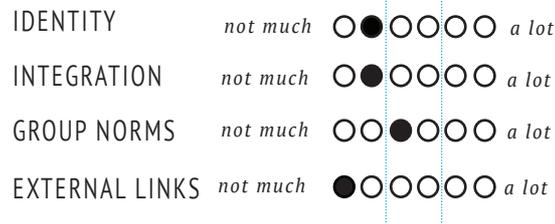
- *no cohesion*

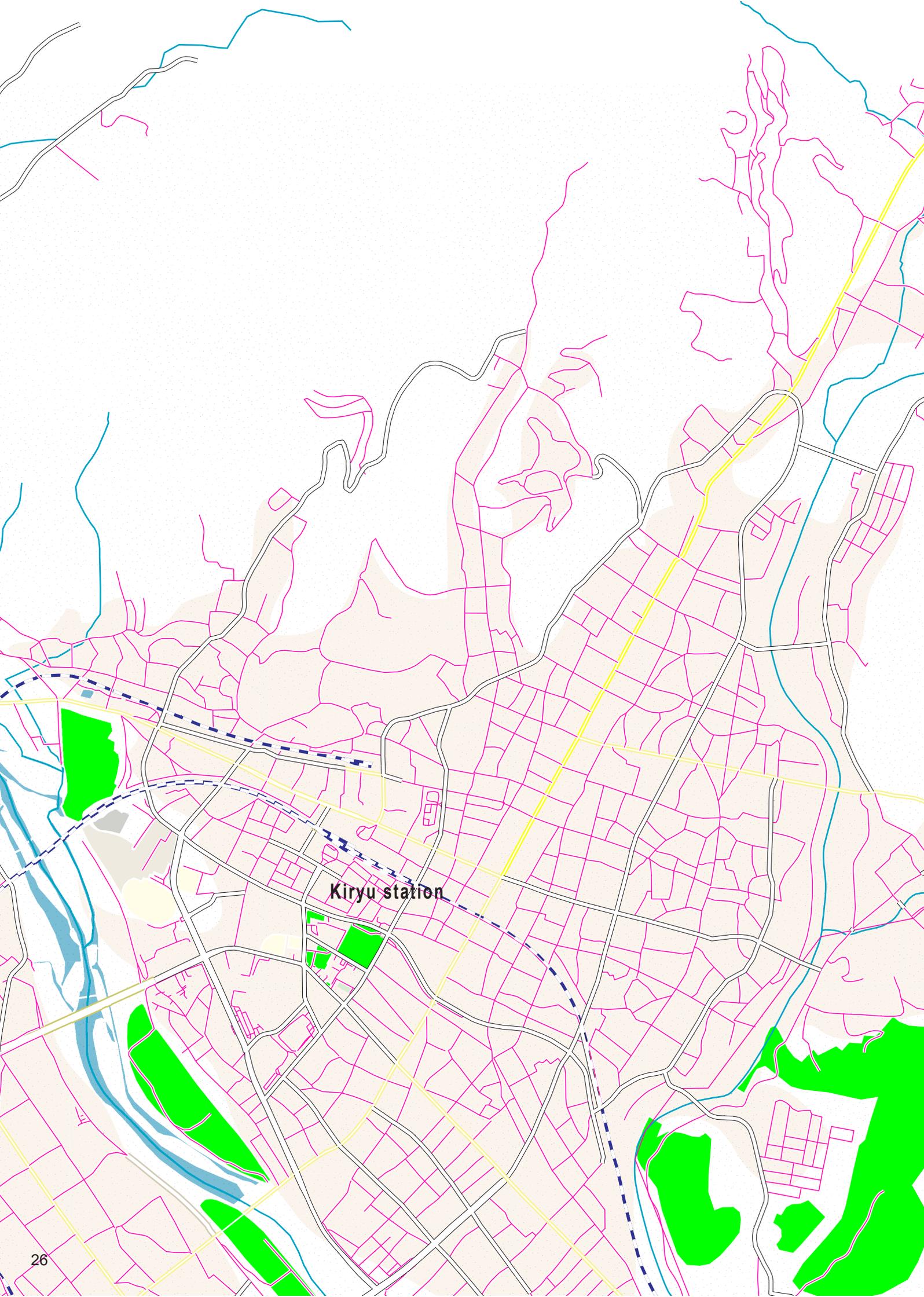
There is not much cohesion to be noticed. People barely know their neighbours and rarely meet.

- *social distance between people*

Their mentality might also be a little individually oriented and not really willing to interact with others. There are no arrangements made in terms of neighbourhood festivals or reasons to interact.

This form of community had formed this way throughout the years. On *page 28* you will see the changes from 1985 up until now. Followed by a scenario written about the future situation here at the assigned location.





Kiryu station

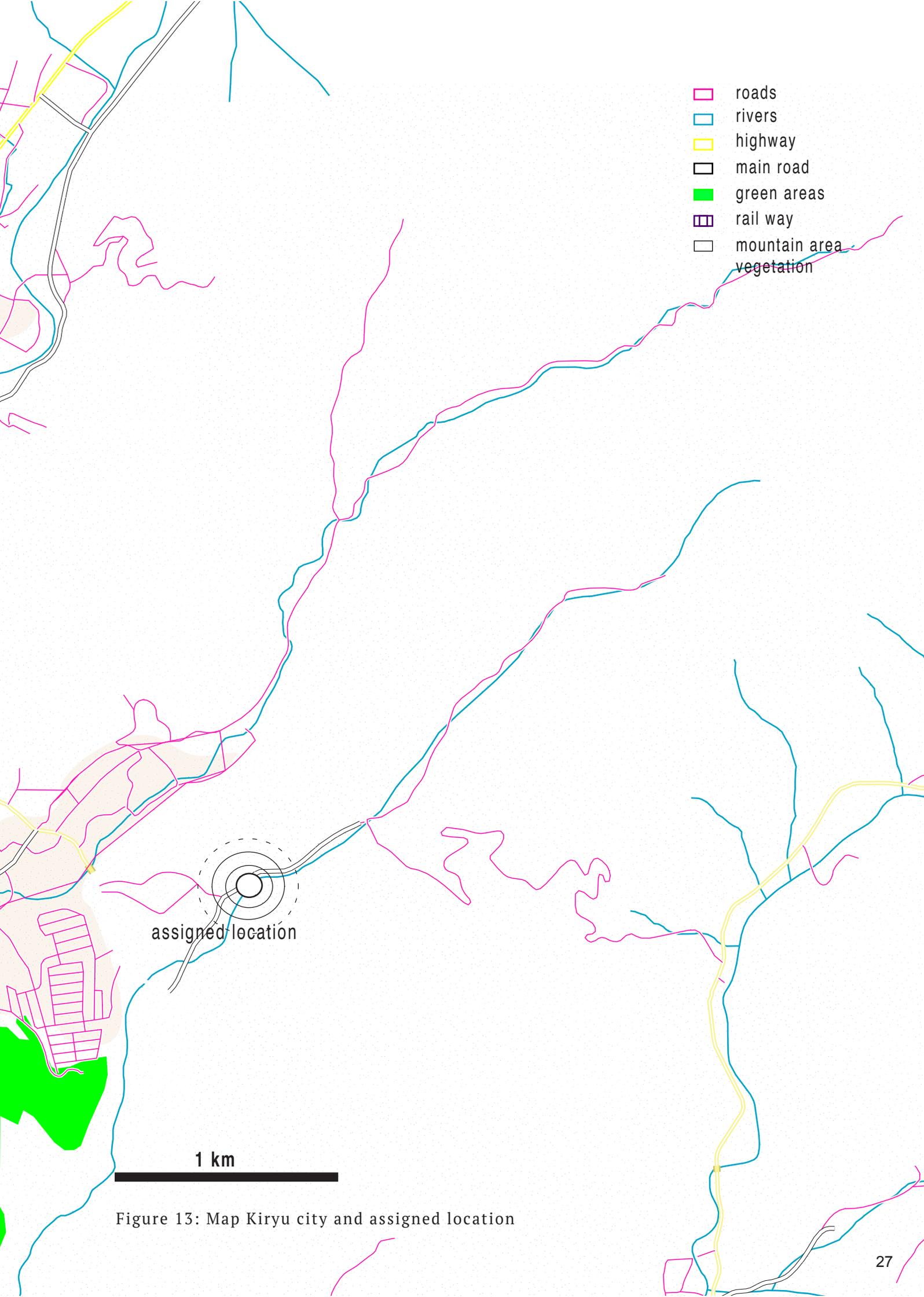
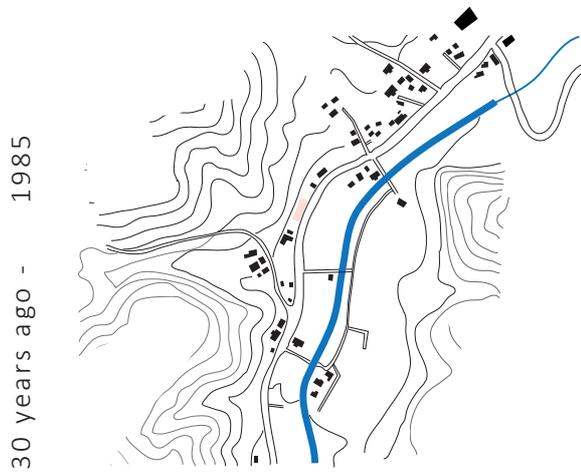
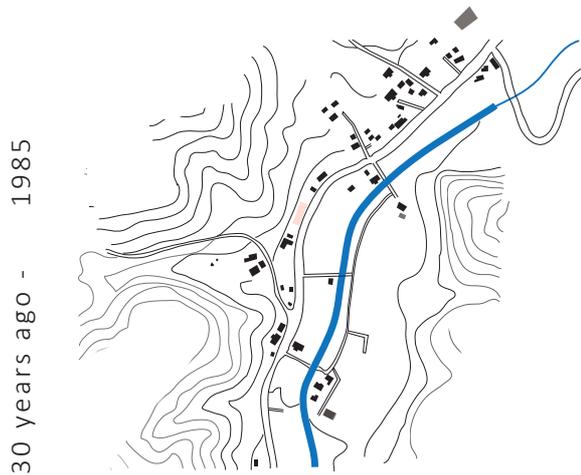


Figure 13: Map Kiryu city and assigned location

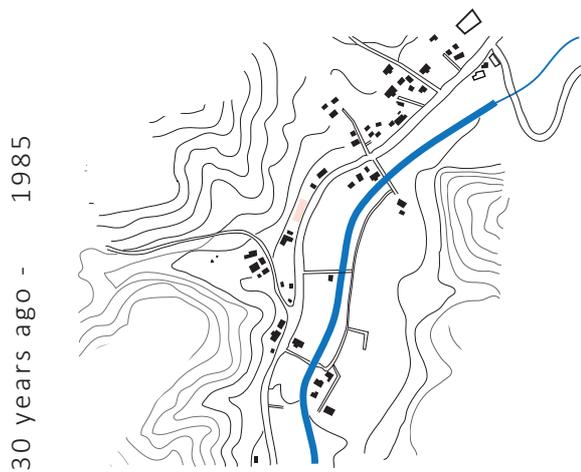
4.4.2 Historical changes Tochigi - assigned location



Just a few years before 1985 the river was flowing quite wildly through the landscape. The people widened the river in order to divide the land into more sincere partitioning. The school building was still the traditional old one, which soon would be replaced by a new building. By this time the classes were around 15 students, divided into males and female classrooms.



The classes at the school were by this time around 5-6 students. Shortly after this, in the year of 2002, the school went out of service. The local rice & sake shop (1) and the small convenience store (2) shut down too soon after the school closed down. From that time the inhabitants were fully dependent on their own car.



Currently, there are no facilities left anymore. They did not get rid of their buildings either. These abandoned buildings, like both shops and the school, are being used as meeting places in order to discuss with the neighbourhood association.

On the other hand, a few more homes were added to the area. Mostly because of the change of farm-land into building-appropriate area.

- Assigned location new home
- Empty building, no longer in use
- New building
- Current buildings

Figure 14: Historical changes assigned location

4.4.3 Scenario assigned location

According to the above findings the following hypothesis is written. In addition to this estimate, *page 28* shows you the changes throughout the past few years up until recently. This data has been collected by analysing old maps from the area and from information of the habitants in that area.

A few societal aspects will influence the scenario. At first the **'work-life balance'** will change in the next few years. Health will become a first priority in stead of the working pressure. Another aspect that relates to that are the working hours. According to Yoshie Komuro, CEO of Work Life Balance Co Ltd in Tokyo, the **'working overtime'**-trend will stop¹. People won't be paid more, when staying more time at the office. Besides, working in one place would not be the usual anymore. People travel a lot and work in different spot (**'flex-working'**), including working out of their own home. This will give people the possibility to pay more attention for their private matters such as friends, hobbies and most of all family life.

'Family life' will become more important, just like it was in the past. This also includes taking care of their ageing parents and spending ime at the parents their home, mostly situated in the rural parts of Japan.

This will also be part of their hectic life get-away in order to relax and especially let your grand children experience nature and let them play freely in better **'environmental conditions'**.

¹ www.japantoday.com - "Work-life balance more important than ever", by Taro Fujimoto (march 2010)

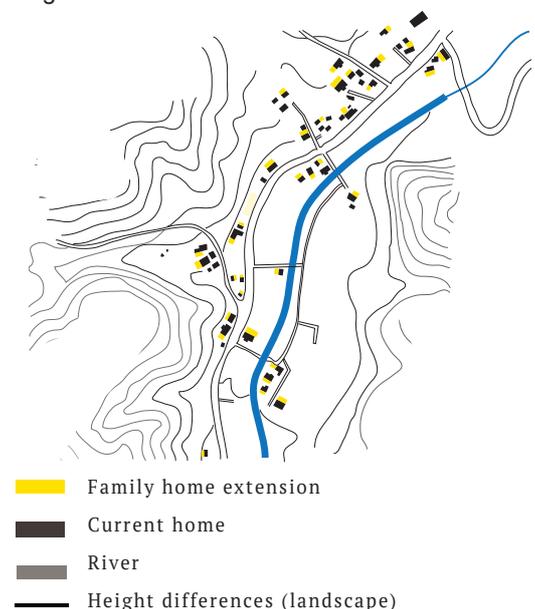
People will start bonding again with the rural area and home which will influence the decision on what to do with the home when their parents eventually pass away.

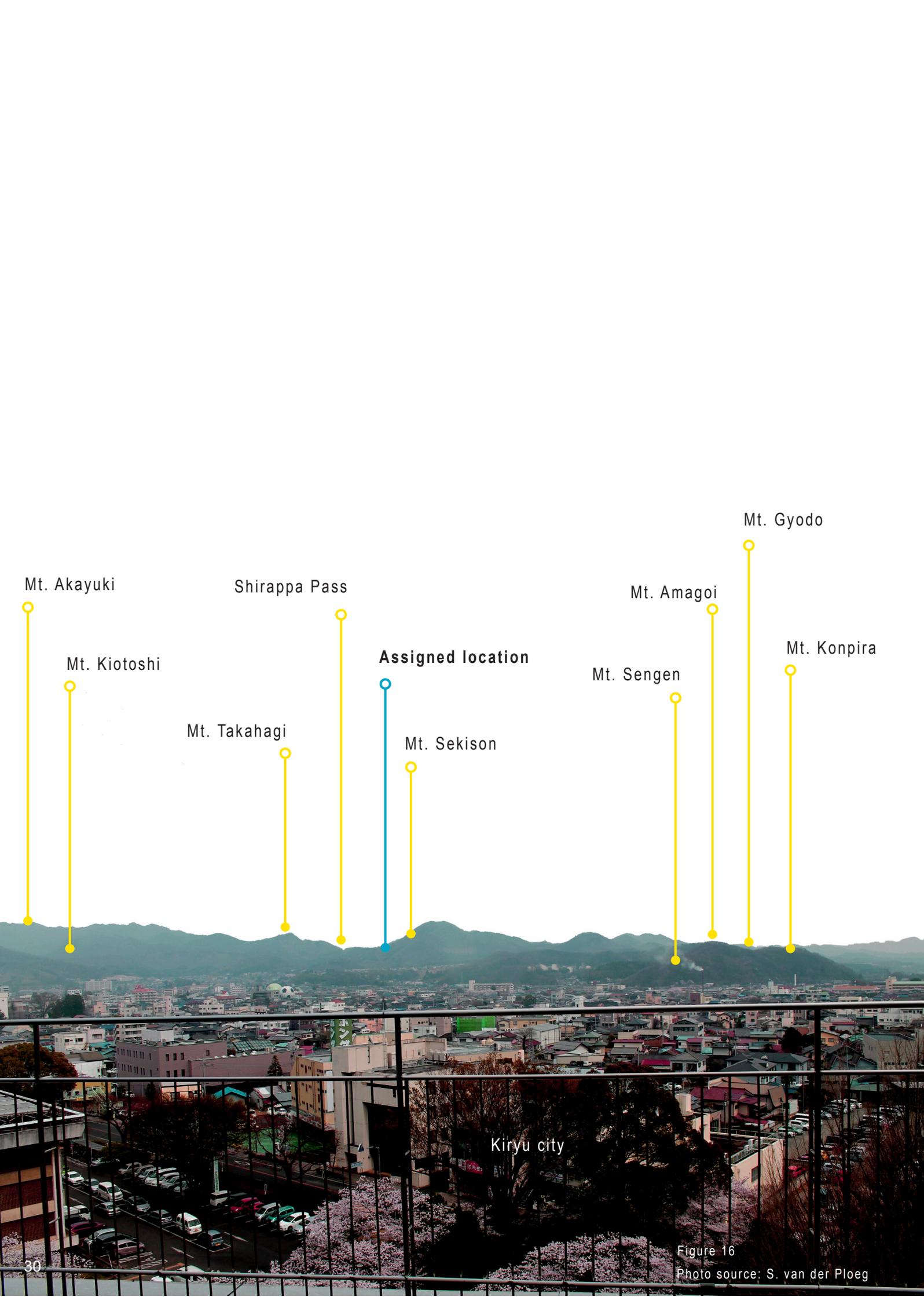
When they experience rural life more positively, both the children as the grand children, they are more likely to maintain living their. The educational aspect will be approached in a more modern way. **'Home school'** will become more popular. Eventually a new school could open when there are more children settling there.

Besides, the lack of shops won't be a major problem. **'Online shopping'** becomes much easier even in more isolated areas. Especially for them, shopping on the internet is a major development. When there are more people living in the area shops will eventually open up again.

You could divide the purpose of the home into 3 stages: 'ageing in place', '3 generation home' and in the end a 'family home'. The family community is a start on having a more attractive life. The figure in appendix 10 is an addition to this scenario.

Figure 15: Scenario





Mt. Akayuki

Shirappa Pass

Mt. Amagoi

Mt. Gyodo

Mt. Kiotoshi

Assigned location

Mt. Sengen

Mt. Konpira

Mt. Takahagi

Mt. Sekison

Kiryu city

Figure 16
Photo source: S. van der Ploeg

4.5 Conclusion

At first, especially as an outsider, you would react on the situation as shown in the previous location plan. You will look for a way to let the individual habitants interact with each other, in order to live a more social and fulfilling live. Which makes it more interesting for other (elderly) to be part of this social networking community.

The current situation does not show that much of a community life. Except for the very few meetings held with the neighbourhood association.

'Rebuilding' the community by focusing on activities for the neighbourhood is not the right approach in this case, in terms of creating 'meeting-points' or ways to gather with your neighbour. Statistics do show that the countryside is facing the major aging and depopulation problem and its affects. There has to be response on the current situation, in order to make it more interesting for others to move there, considering the emptying area.

The above findings and field research lead to the following conclusion; the community approach will still be focused on but at a smaller scale in the sense of a family community, in order to react to the larger scale in the future.

When creating a self-sustainable family community, the habitant will live a more assuring life because of its independent position by for example growing its own food, instead of the independent position on going to a grocery store 15 km by car.

On the other hand, the vertical community approach will ensure the habitant of having friends and family around more often. The current situation shows that Japanese homes are not very efficient and openly designed for the importance of accepting friends and family in and around the house.

In order to react on the larger community, these family homes become more interesting which could be convincing to others to live the same sort of life. The depopulation might go on at first, but without having too much of an effect on your daily life because of you self-sustainable position. When more homes start working the same, the country side "will" eventually attract more people in the future (scenario).

Just like the client mentioned, they are not even considering living somewhere else because facilities are disappearing and neighbours too.

What if you can be ahead of that what is coming for you? How to prevent becoming isolated, depressed and aging in place far from gracefully?

The main question for the case study is how a new community concept can at first take up the needs of the elderly couple and later on have an effect on both their ageing process and the community around them.

As a conclusion on this chapter, the main focus will be on the family community, in multiple generations.

5. CASE STUDY

HOME DESIGN IN TOCHIGI



Assigned location, case study site

Photo source: S. van der Ploeg

5.1 Introduction

In the assigned case, the first question was how to minimize the challenges that aging brings to the elderly couple. Apart from this, the design will be a response to the current ‘problem’ Japan is facing nowadays which is an aging society resulting in a depopulated countryside. The main conclusion on these findings was that the slowly emptying area of Tochigi would have a major impact on the ones that will still be living there.

They will start feeling more isolated and won’t be able to use facilities around them because these start to disappear as well as the ‘community’. The question then is how to live in a situation like that and what will perhaps change this situation in the future.

According to field research, the community part is not the inhabitants their main concern at the moment. Having your family around has a higher importance within the Japanese life. This is changing though. The scenario written in part 3 pointed out the change within the next couple of years.

Instead of directly ‘answering’ to the community loss, the home concept would actually focus on the ‘family community’.

People in the neighbourhood will also notice this vertical focus, which might result in horizontal community development eventually when networks start to extend again.

The main intent of the design is to create a setting for elderly that meets the challenges of their changing lifestyle both as their mental, physical and cognitive abilities will change. And on the other hand, as a reaction on the community disappearing aspect, the design will be focusing on the ‘family community development’ within the (multi-generation) house. As a starting point on creating a more attractive life on the country side.

This final part of the paper will show you the analysis on the location, the concept visualization, including drawings, impressions and concept development. The concept will refer to previous findings from the research process as mentioned in chapter 1, 2 and 3.

5.2 Design approach

5.2.1 Approach

The case study will be approached with a specific method, in order to create a defined program that leads to a final product.

- Analyse current situation/location
- Refer to findings from research
- Define design goals and conceptual approach
- Proposal conceptual design

5.2.2 Product specifications

The final product of the case study will be a conceptual design proposal in order to create a possibility to continue living a fulfilling life at the country side in Japan, with the aging process kept in mind. In advance, the following product specifications have been made, in order to present, support and propose the design.

The proposal must include the following:

- Concept sketches and diagrams in order to underpin my thoughts and findings.
- Location plan (scale 1:1000)
- Housing plan (scale 1:200)
- artist impression and architectural model

5.3 Location analysis

The assigned location is situated in the prefecture Tochigi, which is part of the Kanto region on the island named Honshu, Japan. The capital of Tochigi is Utsunomiya. A well-known area of Tochigi is the region Nasu. Many people know this area because of the onsen baths, the locally brewed sake and ski resorts in the area.

The climate of Tochigi is situated in a humid temperate zone with many temperature swings. The large amount of snow that could fall must be kept in mind. The barren winters with its dry winds, and summers of humid and frequently located thunderstorms identify Tochigi. Whereas the assigned location is situated right between two mountains, it does have the climate conditions of a valley.

This means that during the day you will have warm air going up the mountain slope and cool air going down. At night the situation will be the other way around, as shown in the fact sheet on the bottom of the next page (figure 17).

The actual building site is located just at the foot of the hill, next to the asphalt road. The plot is right between a shed and the farm of the brother of the client.

The fact sheet on page 35 shows more information of the site and the isolated location. The area is a typical example of a Japanese rural, slight depopulating, area. Several characteristics of this area are low density, large distances to facilities and overall green surroundings.

5.3.1 Infrastructure

Within 50 minutes you will enter Tokyo by using the Shinkansen, departing from Utsonoyima. Apart from the shinkansen, which is relatively expensive, you can use the regular JR line and Tobu railway.

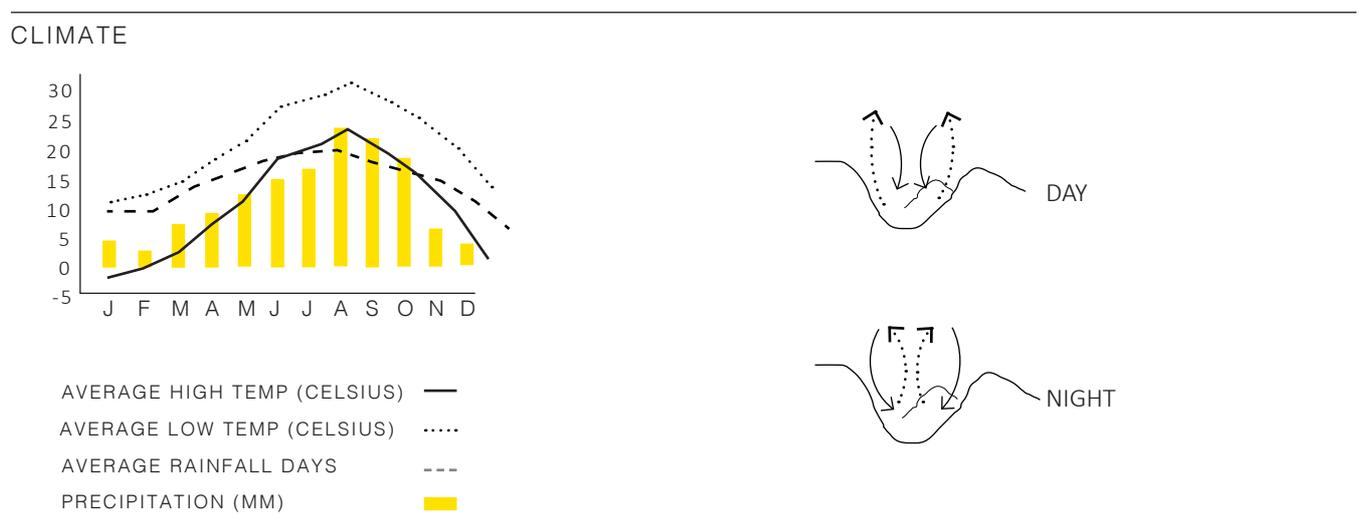
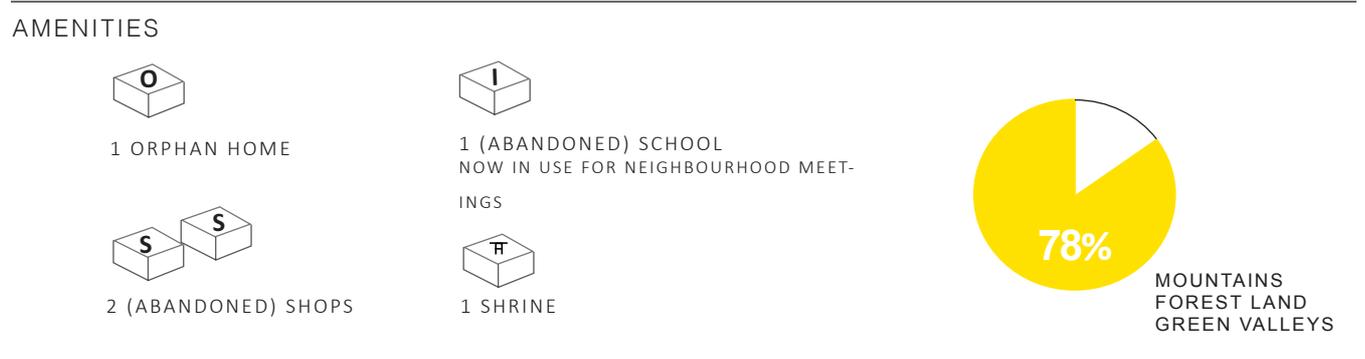
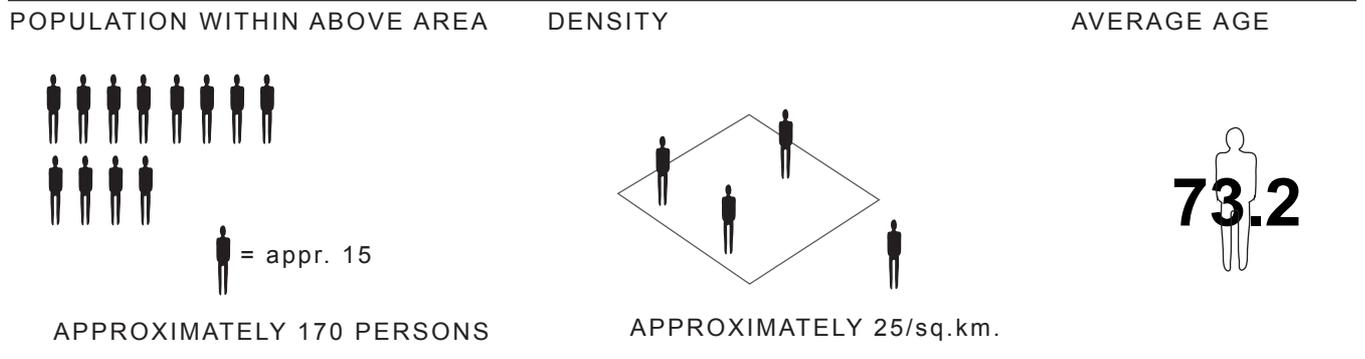
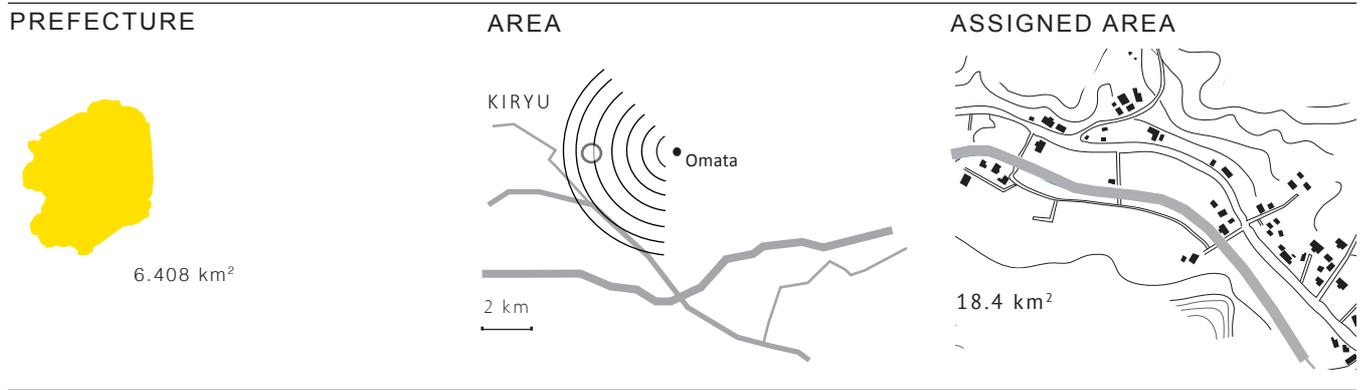
In order to get to the assigned location you need to go by car 1 hour and 17 minutes (73,6 km) or 1 hour en 50 minutes transport from Utsonoyima station to Omata station. The road, as shown in figure 19, is an asphalt road a sideways of the main road nr. 50.

You can either get out of direction 1 from the main road (50) which leads to Tokyo for example. Or come from direction 2 which is a smaller mountain pass leading to Nikko. (Appendix 13, image 2.)

Kiryu itself is very good accessible from changing on the main road nr. 50 to a sideways leading toward the centre. You can easily drive through the city by car, when not using the public transport which is faster though. The assigned location, however, is slightly more difficult. From Kiryu you can either use the mountain pass or a main (hardened) road towards the northern part.

The assigned location is surrounded by green slopes and mountains with large cedar wood forests. A very calming atmosphere where nature has a major role within the living circumstances.

Figure 17: Fact sheet: assigned location



5.3.2 Green space

The assigned location is surrounded by green slopes and mountains with large cedar wood forests. A very calming atmosphere where nature has a major role within the living circumstances.

The assigned location is surrounded by green slopes and mountains with large cedar wood forests. A very calming atmosphere where nature has a major role within the living circumstances.

The green areas are around Kiryu are mostly recreational facilities and parks. A striking fact is the great amount of golf courses around this area. On the other hand, there are not many parks people could enjoy.

5.3.3 Distances

The figure in appendix 14 points out the accessibility to key services from the assigned location. Most standard facilities are located in Kiryu all about 4-5 km away from the assigned location. For example, the first accessible (middle size) supermarket is reachable within 14 minutes by car (5,5 km).

This is a reasonable distance, although you are really dependent on your car. Unfortunately, you won't have a local shop or bakery nearby in walking distance. On the other hand, you won't have much traffic passing by because of the location of the facilities which are on the other side of the hill.

Most habitants do own one or two cars. If you are not able to drive a car, or own one, you are really isolated from basic facilities. This will not be a reasonable living situation. There is no acces to a local bus or something similar.

Kiryu does offer all needed key services and facilities. There are lots of medical clinics, dentist, hospitals and even specialized clinics. The closest (sushi) restaurant is reached within 4 km around area of the Kiryu station you will have the most variety of diner, lunch and coffee.

The assigned location is marked on the map on page 39 with a yellow circle. Which immediately occurs is the isolated position with barely anything use full nearby. Most facilities which will be used are situated in the nearest town called Kiryu. The second city within 6-8 km is Ashikaga. Kiryu is actually part of the Gunma prefecture, directly on the border of Tochigi prefecture.

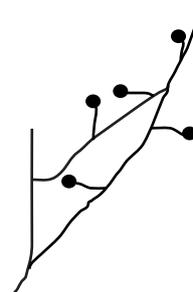
Situated at the foot of Mount Akagi, the city boasts one of the most beautiful settings in the Kantō region. Two rivers, the Kiryū and the Watarase, run through the heart of Kiryu. In the north you will be surrounded by mountains. The northern district is also well known for its cedar trees.

The map on page 39 shows the urban areas (housing facilities, hotels) in light grey, with all commercial facilities (shops and restaurants) marked with blue dots.

This is a typical Japanese suburb situation where there is not such thing a main shopping street. Everything is spread out, and on in every corner of all housing blocks you are likely to find a local shop.

Kiryu its suburban layout could be seen as a line-layout, which is similar to a tree-layout. It is accessible from both sides. The grid makes it possible to access the houses also from the arteries. The diagram above shows you a abstract form of the layout. In practice it is mostly, also in Kiryu, a combination of several lines.

Characteristics are low density, no easy get-away by foot and much houses facing the main acces allowing for quick vehicle transport.



5.4 The concept

5.4.1 Design goals



Creating an ageing resistant home for the elderly couple where they are able to continue living a fulfilling life. This also includes a healthy and safe living environment which must be 'responding' to the aging process. The house must be ideal for a balanced life cycle in which people at different stages of life feel satisfied and fulfilled.



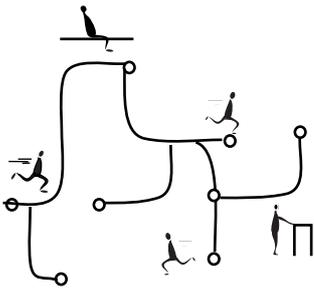
The home will be designed in a way that family and friends (visitors or the 'community') are feeling accepted and welcome when staying over. They will be part of the living scene, where the amount of privacy interruption will be 'coordinated' by the owner itself. Not only by focussing on the current family situation, but also the future situation.



Within the final design a modern interpretation on traditional Japanese housing elements must be made. This must be done in a way the client can continue living, when aged over 60, in a familiar environment where the cultural background is respectfully integrated.



At last but most important is to adapt, with the conceptual design, to the current 'problem' Japan is facing. The aging society resulting in a depopulation of the countryside. The concept needs to react to that situation. It might not be a direct solution, but a first step into the direction of 'more attractive life at the countryside'.



5.4.2 "MA" in practice

'Ma' is a very common 'concept' within Japanese culture (appendix 5). 'Ma' literally means 'space in between', space including the concept of time. This phenomenon is constantly present in different ways. You could translate 'ma' into two different statements. The distance between objects in space and interval of time between different phenomena.

Throughout daily life in Japan you will find yourself experiencing situations 'facing' 'ma'. In order to analyse this sense of feeling a few examples of real experiences are given. The 'ma' involvement will be explained and the specific situation will be shown in an abstract figure (appendix 5).

This will lead to different interpretations and actual behaviour of 'ma'. In order to understand the Japanese relationship with time and space a quick reference to the west has to be made.

In western countries space is known as a three-dimensional area based on length, height and depth. It is a static perception of space (a homogeneous space). It derives from a linear perspective where you place yourself, the subject, outside the space to observe the space as an object.

The time dimension is removed and accordingly the static room is isolated. In this sense "time" has always been detached from space. The west considers time as absolute and linear.

5.4.3 "MA" integrated in the home

One particular important aspect of the ageing process is the loss of physical abilities. If there is one thing to mention which must be prevented, it will be falling in and around the home. Elderly revalidate slowly and one accident might cause major life changes.

In order to lessen this fear and be ahead of any disastrous accidents, the main goal is to integrate the old Japanese concept 'ma' within home design.

The "pause" gives an idea of space including the concept of time. Unlike in Western countries, this term in Japan has a sensorial perception of space. "Ma" originally means the space in between things.

This historical and abstract term inspired the integration of 'ma' within an elderly home. In the Netherlands people would recommend to attach all sorts of hand rails and bars in order to help the elderly walk from one room to another. On top of that most rooms are directly facing the next room closed off by a door. The "ma" aspect will be focussing on possibilities for the elderly to 'pause' their walk and find their pause in time in order to continue their walk safely without losing balance.

The following sketches will give you an impression of what this 'stage in-between' will mean in practice. Between every separate 'room' (function) the "ma" will be integrated.

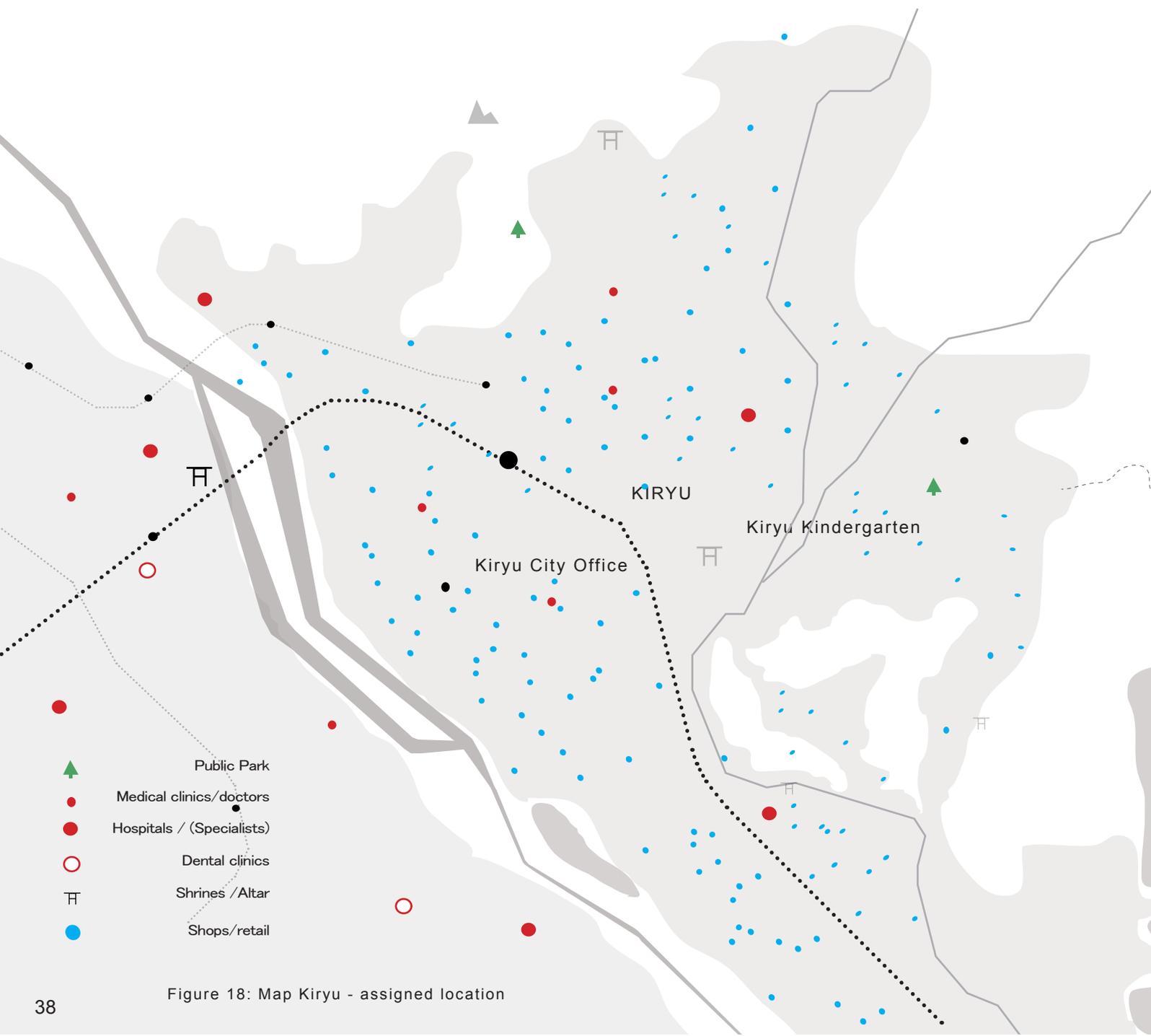
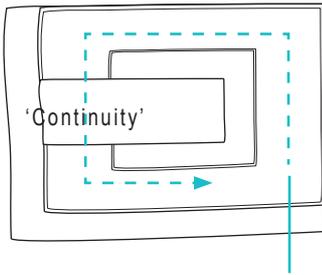
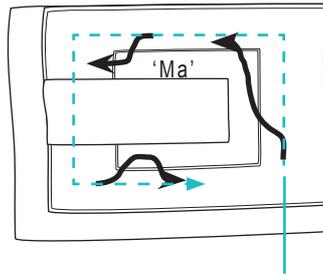


Figure 18: Map Kiryu - assigned location

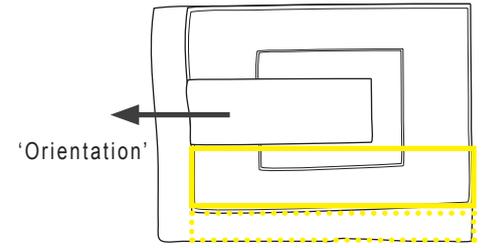
Concept diagrams



The different rooms are all gathered around the central inner space. Because of the continuous relation with the inner centre, all spaces remain in contact and be part of the whole existence of the home. New diagonal sight lines are created as well. This strengthens purpose of the basic shape and focuses on continuity.



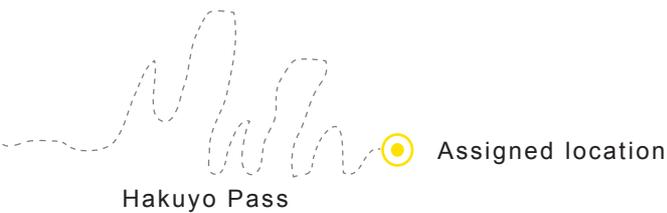
The 'space in between', also known as the 'ma'-area, creates an environment between different spaces and right between in- and outside. When entering this space, serenity and safety are the highest priorities. By walking through here toward another room, you can make use of handrails and clear daylight in order to move yourself as safe as possible.



The U-shape creates an open orientation and sight line toward the direct neighbours (which is family (brother)). This welcoming appearance makes an inviting gesture towards them.

The rooms at the front side are know as the community area, which has a extension possibility through opening the front facade. The closer you get to the green tree line (in the back) the more private the functions will get.

H

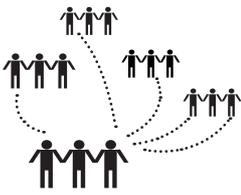


Hakuyo Pass

Country club

H

5.4.4 Family community



The family aspect has a high importance within the Japanese life. Instead of directly ‘answering’ to the community loss, the home concept would actually focus on the ‘family community’. People in the neighbourhood will also notice this vertical focus, which might result in horizontal community development eventually when networks start to extend again.

According to the research on family importance throughout the years and the estimate (hypothesis) written in the research part this will continue changing again. The concept of focussing on these changes will be the introduction to a more attractive rural life.

In the past, family was extremely important, which became less because of the working pressure and the priority change. Work seems to be the most important aspect of life at the moment in Japan. This will change within the next years, due to several mentality changes.

At first the health issue came up more recently. Which will make people reconsider their health situation when working such long hours and not having a private life. Besides the working mentality will change. Flex-working will become more popular.

Working behind one private desk is not the future image in terms of working environment. More people will work on flexible places and even at home. (This is further explained in the scenario in chapter 4). These aspects will create more options for younger families to consider living on the countryside.

Besides the future aspect, the ‘family community’ also stimulates the elderly within their ageing process. Your mind and brain is facing new information when having conversations with others and keeping in touch with the society, developments and news.

New daily activities will occur as well, like baby-sitting on your grandchildren which will make you will feel a lot of joy and gratefulness. The social aspect is a great advantage when having family over. When getting old, you will start losing your friends because they might pass away earlier. This means you will become more isolated, lonely and will not be able to find any new social connections by yourself.

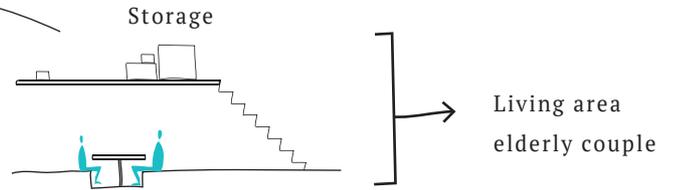
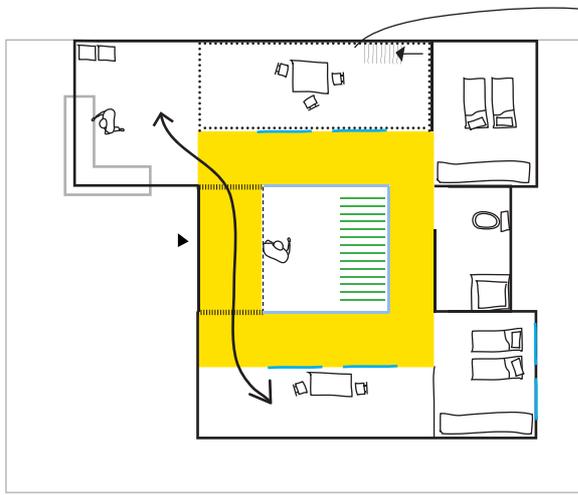
Also your physical needs will be encouraged by having your grand children wanting to play with you or having your children making you ready for a walk, which might have seen to much when going on your own.

5.4.5 Change of time, change of use

As mentioned in the scenario written in part 4.4.3, the home will pass 3 different stages: ‘ageing in place (phase 1)’, ‘3 generation home (phase 2)’ and ‘family home (phase 3)’. The changing conditions and the people involved in every phase are further explained in the figure in appendix 12.

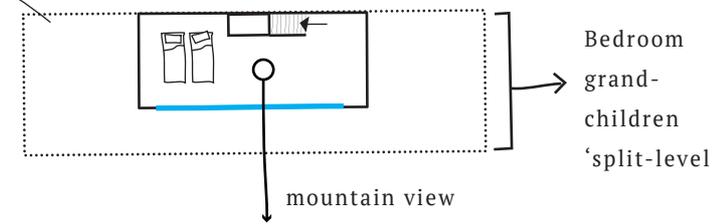
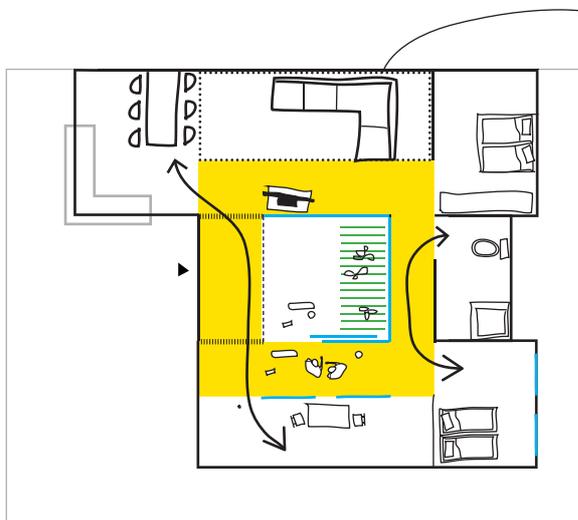
The figures on the next page will relate the changing phases with the home design. What would change in terms of interior? The use of facilities in the house? And , what would change because of modern influences?

'Ageing in place'



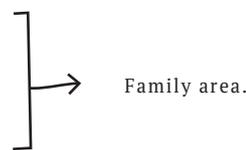
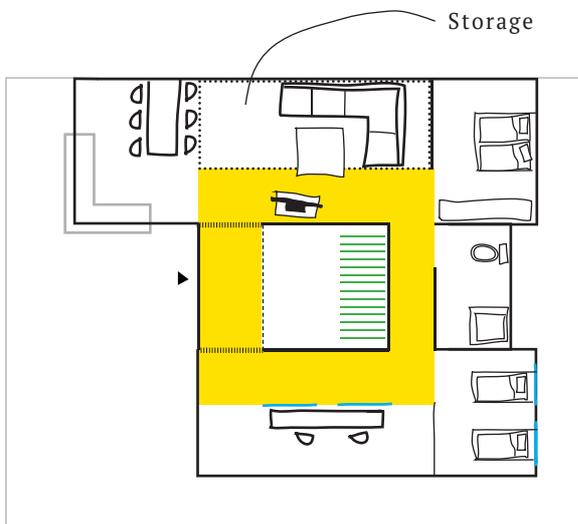
Guest area: Children (family) visit from time to time. Bedroom and private living area. And a possible short cut to get to the kitchen without interrupting the elderly. Dining area (kotatsu) is shared underneath the lower floor level.

'3 generation home'



Guest area turned into the area for the elderly couple. They need less space and have their private territory in the front part. The former back area is now for the children and grandchildren. The 'ma-panels' in the back area are removed in order to create a bigger living area. Also a dining table is integrated. Grandchildren have place withing the 'Ma area' to play, also in the open space, and on the 'engawa' (porch).

'Family home'



Living area grand children. Desk for studying and hobbies included. Besides, more privacy from their parents in their own front part of the house. Regular beds in the bedroom.

Figure 19: Community development phases - home sketches

5.5 The outcome

5.5.1 Plan (situation)

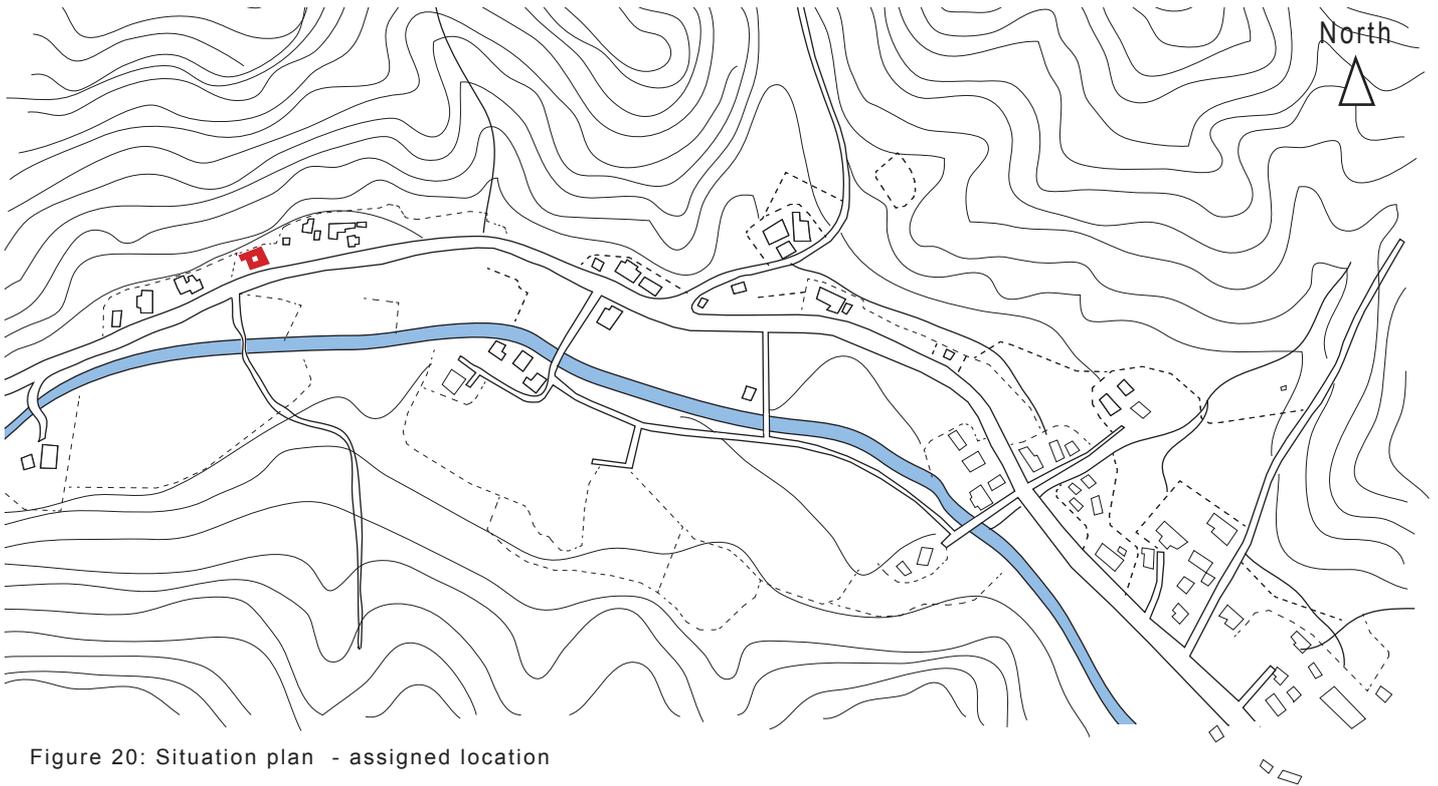


Figure 20: Situation plan - assigned location

	CHANGING CONDITIONS	
'Ageing in place'	Work	First priority, hard working pressure
	Education	Schools shut down
	Facilities	Disappearing
	Family	Stops by rarely
	Friends	Not much, lack of social life
	Health	Slight loss of physical abilities
'3 generation home'	Work	Less priority, mentality change
	Education	Day care for grandchildren, home school
	Facilities	Some re-opening
	Family	Stops by more often, move-in, get-a-way from hectic urban life, caring for parents
	Friends	Loss of friends, passing away but family is bonding and new connections start
	Health	Loss of sight, hearing and hard time moving.
'Family home'	Work	Flex working, job less priority
	Education	Home school, new rural school
	Facilities	Re-opened and new developments (use of internet shopping)
	Family	'Family rural home' nr.1 priority
	Friends	New friends (parents of children their friends)
	Health	Fine - living an attractive self sustainable life with family around

5.5.2 Plan (home)

Appendix 15 will give you a better view of the location and the different views from the site itself. As an addition to the plan of figure 20.

Appendix 16 will show the plan of the house in the first phase. The design stands for a ageing resistant multi- generational home where community the approach will at fist focus on intern family community and in the future have its effect on the surrounded community.

The sketches of figure 19, appendix 12 and the diagram on page 42, will give an indication of what these phases mean and what kind of influence they have on the interior and use of the home.

Figure 21: Sketch section (south direction view)



5.5.3 Scenario community development on an urban scale

The focus within the concept home is on the 'family community'. Intern development and interaction within the family home. The changes and passing phases also differ from 'community development and participation'. Every phase is characterised by its own way of interpreting community life and influence.

This paragraph is a scenario written of what would happen at this phase (1) and the future coming two phases.

The situation sketch shows the current situation. The diagrams on the next page will focus on 3 groups of the residents of the valley. A: The elderly couple in their 60's. B: A lonely widowed men in his 70's. And C; An old (pensioned) couple in his 70's. These are, in general, the representatives of this area.

The first phase architectural plan will be further explained on page 51.



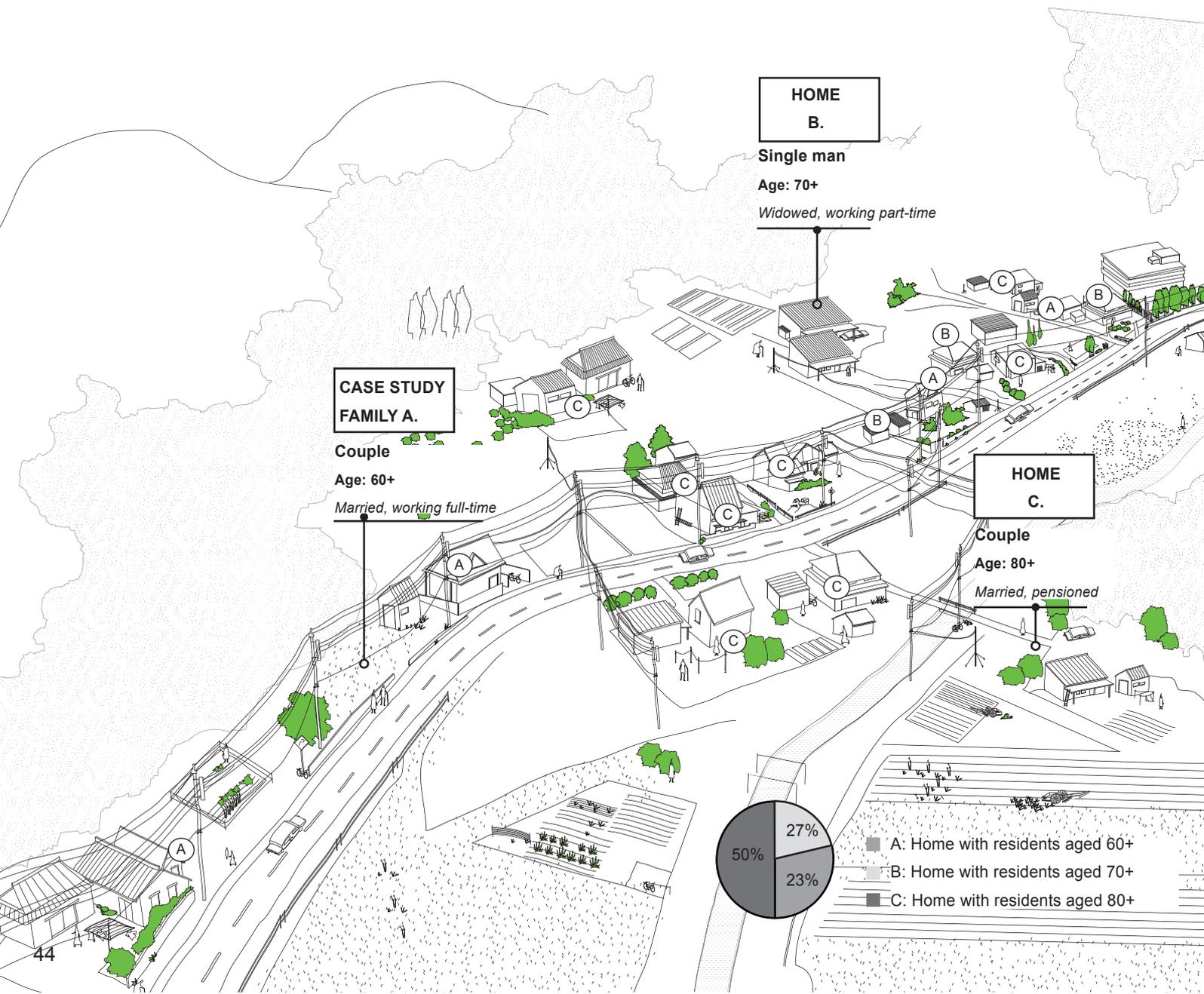
Elderly couple
Age: 60+



Widowed man
Age: 70+



Pensioned couple
Age: 80+

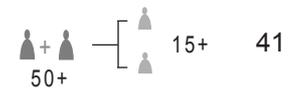
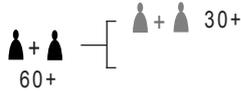


Phase 1 - Ageing in place

Phase 2 - 3 generation home

Phase 3 - family home

Residents



Community participation
Initiatives and influence

Family community is slowly appearing. 'Community development' internal, within the family home it self.

Children move in and grand-children will be part of the '3 generation home' too. Community development within the home and with its influence on the neighbourhood.

Community development around the neighbourhood in full swing. Children go to school, attend sports and more interaction with other residents.

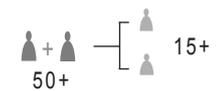
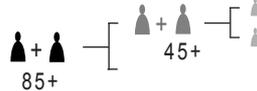
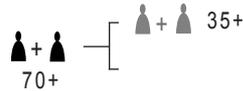
New used facilities

(none)

Playgrounds for children, the old swimming pool will re-open, elderly-activity centre, local shop

Tennis court, football club, primary/elementary school, local restaurant will re-open

Residents



Community participation
Initiatives and influence

Family comes over more often, grand children (around the age of 10 stay over sometimes for the weekend.

Children and grand children move in with the old man. He gets more support in his daily life. And gets encouraged by activities from his family. 3 generation community development.

Besides family bonding, the community aspect in the neighbourhood gets stimulated as well.

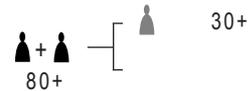
New used facilities

(none)

Elderly water aerobic in the swimming pool, shopping at local store, join grand children with a walk to the playground, go fishing with his son.

Tennis court, football club, primary/elementary school, local restaurant will re-open, Neighbourhood association receives fresh new input and initiatives.

Residents



Community participation
Initiatives and influence

This old couple only has one son visiting from time to time. Work pressure is getting less and visiting happens more often.

The couple passed away. The son inherits the home from his parents. He decides to move in there. He starts working on the land and participates in the neighbourhood association, like his father used to do.

The single man married with another woman who grew up in this area. They sell their fresh grown vegetables to people in the neighbourhood and exchange products with their neighbours.

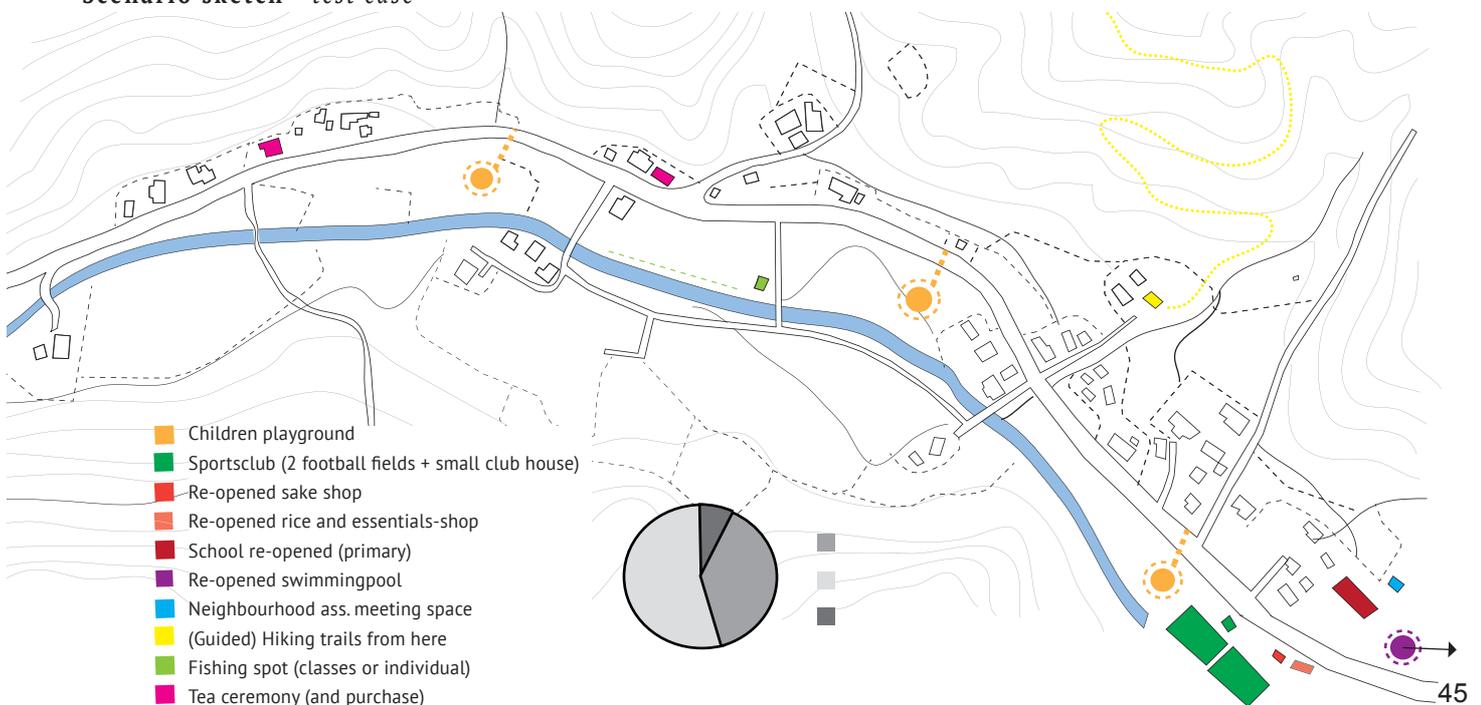
New used facilities

(none)

Neighbourhood association, local shop, supermarket, swimming pool, introduction of a new running team.

Two families integrate in 'family activities'. Woman starts working at local sake brewery. Man arranges running activities and matches (very popular sport) and hiking trips into the mountains.

Scenario sketch - test case





6. CONCLUSION AND DISCUSSION

6.1 Conclusion

On account of the request from a specific client from Frontoffice Tokyo, the aim of writing this paper had come into being. After pre-research on the client its background and the current situation of Japan the main- and sub-questions were formulated, and related to the requirements from the Hogeschool (Engineering studies).

The client, an elderly couple (60+), is currently planning to move from a suburb town to the countryside. Their wish is to come up with a design for a new home in this rural part called Omata (prefecture, Tochigi). In order to get a better view of Japan, with the focus on the position of elderly in society and the conditions and circumstances of rural Japan, research had to be done in advance.

This brought me to the following conclusions. Japan is certainly dealing with a super-aged society. The elderly grow older and are rising in number, whereas the younger part is shrinking, due to the health care improvements and the lowering birth-rates. These birth-rates are the reflection of the economic recession in the late 1990's, but also a mental change together with the introduction of birth control.

This trend, in my point of view, is not that harmful at all. The overpopulated, very dense country Japan won't suffer from some population decrease if you ask me. The main concern, I noticed, is the effect on rural Japan. They are slowly emptying because of the loss of elderly and young ones moving away. Obvious, because facilities such as educational institutions start to shut down. Elderly who remain living in these areas are getting more and more isolated.

The above findings have led to the following research question: *"To what extent, can re-designing an ageing resistant home result in a more attractive, at this time depopulating countryside?"*

One aspect that occurred to me after finishing the 'pre-research', was the fact that not only elderly become isolated but also communities start to disappear, due to the loss of both people and facilities.

This brought me to the following sub questions. *"What does ageing in place mean for rural elderly?"* and *"what is the effect of community disappearance on rural Japan?"*.

Another conclusion was that most elderly in Japan aspire to remain living in the same home at the same place until they pass away (known as 'ageing in place'). The main concern is the condition of these houses, which are not prepared for the complex ageing process. The design eventually its main focus was answering both short- and longer-term desires, such as wheelchair possibilities.

One consequence of depopulation (and community disappearance) was the loss of neighbours (literally or the contact) and them watching over you in time of need. Instead of "bringing back" this mentality, behaviour and interaction between habitants, I choose to focus on a different kind of community approach. This was led by field research concluding that these elderly are very closed off and not specifically looking for new interaction with others. However, interaction within the family was very much preferred.

Research on the family importance within the ageing process over the past few years, brought me up a specific trend. In the past, family was very important and children would obviously take care of their ageing parents. The current situation is the opposite. With work as first priority and the distance from your parents won't make you visit them often.

The scenario I wrote assumed that the past would repeat itself, due to the fact that 'health' will become more important and working (pressure and over-time) will have less priority. The case study brought together the changing needs of elderly and family community approach. This resulted in the design of a house changing along with these conditions from 'ageing in place' to a '3 generation home' to, finally, a 'family home'.

This also has its influence on community development. At first, the focus will be on the family itself, internal within the home. In phase 2 and 3 new facilities will be introduced and developed such as playgrounds where children gather, or the re-opened swimming pool where residents can attend sport activities. Besides, the younger residents will go to the newly opened elementary school.

When these family communities all individually slightly start to develop, the interaction between other parents and other grandchildren will occur (whether or not unconsciously) too. Which will, in assumption, slowly bring back the community and a more attractive rural life.

6.2 Discussion

Initially, the client pointed out that they are not much opened up towards interaction with other habitants. This brought up the discussion on whether this applies to the entire countryside. However, this group aged over 60, won't have the same intentions as the new generation on which the conceptual design also be focussing. For this research paper, presumed is that it does include almost entire rural Japan. Based on the knowledge of both *Frontoffice Tokyo* and other actors I have spoken to. However, there will be areas that actually might prefer more interaction. These are within this paper left out of account, but surely worth it to analyse in further studies.

There are currently several *community development projects* running in Japan. Mostly with their focus on coastal areas suffering from the consequences of nature disasters such as the tsunami.

This led to a previous conclusion on rebuilding the existing and slowly disappearing community of Tochigi (at the assigned location). However, field research proved the opposite. There was no demand for these kind of initiatives. This was an important learning moment, which had influenced the final concept.

6.3 Recommendations

The research that has been undertaken for this thesis has highlighted a number of topics on which further research would be beneficial.

I would recommend interviews taken with every habitant who will be affected by the new concept, including the new generation. This will bring the design (approach) to the next step and will improve the quality. When the habitants are included in the process more closely the concept will be, in the end, much easier to justify and seen as plausible and realistic.

Besides, life in rural areas, especially when the new concept will be introduced, must be promoted more as a new way of attractive living in Japan.

Initiatives such as subsidies on buying rural land or home building costs could be introduced by the government. Japanese (urban) citizens must get acquainted with the new rural identity. Possibly, by arranging trips from urban to rural areas, people notice the advantages of living there.

The move from chaotic and dense urban cities towards peaceful rural surroundings must be stimulated. Both governmental and real estate (or travel agencies) initiatives could play a crucial role in this process.

In the end, time must show what would really happen to the rural areas and if the concept will work out the way I assumed in the written scenario.

7. COMPETENCIES

On behalf of HRO¹ studies, in this case 'HBO Engineering', several graduate objectives have been formulated written in the competence-matrix 2014-2015.

All students will be criticised on the general AHC² competencies, research competencies and the engineering specified competencies (BBE). This chapter will explain 2 BBE-competencies I have been focusing on. And at last my personal goals and ambitions will be pointed out.

7.1 BBE competencies

BBE1: Develop design specifications

During this process of thesis-writing, the most crucial and defining part was pointing out and investigating a certain situation, relevant for the development of a plan, leading to a final product. With the focus on the use of space and build environment.

After rephrasing the research aim several times, a defined situation was related to one main question, justified by sub-questions. The process did not go linear, because the goal (research aim) was rephrased together with the final 'product'. The office handed over a suggestion of a case study. Whereupon the thesis questions had to be related to this case study. Whereas this final product also had to be rephrased and expressed in my own words. In order to do so, pre-research a the actual topic was necessary.

The analysis within this paper lead to functional design specifications in order create a conceptual design. Both the clients' wishes and the analysis related findings and conclusions lead to the design of an ageing friendly home in rural Japan (the final product).

BBE2: Create an inherent design and be able to justify it.

These specifications lead to a specific concept, in this case 'family community home'. This concept is a personal interpretation of the findings related to the main question.

In order to create a persuasive design, the steps I took towards the final product, are all related the previous findings within the subject. The 'solution' and 'answer' to the main question was integrated with the design of a home (the case study). This product is in line with the criteria of the firm Frontofficetokyo.

During this process, feedback from both of my supervisors and specifically mr. Klinkers from the architecture office, has been implemented in the paper. This also made the design clear and able to meet the criteria of the office (and client).

7.2 Personal goals

The main ambition was to accomplish writing this thesis, while staying abroad. This did make it harder to keep in contact with school and my supervisor because of the distance and time difference. In my opinion, it all work out well.

One other ambition, was to work in an international new environment. This really worked out well. I got to work with different nationalities, which really inspired me. Apart from the people and colleagues, the country (Japan) exploration was a life-time experience. This specifically different land and culture (compared to Holland) made me look different to decisions and choices within this subject and 'architecture'. I am also convinced that this unique experience will influence future steps in life and even choices on a more detailed level.

¹ Hogeschool Rotterdam - HBO (Hoger Beroeps Onderwijs) Bouwkunde.

² Algemene HBO Competenties - BOUAFS40 afstuderen 2014-2015 N@tschool. p. 25.

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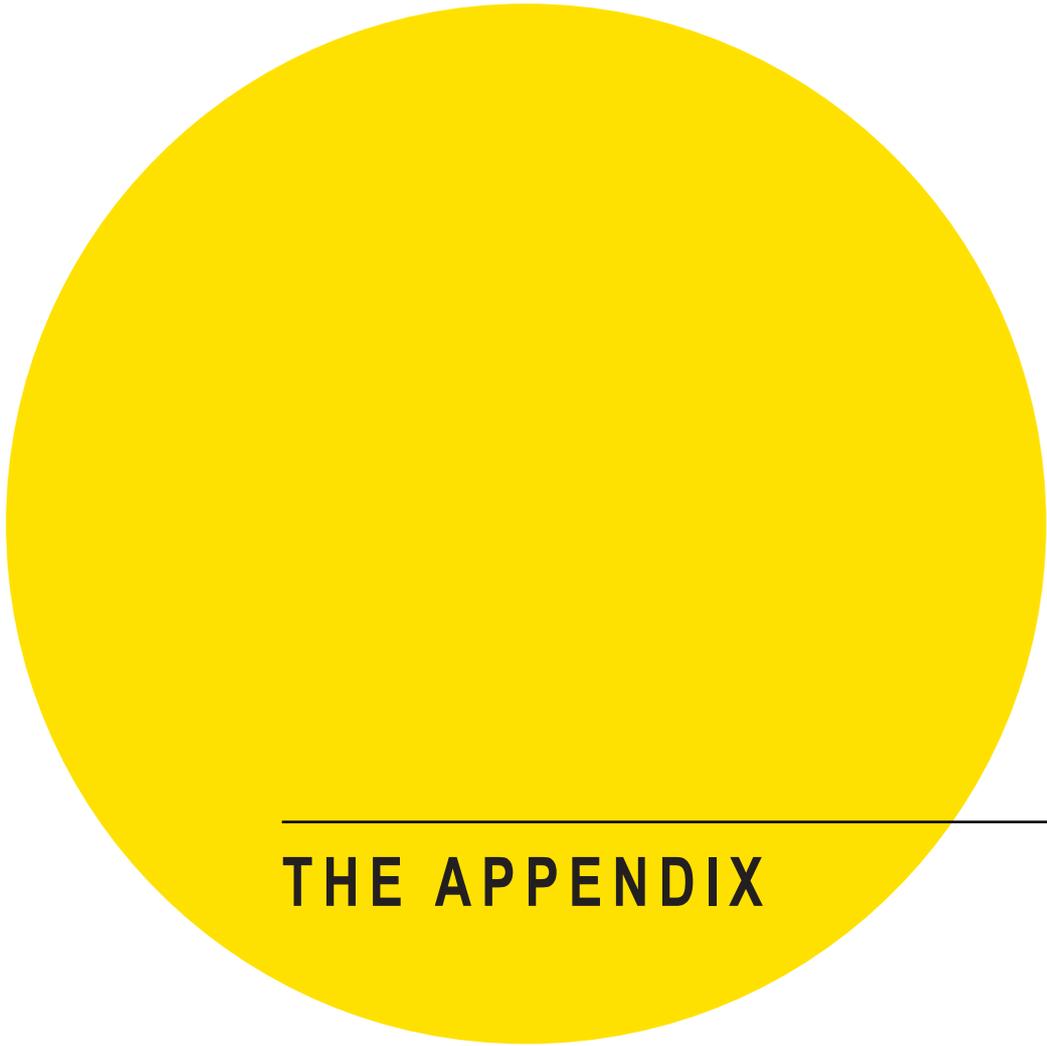
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RURAL ELDERLY

ARCHITECTURE RESPONDING TO A SUPER-AGING JAPANESE SOCIETY

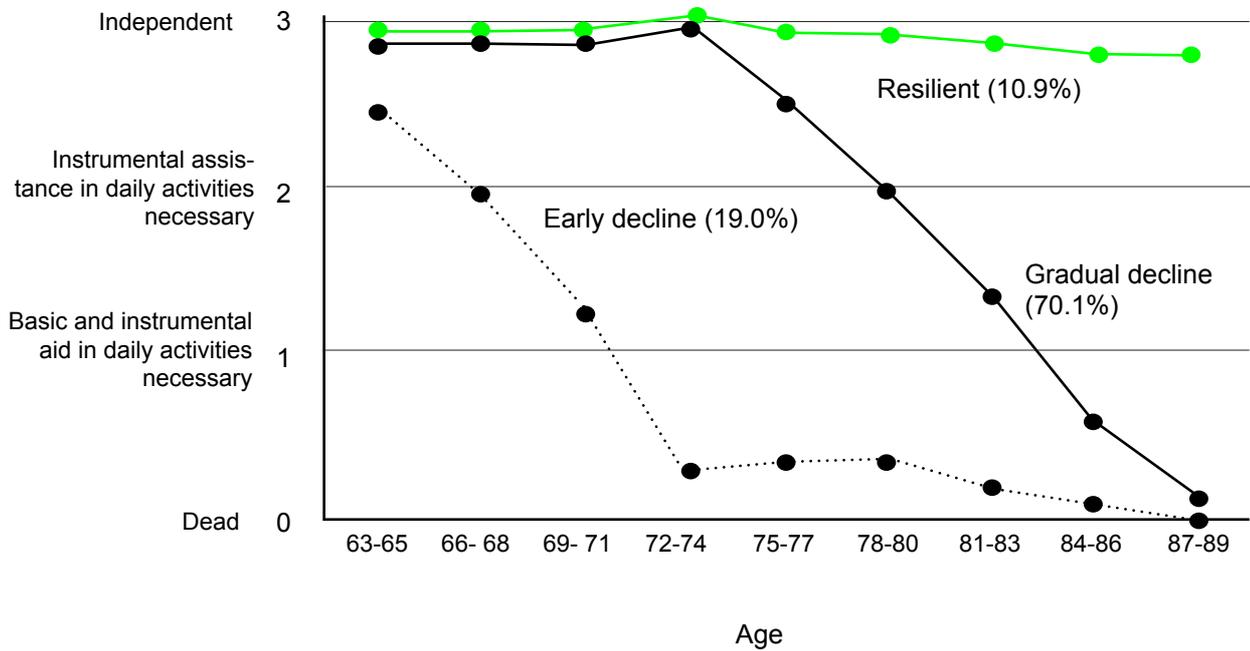


THE APPENDIX

CONTENT

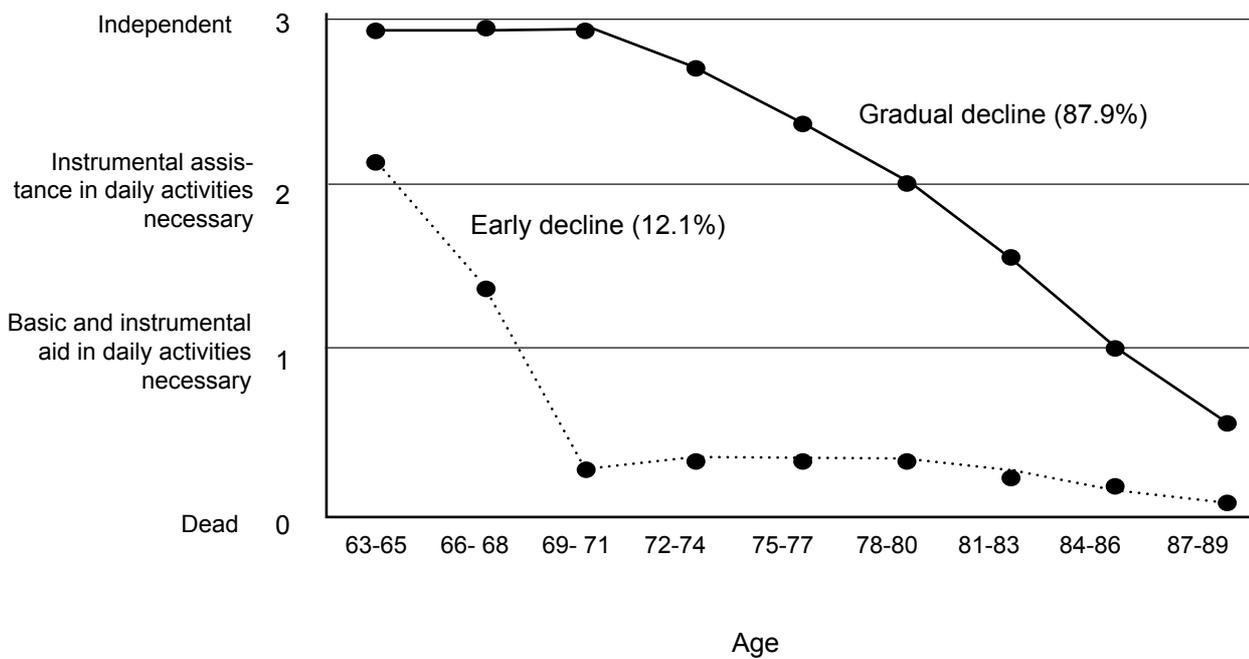
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MEN

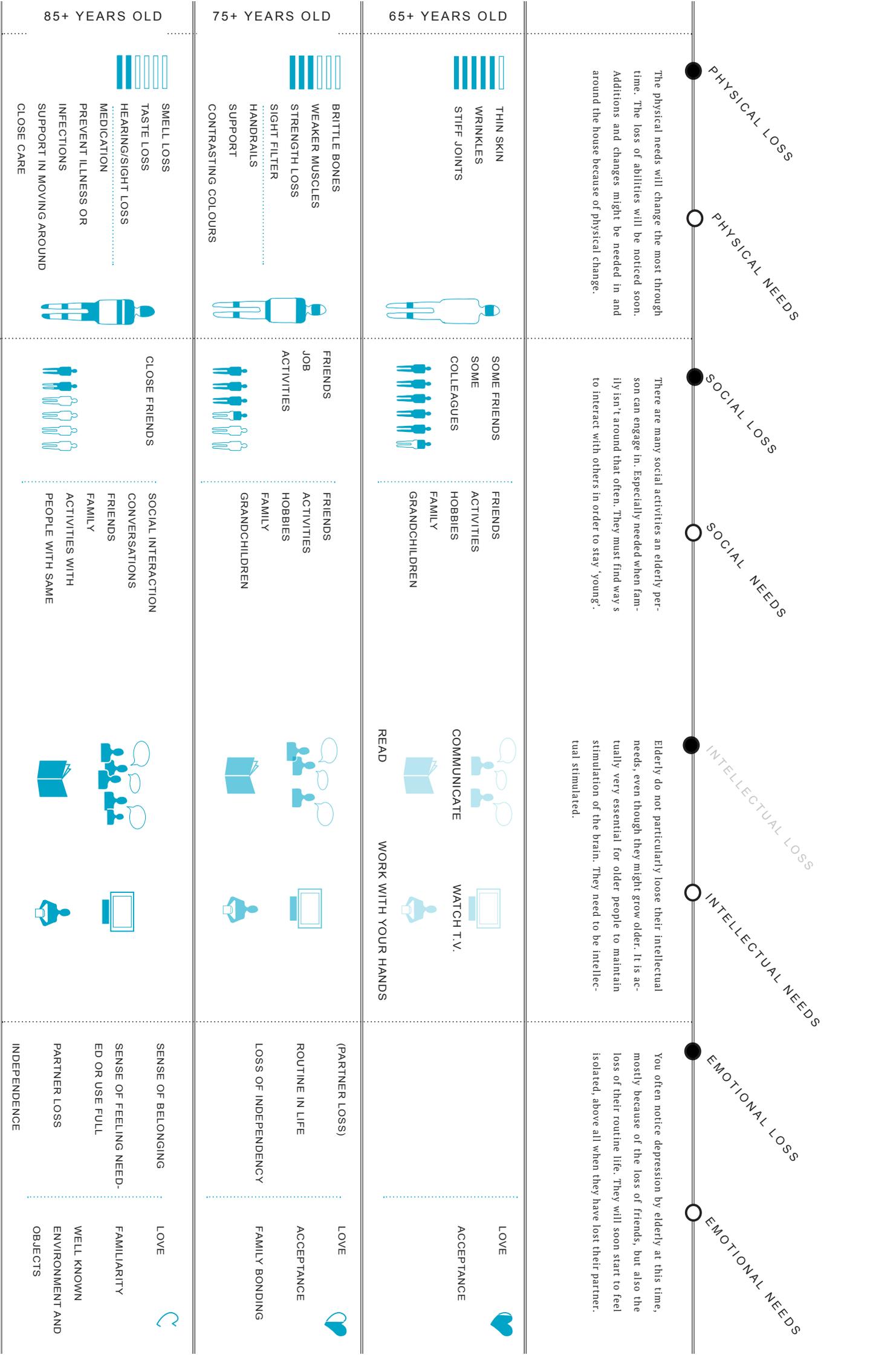


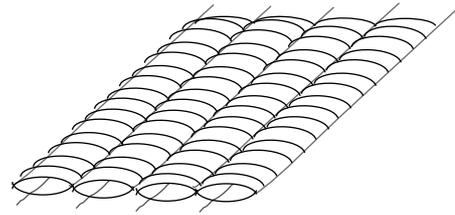
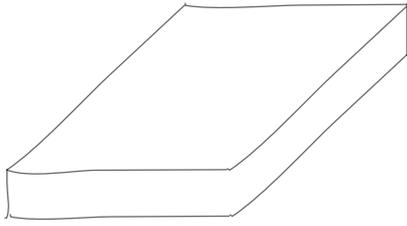
Appendix 1.1 Aging process male

WOMAN



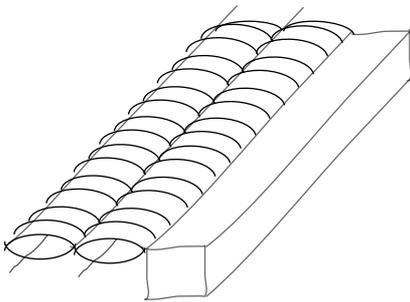
Appendix 1.2: Aging process female





2.

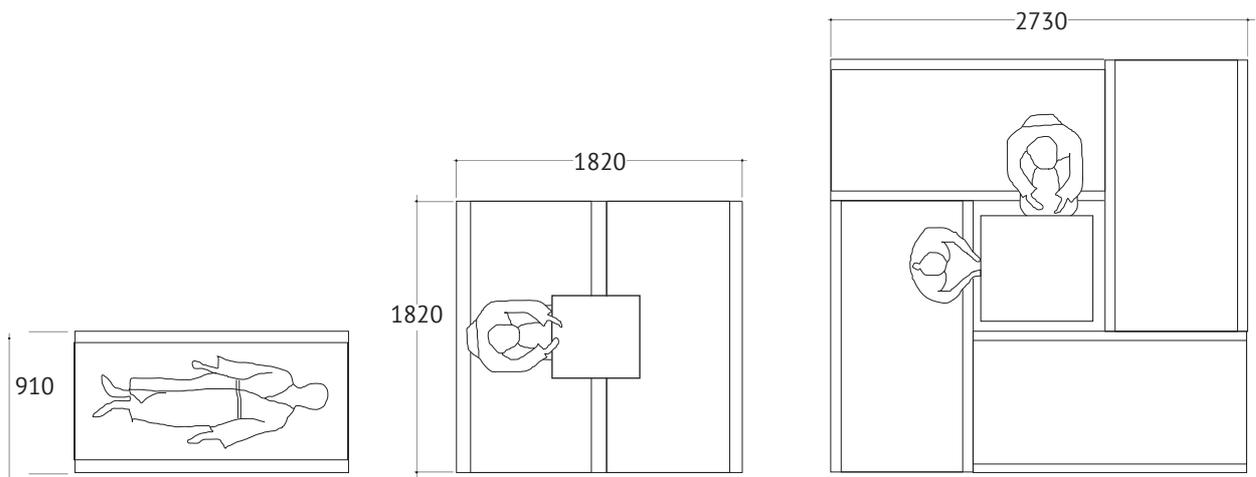
FLOOR MAT CARPET COVER: *tatami-omoto*



3.

FLOOR MAT CLOTH TAPE

STANDARD FORM - 1 SKAKU = 303 mm.

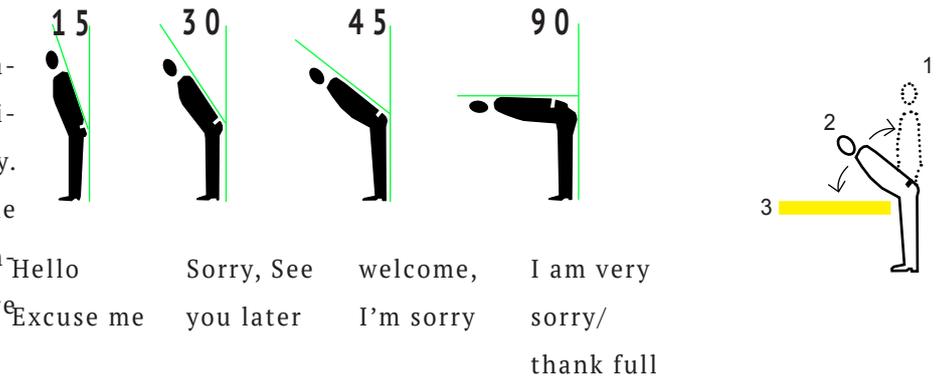


Standard tatami measurements

	RENT/OWN	COSTS	CARE TYPE	PRO/CON's
GENERAL HOUSING 	RENT/ OWN	—	—	TAX REDUCTION FOR MORTGAGES HAVING AN ASSET HOUSING SECURITY FRIENDS & FAMILY AROUND KNOWN ENVIRONMENT <hr/> <i>NOT EQUIPPED FOR ELDERLY</i>
RENTAL HOUSING FOR ELDERLY since 2012 	RENT	¥ ¥	DAILY SUPPORT CHECK-UPS BY TENANTS	ELDERLY FRIENDLY DAILY CHECK-UPS <hr/> <i>NO FULL ELDERLY CARE LOSS OF HOME TOWN</i>
RESIDENTIAL FACILITY 	RENT	¥ ¥ ¥	DAILY MEALS DAILY ASSISTANCE	LONG TERM CARE IF NEEDED <hr/> <i>COMPLICATED AND DIFFICULT SYSTEM FOR ELDERLY</i>
WELFARE FACILITY 	RENT	¥	DAILY MEALS DAILY ASSISTANCE	LONG TERM CARE SERVICES DAILY ASSISTANCE AFFORDABLE WHEN HAVING LOWER INCOME <hr/> <i>MUST BE IN NEED OF CARE</i>
LONG TERM CARE INSURANCE FACILITY 	RENT	¥	DAILY ASSISTANCE LONG TERM CARE	REDUCE BURDEN ON FAMILY <hr/> <i>LOSS OF TIES WITH FRIENDS AND FAMILY GROWING DEMAND FOR THIS SER- VICE WAITING LIST FOR ADMISSION TO THESE FACILITIES</i>

THE BOW

In Japanese culture 'the bow' is a major aspect. A good bow is to show either respect, thank you or an apology. Not only the bow itself has to be done properly, but also the 'pause'. The interval of time (a short pause) before standing straight again.



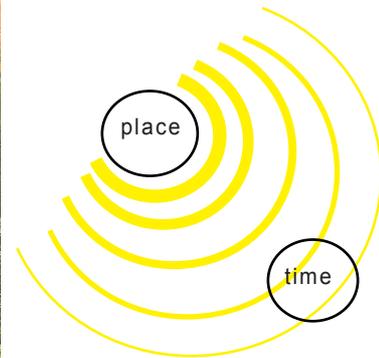
THE CROWD

In crowded areas, which you will find quite often in Japan, people are not happily touching each other. They preferably cross over without touching someone or over crossing the 'ma' space. This is the intimacy boundary and a way to show respect.



KAIYUSHIKI GARDEN

In this Japanese garden elements are not positioned to get appreciation in their overall view, but are arranged in order to reveal themselves gradually during the moment of place taking over time. Here they refer to the growth of the green.



ROJI GARDEN

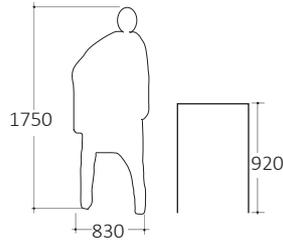
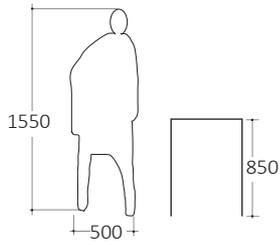
Stones are marking a path towards the teahouse. These intervals (space in between) creates a rhythm of steps which refers to the over thought steps the tea master is making during the tea ceremony.



JAPANESE MALE

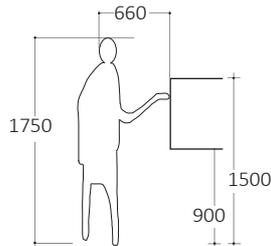
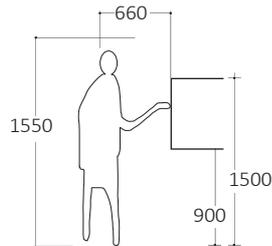
EUROPEAN MALE

1.



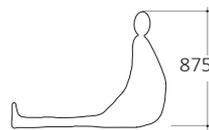
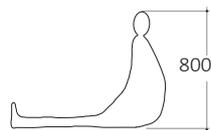
Many measurements in and around the house are based on human scale. In Europe we more or less use the average male body to base the size of a door on for example. In Japan, however, they have their own human scale, basically because they are a lot smaller than the European male. The figure shows an example of a kitchen counter height difference.

2.



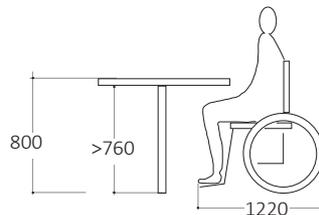
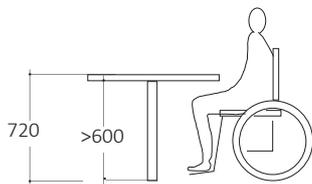
In Japan you will see that all the furniture is also based on the Japanese scale. By European standards these measurements are very different. They are also used to live in a rather small environment, the floor price is expensive and in dense city you will only find small homes.

3.



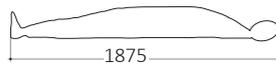
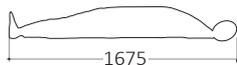
This measurement won't be used that much in Europe compared to Japan where they are used to sit, sleep and live on the 'tatami' floor.

4.



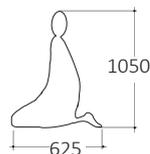
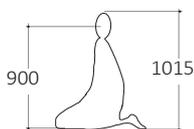
Also wheelchairs and heights based on sitting in a wheelchair differ from Europe and Japan. Again, these are based on the human body.

5.



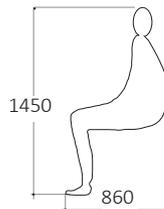
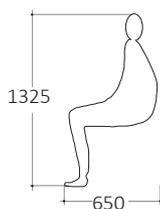
In Japan most people, even elderly sleep on a futon on a straw mat floor. In Europe everybody sleeps in a western style bed.

6.



This position + (3) is typical for the Japanese human body because of their lifestyle of living on the 'floor'. In Europe homes are not based on this movement.

7.



The particular sitting position slightly differs because of the body height. It is less common in Japan to sit on a chair though.

Even during the bathing rituals they do sit on a seating. But this has a very low height.

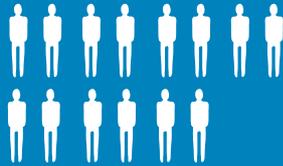
Appendix 6: Japanese vs. European measurements human scale (mm)

COUNTRY



POPULATION

1,4%
immigrants



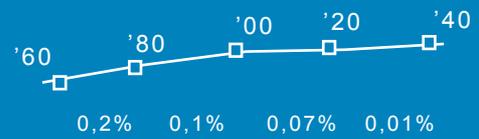
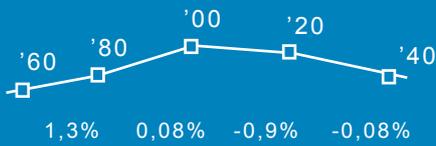
127.3
MILLION

7,8%
immigrants



60.8
MILLION

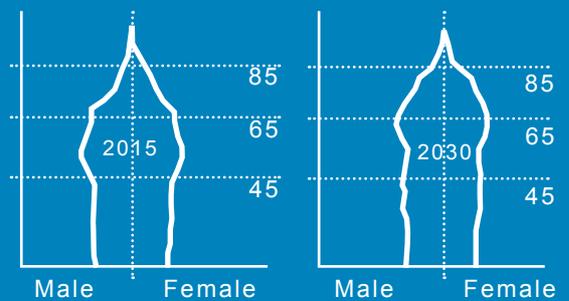
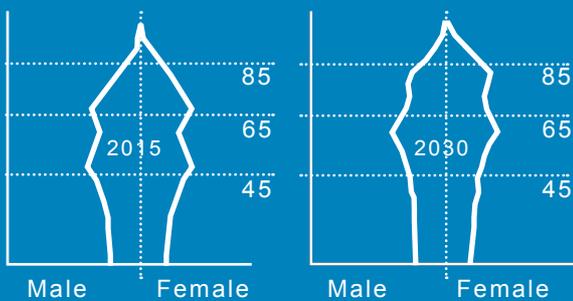
POPULATION GROWTH



FERTILITY RATE



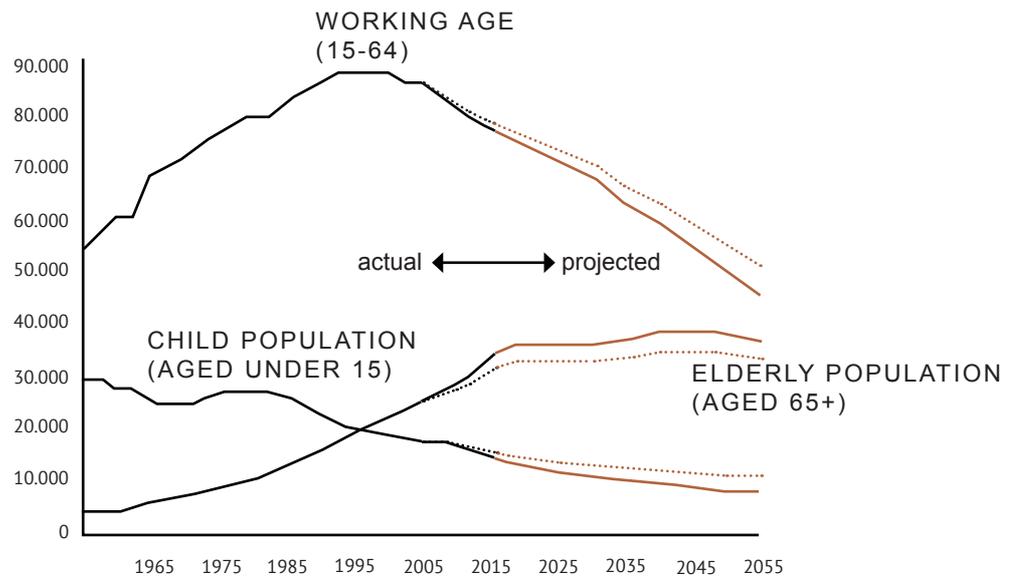
MALE/FEMALE IN AGE GROUP



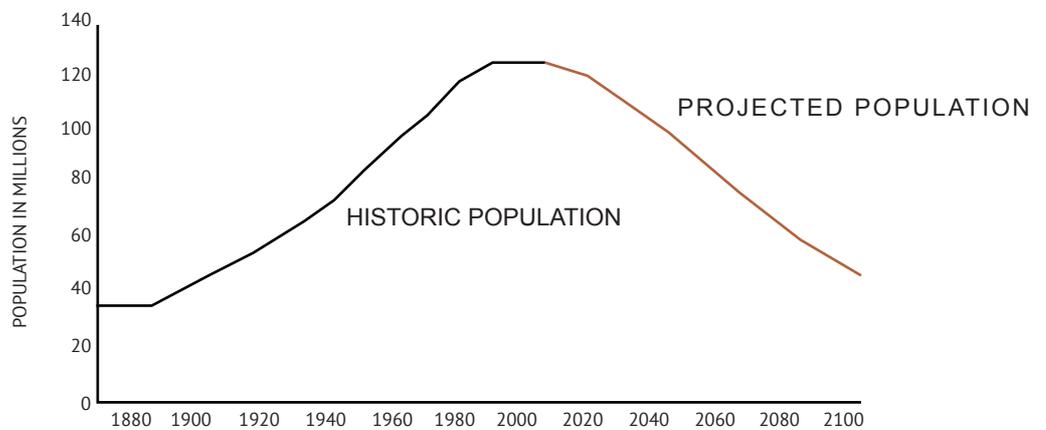
Appendix 7 FACT SHEET: JAPAN VS. HOLLAND

Source: <http://trendingeconomics.com/netherlands/age-dependency-ratio-percent-of-working-age-population-wb-data.html>

appendix 8: Population numbers Japan within age groups.

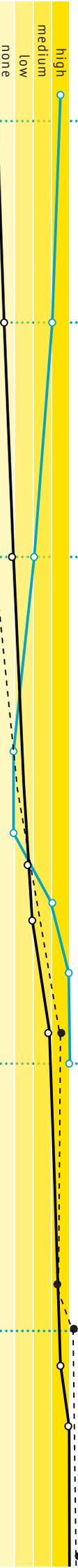


appendix 9 Total population change.



Source: www.indexmundi.com/g/g.aspx?c=ja&v=30. Life expectancy rates and population numbers. January 2015.
www.stats-japan.com/t/tdfk/tochigi. Statistics Tochigi-prefecture comparisons. Update 2015.

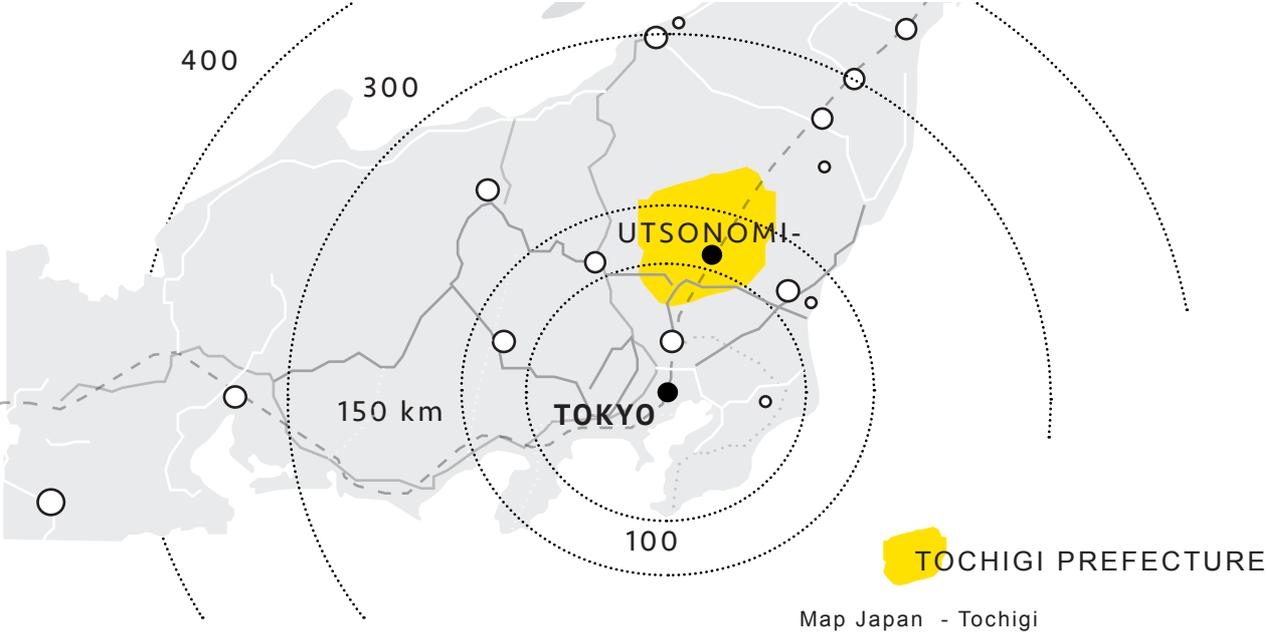
STAGE	1. PRE-PENSION YEARS	2. AGEING IN PLACE	3. COMMUNITY LOSS AND DEPOPULATION	4. CHANGING WORKING MENTALITY	5. FAMILY HOME IN RURAL JAPAN	6. HORIZONTAL COMMUNITY
Description	Elderly couple is working full time. Still flexible and heading off to work every morning by car. Weekends are for hobbies, mostly gardening. Family is seen once in a while, their priority is work too but distance is a burden.	Both receiving pension and either stopped working or working part time to earn some extra money because of the low pension. 'Ageing' started and they need to find a new daily routine, adding new hobbies and activities.	The couple is now facing some physical losses because of the ageing process. A major problem is the loss of neighbours and the isolated position is getting worse. They need more care, and family comes often a little more.	Working pressure is becoming less, health is getting more attention. Family comes over often as a get a way from busy life. Grandchildren are coming along. The elderly are stimulated both physically and intellectually. Even though the community around them is disappearing, the family community is getting stronger.	The family build up a strong relationship with the home and area. The elderly now passed away, and the family decides to move into the home. They start working from their home base or find a job near by. Flex-working has become very popular. And healthy living and having a private life has become very important. Children are exploring the rural area together with its people.	The family is living a peace full life. Because of the exploding family communities, a school and more shops are starting up again. The horizontal community is also getting more attention. Mostly because of the children that start to interact with each other, which also involves the parental communication with other habits. Life is much more attractive.
Progress diagram	Both full-time working Transport by car. Very healthy, flexible and taking care of themselves. Couple 60+	Receiving pension and still working part time here and there. Feeling a little isolated, more free time which means a new daily routine. Some physical loss is shown.	Couple 75+ Children 30+	The elderly are loosing their balance, sight and their ability to hear well. They are in need of more care, medication and company. People either go working at home, or use flex or work regular (European) hours. Their is more attention paid to family(life).	Health is getting worse. They pass away, which is a new step for the family: what to do with the home? Couple 80+	OTHER FAMILIES Children + grandchildren
Commitment diagram with location	1. PRE-PENSION YEARS	2. AGEING IN PLACE	3. COMMUNITY LOSS AND DEPOPULATION	4. CHANGING WORKING MENTALITY	5. FAMILY HOME IN RURAL JAPAN	6. HORIZONTAL COMMUNITY
Community development	Identity - Integration - Group norms - External links -	Identity -- Integration -- Group norms -- External links --	Identity --- Integration --- Group norms --- External links ---	Identity - Integration -- Group norms -- External links --	Identity + Integration ++ Group norms + External links -	Identity ++ Integration +++ Group norms ++ External links +
Who is involved?	Elderly couple	Elderly couple + 2nd gen.	Elderly couple + 2nd gen.	Elderly couple + 2nd gen.	2nd generation + children	2nd + 3rd + other families



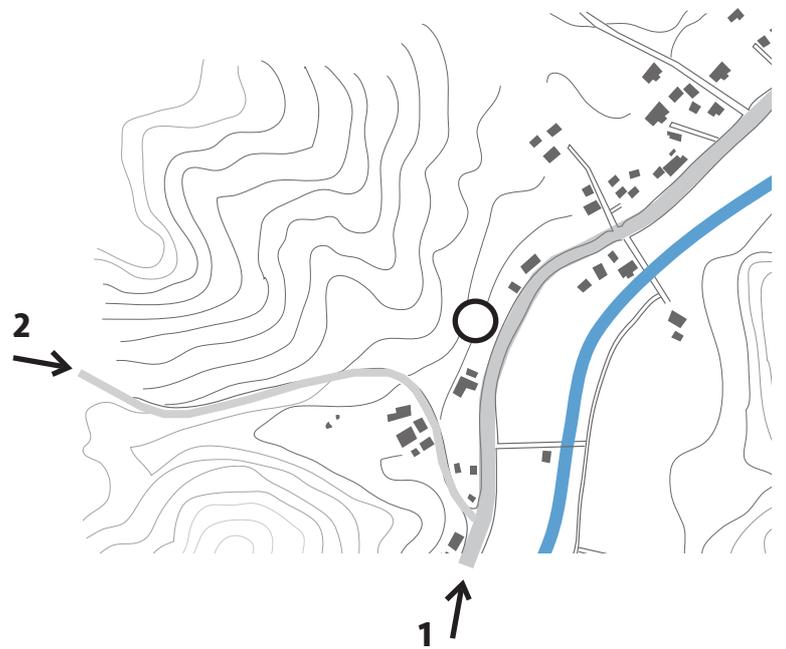
GENERAL	<ul style="list-style-type: none"> - contrasting colours between different surfaces in order to see perspectives and prevent the elderly from falling or losing balance. - Wide hallways (if needed accessible for a wheelchair) - Increase lighting at important areas such as the kitchen counter. - Include night lights - Entry points to specific rooms are needed - An overall view on the home would be helpful for their orientation
KITCHEN	<ul style="list-style-type: none"> - The kitchen must be designed for different generations and the possibility to adapt for changing lifestyle needs. - Make sure you are able to move around even in a wheelchair. - Vary in height to be able to sit or stand at the counter - No stone floor adding, this mainly results in back pain for elderly
BATHROOM	<ul style="list-style-type: none"> - The bathroom/toilet must be reachable and easily and quickly accessible from the bed. - There must be seating possibilities on your way to there and inside. - In the bathroom and elderly person must be able to hold on to something (a grab bar or something alike).
BEDROOM	<ul style="list-style-type: none"> - The bed must be reachable from every side to allow a 'future' wheelchair. - Prevent too much bending in order to reach a closet for example

Appendix 11: Basic restrictions within an elderly home

Source: *'Home for a lifetime: interior design for active ageing'*
Ageing in place - Toolkit - AARP
www.55-pluswoningen.nl/kenmerken_seniorenwoning



Map Japan - Tochigi



Accessibility location



Map Tochigi - public transport

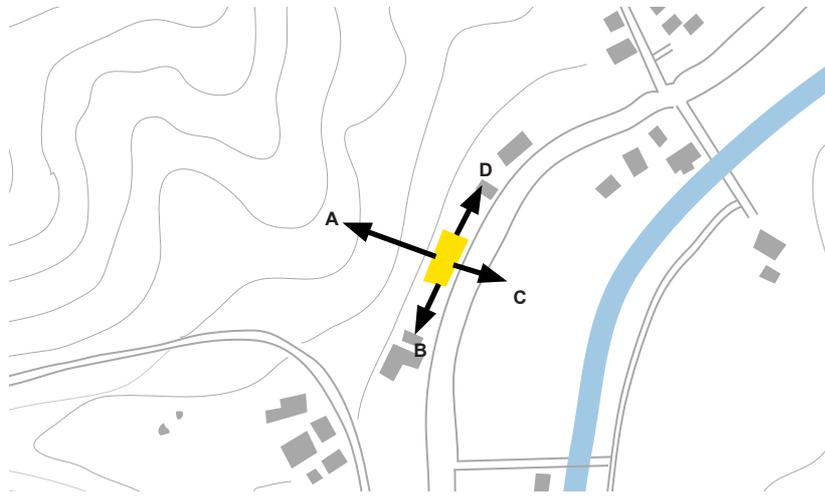
- BY FOOT
- TOBU RAILWAY
- JR CONVENTIONAL LINE
- - - - TOHOKU SHINKANSEN



Appendix 14: Distances from location

FACILITY	RELEVANCY		
	60+	75+	85+
Altar	••••	••••	•••
Country club	••	•	•
Car garage	••••	•••	•
Restaurant	•••	•	•
Shop (locat furniture)	••	•	•
Supermarket (small)	•••	•••	•••
Shop (retail)	••••	•••	•
Caring home	••	•	•
Buddhist temple	•••••	••••	••
Supermarket (middle)	•••••	••••	••••
Hospital orthopaedic	•••••	•••••	•••••
Hair dresser	••••	•	•
Gas station	••••	•••	•
Kindergarten	•	•	•
High school	•	•	•
Elementary school	•	•	•
Dentist	•••••	•••••	•••••
Supermarket (large)	••••	•••	•••
Bakery	••••	••	••
Medical clinic	•••	•••••	•••••
Post office	••••	••	•
Park	••••	•••	••
Cafe	••••	••	•
Bookstore	••••	•••	•

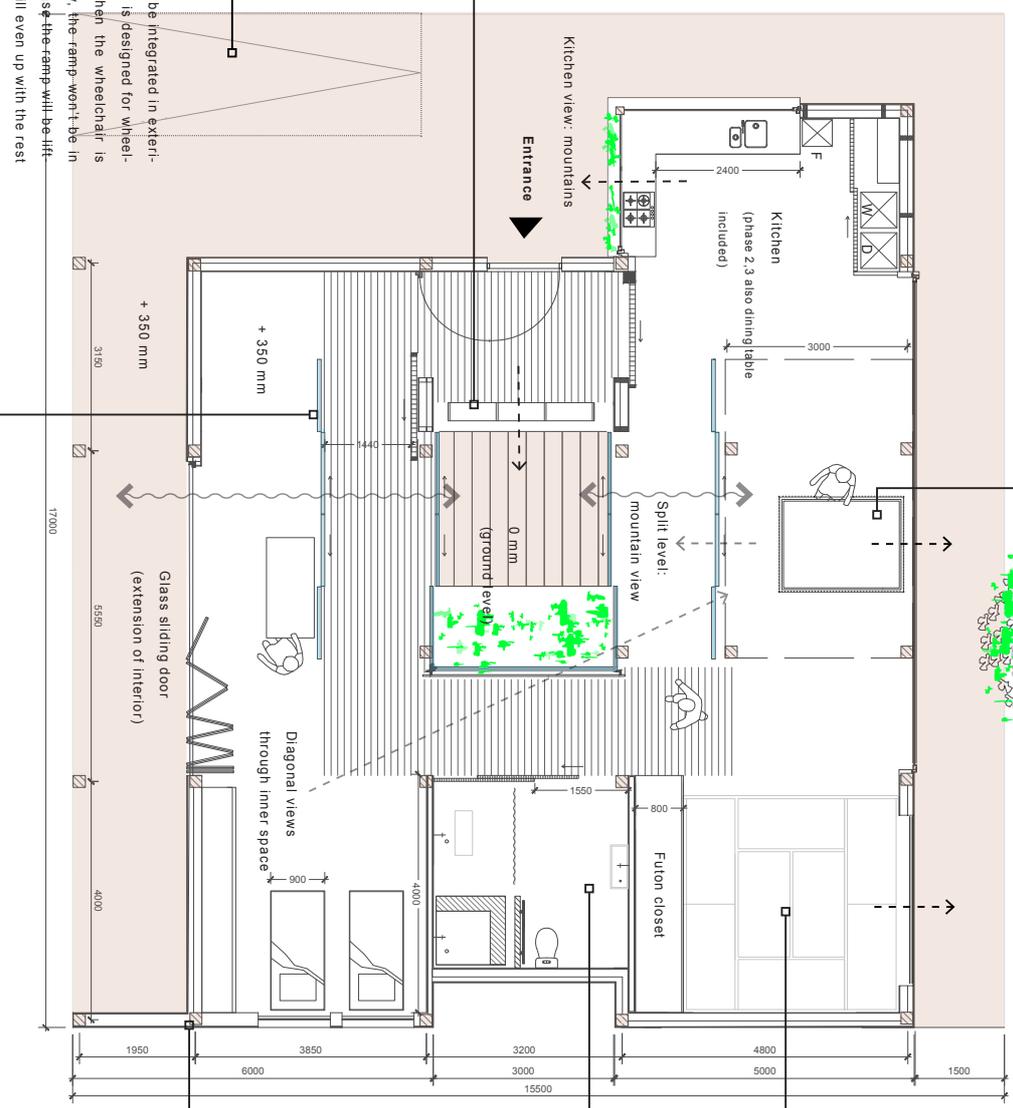
• least relevant
 ••••• most relevant



Site case study - assigned location



Kotatsu:
This is the place to gather around the heated table. The 'ceiling' is a split level floor, where the grandchildren may sleep in the future. This lowered floor strengthens the more intimate space. The kotatsu will later make place for a proper couch (iv corner) and dining table (see sketch at page 47).



Tatami (bedroom):
This is the tatami room of the house. This will initially be the bedroom of the elderly couple and later on taken over by their children. Probably with the introduction of regular beds. Underneath the tatami floor bedding adjustments have to be made in order to be able to put a western-style bed onto the fragile tatami floor).

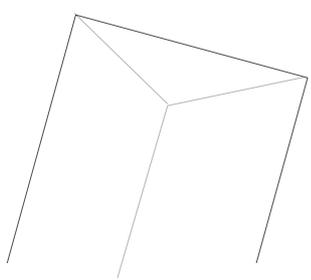
The bathroom:
This space in particular (also the rest of the house) is wheelchair proof. When entering the room through a large sliding door, you will find the sink, toilet and bath. The bathing area is 'separated' by a curtain like cloth like seen in many bath houses. Here is the bath tub placed where the edge is wide enough to sit on, in order to easily enter the tub. And in Japanese style, the washing seat with a shower head and a smaller tap.

Construction:
The structure of the house will be wood. As well as most used materials. The home will be build by the brother of the client which is a carpenter and uses local wood.

Ramp:
The ramp will be integrated in exterior design and is designed for wheelchair use. When the wheelchair is not necessary, the ramp won't be in use. In this case, the ramp won't be lifted up, so it will even up with the rest of the level height. A ramp is dangerous for elderly who only face a declining walking capability and use walking sticks or handrails. The ramp can be adjusted to the actual needs.

MA:
These semi-transparent sliding doors 'close off' the MA-area (explained on page 44). These can easily be slid aside in order to create openings. Removing the doors is also an option. For example the upper 4 panels in the back area of the house, will be removed when the living area will be enlarged and provided with a family couch. The ma area will also be used as a 'playground' for the young grandchildren.

Shed from (left) neighbour.



Pedestrian

Car road (asphalt)

Butsudan:

“Buddhist altar”: wooden cabinet contains statue or painting of a Buddha. Used to remember relatives and grandparents that passed away.

Fusuma:

Opaque sliding doors (rice paper wooden frame doors).

Futon:

Japanese mattress used on tatami floors.

Ikagai

Feeling the pleasure of living

Kotatsu:

Low wooden table frame covered with a futon or heavy blanket with a table top underneath is often a heating source.

Ryokan:

Typical Japanese oriented ‘hotel’ including elements such as a tatami and Japanese furniture.

Shaku:

Standard tatami form: 1 shaku is 303 mm.

Shoji-gami:

Traditional Japanese paper used as floor bedding in traditional homes.

Tatami:

A rice straw mat used as floor bedding in traditional Japanese homes.

Tatami- doko:

Floor mat under part

Tatami-omoto:

Floor mat carpet cover

WLB:

Work-life balance, often used term in Japan.

