The Rural Awakening

revitalising a village into a farm community

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All artwork and photographs presented are by Philipp Westhauser unless noted otherwise.

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Last but not least, I would like to thank my parents for making this master‘s degree possible in the first place.

„We do not engage with a better world that might be possible, but go on wondering why nothing is happening.“ - Raul Krauthausen ***(translated)***

Abstract:

This Master's thesis is not about ocean acidification or the sixth species extinction. I want to address the loss of soils, extensive agriculture and inequalities in society. My thesis is not just about listing and analyzing problems; it is about finding a solution through a concrete project. In a time of increasing urbanization and suburbanization, it is important to find alternatives in small villages. Many rural communities in Austria are affected by migration. This thesis first shows the reasons and the history why this village was chosen. It then addresses the question of the sustainability of current trends and their effects. After the analysis of the region and the village, successful example projects are shown. The strategy aims to show ways to make a sustainable life and work on the concrete example Oberaschbach attractive.

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1. Introduction

In the beginning, I would like to write briefly about today's desire to live - the constant wish for our own family home in the countryside. This desire for many is instilled into us from childhood. Be it through children's books or by means of advertising. Almost each of us drew in his childhood a house on the green meadow with a tree and a sun.
As architects, we have the task of fulfilling the wish of our clients. But as sustainable urban designers, it is important to implement this image of living in the green also socially and ecologically in today's world and sustainably in the future.

The pandemic showed us that people who live close to nature were psychologically less stressed than city dwellers who have to cope with each other confined to a few square meters. In addition to many negatives, such as increasing mental illness due to isolation in lockdowns, it has also shown us positive possibilities, such as that home office work. This offers potential for rural areas that are far away from cities and not suitable for daily commuting.
With my project, I want to show that living together can be possible, regardless of age, income/wealth, gender, sex, or ethnic background.

1.1. aim of the project

- To implement a self-sustaining vibrant village structure that meets today‘s housing needs and is compatible with climate goals.
- Provide new housing and other new uses from existing buildings without requiring a lot of new resources and land sealing.
- Create space and facilities for the village community to work, share and help each other.
- Short and joint transport of goods and people instead of fossil-dependent individual mobility.

1.2. research Questions

- Why and how can we make life in a rural village sustainable, affordable and attractive?
- How to achieve self-sufficiency and resilience in a small village?
- How do we tackle the increasing isolation in a society in the countryside?
- How do we enable people to live in a community without emulating the typical family image?
- What is a circular farming system, and how does it work?

1.3. choice of the site

The main reasons why I chose this village were the proximity to major transport routes, the high number of square farms, the constant migration, cheap property prices in comparison with cities, the organic clustered village structure without centers, the hilly landscape and the recent installation of fiber optic internet. My chosen area is 90 hectares in size and focuses mainly on the village but also on the surrounding fields.

Oberaschbach is a small and remote place in lower Austria, in which the former farmers or their next-generation sell or lend their farms. I want to give new use to these farms and other aging structures and to build a life in the countryside for a new diverse village structure that can act almost self-sufficiently. This self-sufficiency can be achieved with a focus on social spaces, job opportunities, community gardens, new forms of dwelling, and a diverse and inclusive village community in nature.

fig.1: Oberaschbach

2. Analysis

fig.2i field cultivation in the past

2.1.1. life and work in the countryside in the past

Before industrialization, and especially conventional land use, work on the land was very labor-intensive. All helping hands were needed. All generations of a family lived under one roof, and usually, farmhands and maids also lived and worked on the farms.

The village community was essential for the survival of the whole village; people helped each other and borrowed. Because of the high work intensity and little education, the children mostly stayed in the village, and one noticed very little of the outside world. Due to this high degree of independence, the community and the functioning of circular agriculture were necessary for survival.
The knowledge of the individual work processes and the fertile land around the village was passed on and expanded from generation to generation in the course of the work. They slaughtered together. People helped each other in the fieldwork. From young to old, people worked together and lived in strong dependence on nature.

The religion before the Middle Ages was characterized by pagan polytheism, in which each tree stood for a different god. In the center of the village, there was usually a big old linden tree, which was the social center of the village. Christianity at the time of the witch hunts usually built a church there, and polytheism was dismissed as heretical. Thus, even after the Enlightenment, the church remained an important social place in the village life. Many pagan customs and festivals were adopted by Christianity. And these feast days were an important part of village life, for which people feverishly looked forward to the entire working year.

fig.3: Hay harvesting

fig.4: Slaughtering and preperation

2.1.2. traditions and family

As already mentioned in the last chapter, at that time, far more people lived in one farm. Life was very patriarchally structured. This was also reflected in the table culture (figure to the right).

People usually ate from a common pot, and there were table prayers and seating arrangements. The food was prepared by the wife or maid, as well as the dishes. These were hung up to dry and be ready to hand more quickly.

fig.5: Kitchen

fig.6: Shared meal

2.1.3. settlement structure

In the typical old village structure, the inhabitants of a village used to live close to each other, and everyone knew everyone in the village. After some time, the common village bond as protection against intruders was no longer important due to the mechanization of agricultural processes. Due to economic reasons, a crack has appeared in the community. While for centuries, the farming community was important for the survival of all, industrialization made it possible to cultivate much larger fields and transport more goods through the railway. The priority of protection fell away, and economic reasons were prioritized over living together.

The density of village structures began to loosen. The affordability of the car made it possible to increase the distances to the centers even more, and the social center of the former village life moved to the cities.
Thus the reference to a village community had finally disappeared; people were only met in passing in huge shopping centers on the outskirts of cities. Moreover, Suburbanization eroded the cores of the villages.

But the next step in village development has long since begun. Due to increasingly efficient and expensive machines, only a few farmers could afford to buy them. Smaller farmers were thus separated from the market, and the only thing left for them to do was to sell their farms and move to the city. That‘s why more and more farms and barns are getting abandoned in the rural areas. More on this in chapter 2.2.2.. Since a change of job usually brought more profit in a city. For a better understanding, I deleted the former farms in the sketches to the right. In reality, they are slowly falling apart or being converted into holiday homes with no connection to village life. In the next chapter, I will discuss the current trends and continue with agriculture and its present dimensions.

fig.7: typical old village

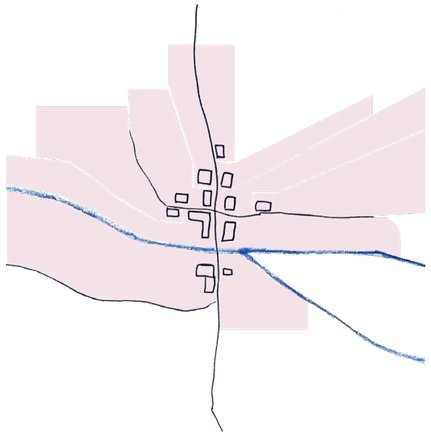


fig.8: former field

TIME

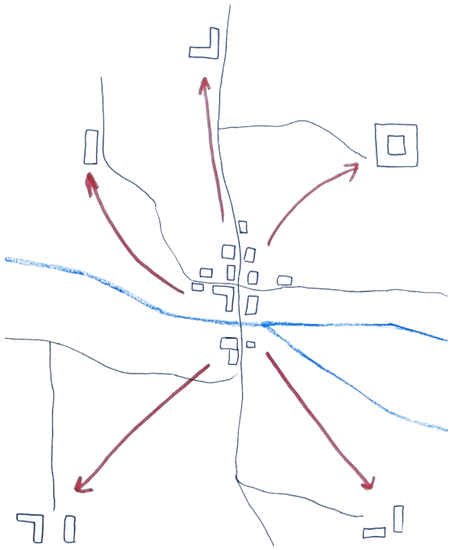


fig.9: mechanism revealed more

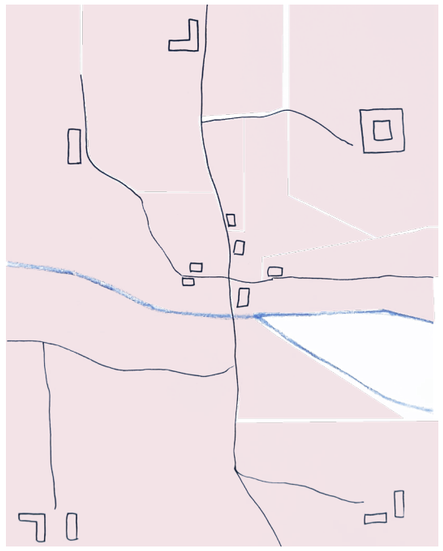


fig.10: and therefore larger fields

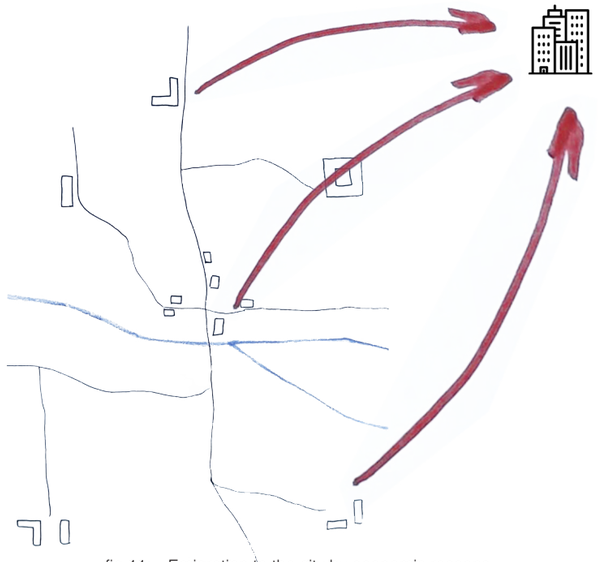


fig.11: Emigration to the city by economic reasons

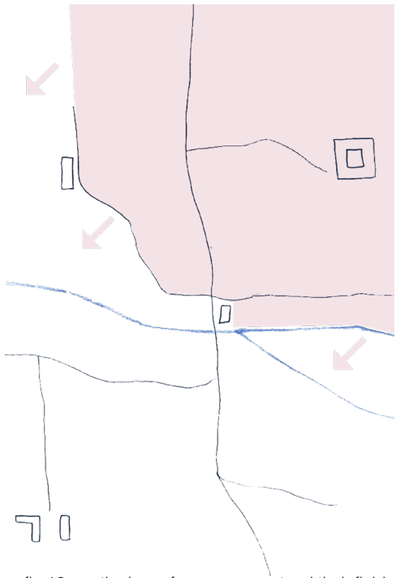


fig.12: the large farmers can extend their fields

2.2. current trends

The country is changing with the times. Family structures are changing, and technology is improving. Agriculture is becoming increasingly digitalized. Remote areas are affected by migration. Many people are fulfilling their housing wishes here because land prices are lower compared to cities. In the last sub-chapter, the social and environmental consequences are discussed.
This topic describes current issues and impacts. These pages contain facts that form the basis for the strategy.

2.2.1. agricultural industry

As the pictures in chapter 2.1.3. the show, the smaller fields were merged into larger ones. The term for this in Austria is „Kommassierung. “ The problem was that not only lots were made economically more attractive by merging them into larger areas. Hedges and bushes were removed to make everything passable for tractors. This process took place around 1960. This was the beginning of conventional land use. Streams and riparian forests were canalized, field margins were removed, and monocultures were created. At this time, also orchards lost more and more of their value and were cleared.

These tractors have changed a lot. Nowadays, electrified energy-efficient machines are increasingly used. The trend is towards driverless machines with artificial intelligence. The machines are also getting lighter and lighter to minimize the impact on the soil.
As early as 1900, the Haber Bosch process made it possible to produce fertilizer on a massive scale. These could be distributed over a large area after „Kommassierung“ by means of these first agricultural machines.
Fertilizers serve only the plant in the field; even nowadays, a large part of the research is directed specifically to the single cultivated plant, without considering the effects on the immediate fauna, flora and water bodies.

Some studies are currently looking at optimizing fertilizers so that the crop only receives the optimal amount of fertilizer (precision farming). But much higher yields with lower inputs can be achieved through circular farming.

fig.13: the first Tractors

fig.14: automatic Tractors

2.2.2. emigration and its reasons

Due to the strongly growing surpluses through conventional agricultural use with fertilizers and mechanization, it was possible to feed even more people in the cities.
But this mechanization of agriculture, and the resulting loss of jobs, is considered one of the main reasons for the emigration.
Also, many farms that could not afford the farming equipment were forced out of the market by larger farms. Villages in rural areas offered fewer jobs than the city, and migration to the city increased.

Nowadays, urbanization continues to take place constantly.
Different life models and lifestyles, the variety of offers in the city, whether it be cultural/recreational facilities, a variety of different venues or a diversity of jobs that make life in the city more attractive than the countryside. That is why young people, in particular, are drawn to the city. When starting a family, people look for cheap building land on the outskirts of cities to build a house, but not in structurally weak and remote regions because the social centers have remained in the city.

If there are no jobs or social facilities, or if associations and communities do not launch initiatives to retain or attract the population with attractive ideas and offers, the migration of the young population increases even more. This can be observed in the demographic change in many localities.
On the basis of the statistics, one can see that the municipality of Aschbach-Markt is affected by over-aging.

The government of Lower Austria has noted in its data records that an average of 33 people move away from Aschbach Markt per year. (NÖ, 2022)

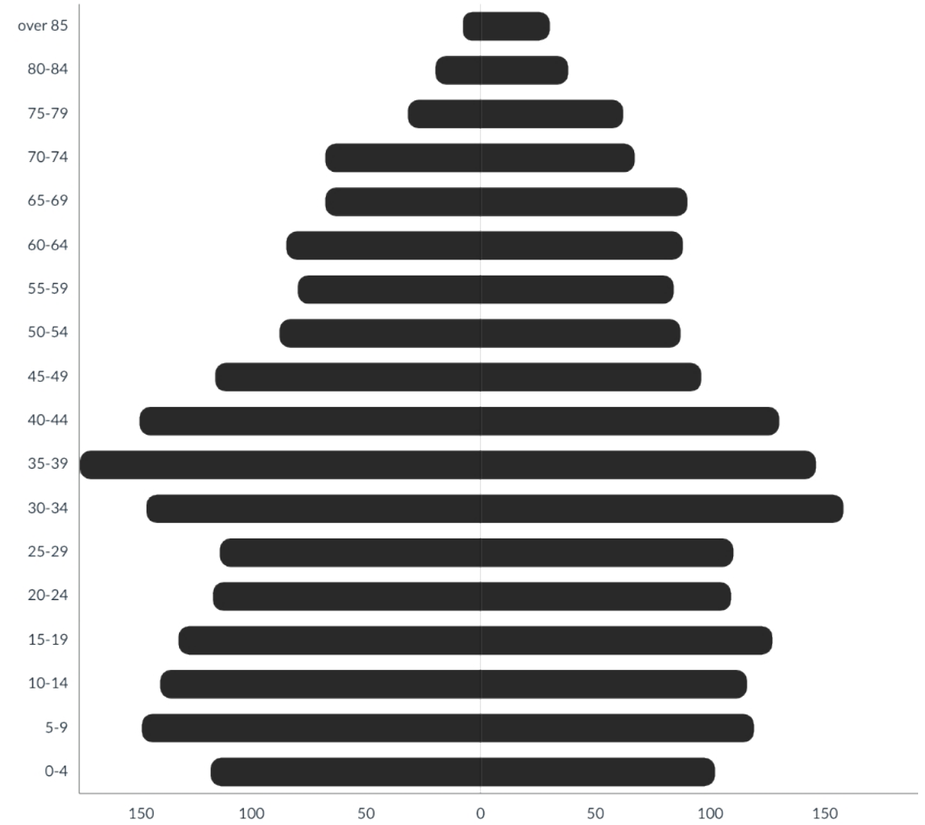


fig.15: demographics 2001

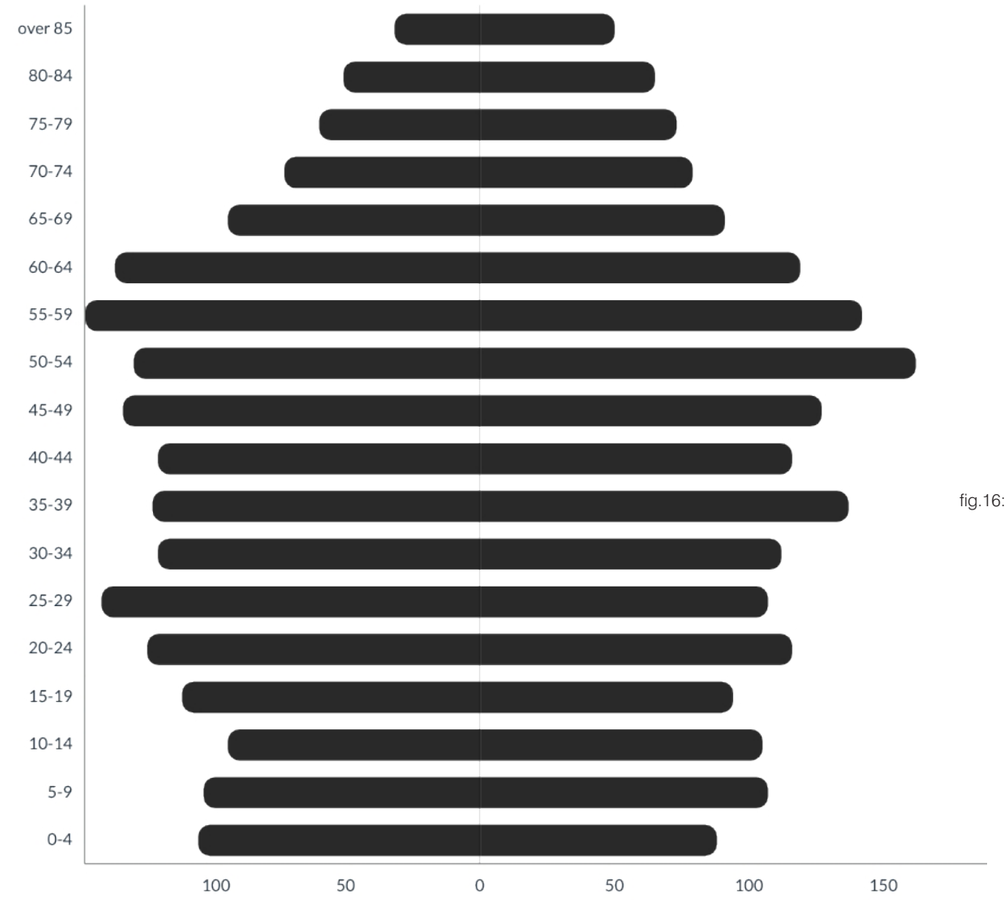


fig.16: demographics 2021

2.2.3. current living trends

The desire for a home of one‘s own is a deeply rooted image in most people‘s minds - a private home that you can design yourself and apply your own decisions. For many, owning their own property is an integral part of their life planning. For 18 to 25-year-olds, justice and ecological commitment are important drivers. Furthermore, property and prosperity are desirable to them above average. 93% of young people want their own home. (Rassaus, Stegmann in Bild der Wissenschaft, 2021)

The desire for a detached single-family home still ranks first across all generations, at 62%, as the most coveted housing wish. (survey, 2020; quoted after Temel in Boden für Alle, AZW, 2020) As mentioned in the history chapter, the whole family still worked and lived under one roof, but due to the private transport of the post-war economic boom, work and living were strongly separated from each other. The car became the most important everyday object. Today, we still have to deal with the consequences of this modernist planning, and broadacre city-influenced planning. In the next chapter, I will take a closer look at the effects of this trend.

What are the main arguments that so many people still cling to a housing desire that is resource-wasting, socially and ecologically unsustainable?

- a lot of space
- distance
- self-determination
- own greenery
- neighborhood

These requirements can, as well, be achieved by well-designed apartment buildings. However, there are very few of these projects in comparison. This is because 3.6 million people in Austria live in single-family houses. That corresponds to 40 % of the population. (Statistik Austria, 2019)

Living in one‘s own home is becoming more difficult to afford. Only 4 out of 10 Austrians can fulfill this dream. (Interhyp, 2020)
On the one hand, there is an increasingly older population that lives alone in a house that is proportionally far too large after the children have moved out or after the partner has died. On the other hand, due to trends of increasing individualism, the tendency towards living alone is also becoming more and more popular among the younger population.

The current residential trend towards more single households is also taking place in the countryside. Figure 17 shows the number of households based on the number of people in them. In the greater municipality of Aschbach-Markt, according to Statistics Austria, only 191 of all private households were single in 2001. Ten years later, the number almost doubled to 304.

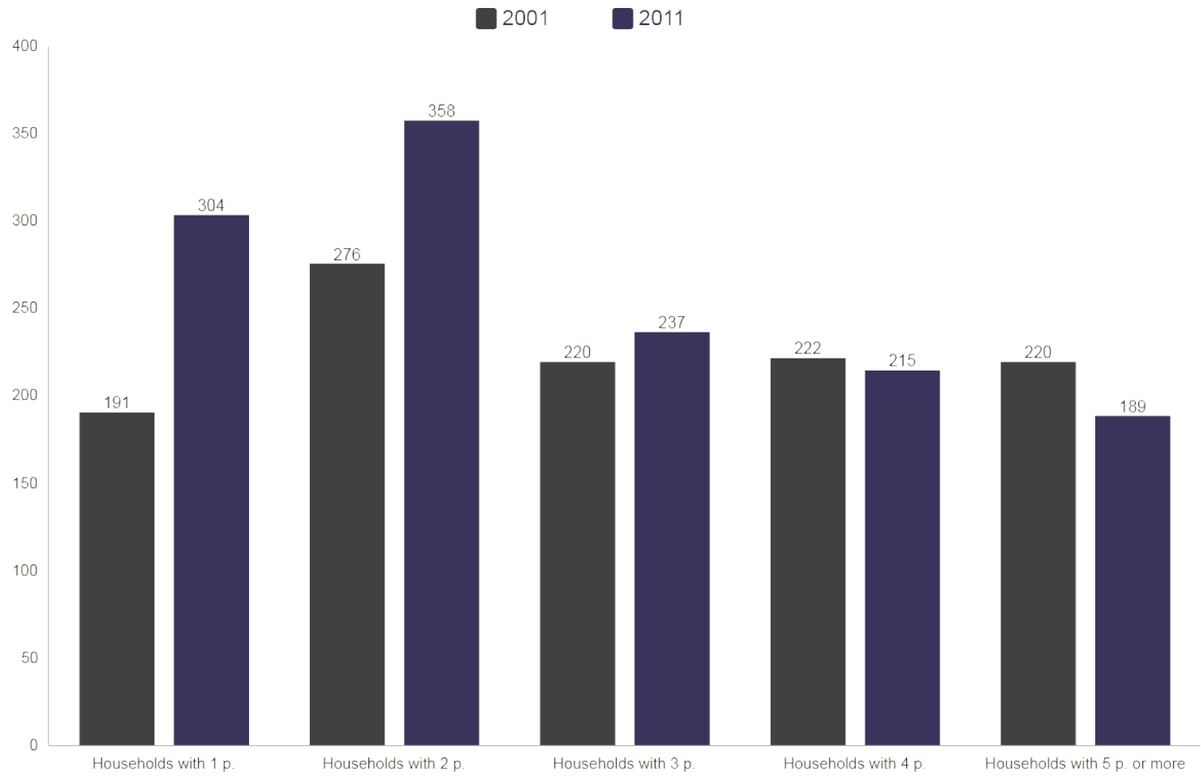


fig.17: Number of households per person in Aschbach Markt

Pair households are also on the rise. The classic image of the family of four seems to be disappearing with time. But multi-generational households are also rare these days. One hundred years ago, it was still common for at least three generations to live and work together on the farm. The trend towards the small family in the last 60 years with the already reduced family in which only father, mother and children live together seems to have reached the next stage. Single and couple flats are in demand on the market nowadays. The Austrian Conference on Spatial Planning predicted an increase to 1.6 million one-person households (+17%) and 1.35 million (+20.3%) by 2030 across Austria. (ÖROK, 2015)

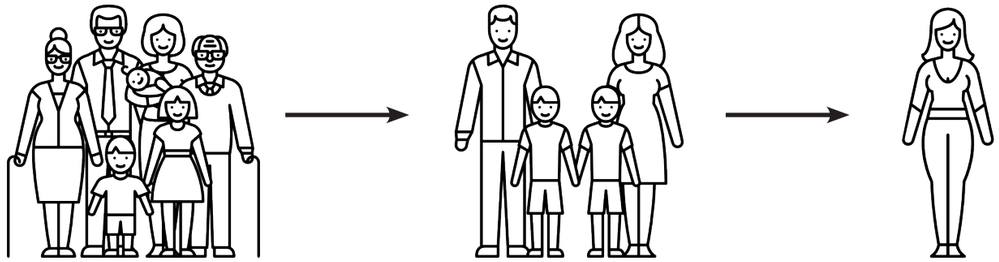


fig.18: Types of habitation in the course of time

While on the one hand, as we read in the statistics in figure 18, the trend towards living alone or as a couple is on the rise, on the other hand, larger living spaces of less than 150m² are becoming more common again. The interesting thing about the statistics is that the living spaces over 150m² are becoming smaller. This is due to the fact that there are fewer and fewer families living together in one household.
Mostly, the children move out after their first job or during their studies, and the parents remain in a large house or even a farm.
But that‘s not the only reason. There is actually a trend in living alone with rent among the younger generations who want to be more independent of a partner or extended family. Despite the trend toward living alone, young people still want to afford a single-family house for later stages in life and for starting a family.

The surveys of the Wohntraumstudie (Dream Home Study) with 2600 participants from Germany confirm the previously (->p. 29) mentioned arguments that make a single-family home so attractive. There are slight differences between the Genders; for example, 67% of women consider proximity to nature very important. For men, it is 52%. The correct location of the property is essential for 75% of women and 63% of men. A good neighborhood is important to 48% of women but only to 39% of men. But the overall picture confirms the arguments, such as the greater need for space. While you have a lot of say in constructing your own house and can choose how much space you need for what, this is not the case with a flat.

About the more space in a house compared to a flat, one can see the trend in the average living space in recent years in Aschbach-Markt (->fig. 19)

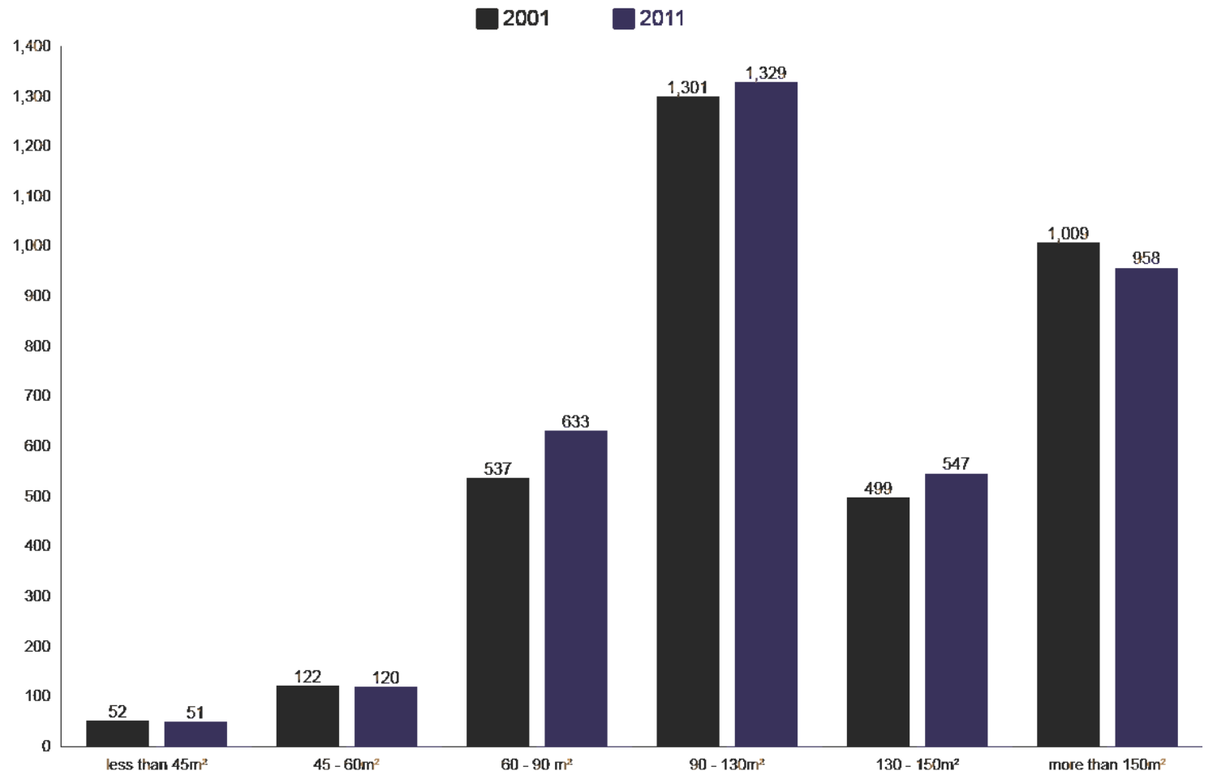


fig.19: Number of living spaces based on their size in Aschbach Markt

But the trend towards more and more living space is not only limited to the countryside with lower building costs. This is happening all over Austria. As you can see in the next statistic, the square meter area per person has continued to increase in recent years.

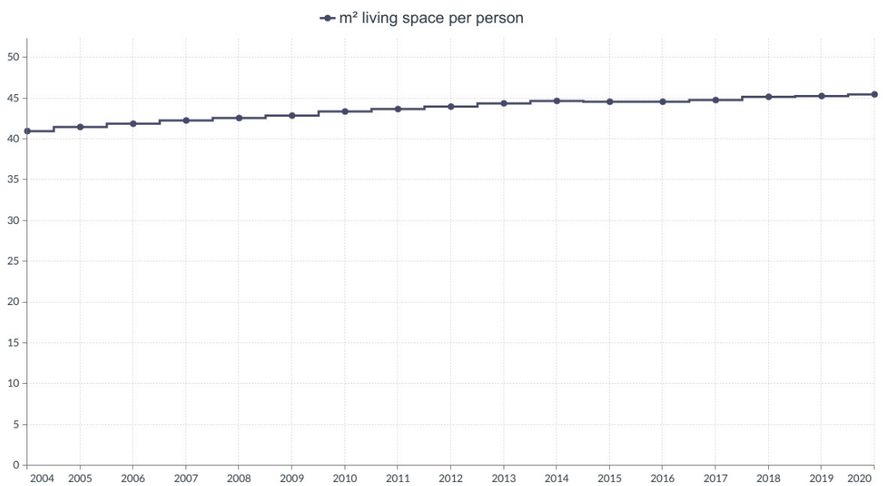


fig.20: average living space per Person in Austria, Source: Statistik Austria, 2022

Nevertheless, there is a difference between urban and rural areas in terms of flat sizes, which is mainly due to the difference in prices, more on this in the next chapter, „housing affordability. “ Here is a short example:
While the average flat size in Vienna has remained between 73 - 75 m^2 in recent years, the average size in the province of Burgenland is 124m^2.

2.2.4. housing affordability

A global problem that also takes place in Austria is speculation. Despite the heritage of „Red Vienna“ of the interwar period and its progressive social housing, speculation has taken over. Prices in the metropolises are getting higher and higher, and affordable housing is becoming more and more difficult. Ensuring social justice while the gap between rich and poor is growing exponentially is not an easy task. Still, one must be brought into focus for urban planners, architects, and politicians.

Further problems for the high housing prices are the increasing construction costs due to resource bottlenecks, a limited number of resources and more and more legal regulations due to higher technical requirements.

As briefly mentioned in the last chapter, young people prefer to live in rented accommodation, but this is not only due to their independence; younger generations can usually no longer afford to own property.

fig.21: real estate prices on the rise in cities

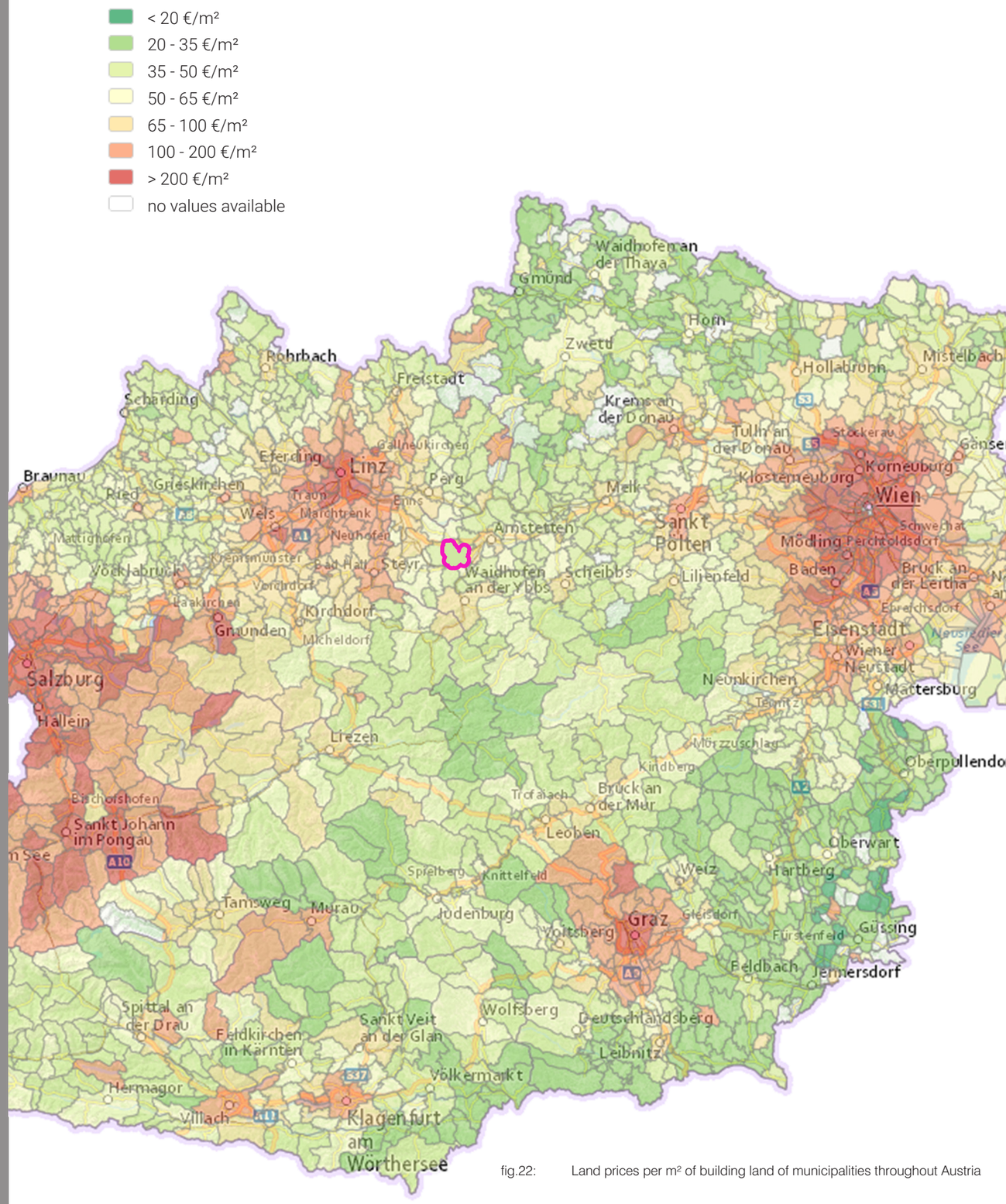


fig.22: Land prices per m² of building land of municipalities throughout Austria

2.2.5. impacts

For the younger generation, fulfilling their housing aspirations will become more and more difficult, they will also feel the effects of climate change more strongly, and they will only be able to offer their children the same standard or worse than the one they themselves received from their parents.

Furthermore, in a world that is becoming faster and faster, the unprecedented amount of information flow and increasing pressure to perform are causing more and more psychological and social problems.

One of the main problems of the young and the very old generation is loneliness. A meta-study by the University of Cambridge shows that the risk of death among people who feel alone is comparable to alcohol and cigarettes. (Holt-Lunstad J, Smith TB, Layton J; 2010)

Another meta-study shows that in Europe, the northernmost countries are the least affected, while the eastern European countries have the highest numbers. It is also noteworthy that the number of younger people, in particular, is increasing year by year. (University of Sydney, 2021)

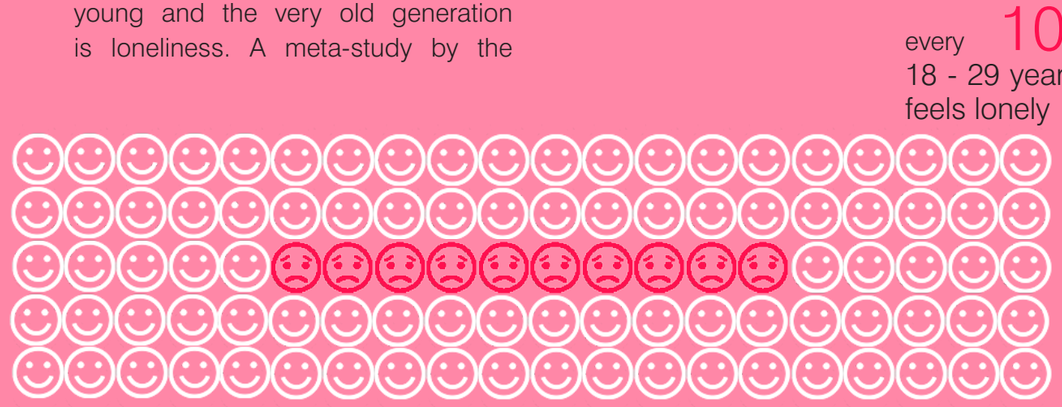


fig.23: loneliness in Austria, ORF science 2022

„The importance we assign to our place within a network of family and social relationships began to erode with the dawn of the industrial revolution.“ and „the trend toward greater isolation was set in motion by a new cultural focus on the individual. (John T. Cacioppo, William Patrick; 2008)

We are now in the age of digitalization and the data economy; the mobile phone has become our constant companion, the digital friend in our pocket. This probably accelerates the psychological problems in our society even more. Interestingly, however, no study can be found that confirms that increased consumption of social media can cause loneliness.
Younger generations who spend an increased time on their mobile phones especially suffer from it.
An American study shows that one in six people suffers from mental health conditions. Furthermore, this study also confirms that Generation Z (18-22 years) and Millenials (23-37 years) are more lonely than older generations. (Cigna U.S., 2018)

Entertainment increasingly takes place within one‘s own four walls. Be it the television, the computer or the mobile phone that entertains us. We take less time for social interaction with our neighbors, often preferring to buy a device ourselves rather than asking the neighbor to borrow it. The single-family home with its own garage makes the chance meeting on the street that stimulates conversation more and more difficult. Social interaction no longer happens so often in the neighborhood. While nowadays you might meet your neighbor by chance in the supermarket or other shops on the outskirts of the cities in the car park to exchange a few words, these short contacts may also disappear in the future, because the trend towards online ordering is on the rise.
The social hub of many people is in the cities and is now increasingly digital.

How we live and dwell, today has not only social implications. The common wish for housing and car dependency led to more problems. For example, higher energy consumption through longer travel distances to work.

Building new single-family houses requires more resources than renovating or converting an existing house. Furthermore, a stand-alone single-family house requires more energy than a multi-family house because more surface area such as roof and walls are needed per m^2 of living space.

Furthermore, the increased building of own houses in the countryside, where building land is still cheap, leads to more land sealing. More roads have to be built, thus creating more impassable borders for the fauna, from which biodiversity suffers. Furthermore, due to the sealing, the water cannot drain into the soil and ends up in the sewage system, which also leads to more flooding due to increased heavy rainfall events.

2.3. the region - Mostviertel

The village is located in the municipality of Aschbach-Markt in the Mostviertel. Its superior municipality is Amstetten in Lower Austria. Oberaschbach is located south of the Danube, between the most important main traffic routes for rail and individual traffic in Austria. The region is characterized above all by its hilly landscape and its square farms, which are scattered throughout the countryside. It stretches between the rivers Traun and Ybbs. The land is very fertile due to the mild climate and the nutrient-rich limestone soils. Fruit, wine and vegetables thrive. This region is the Mostviertel.

fig.24: Mostviertel

2.3.1. historical development

Mostviertel is one of the oldest regions in Austria. Austria was first mentioned in writing in a deed of donation in 996. At that time, it was called Ostarrichi, which meant the eastern dominion.

The Roman-German king of the time bequeathed this area from Bavaria to the bishopric of Neuhofen.
From this time onwards, then Austria expanded and grew. (wikipedia, 2022)

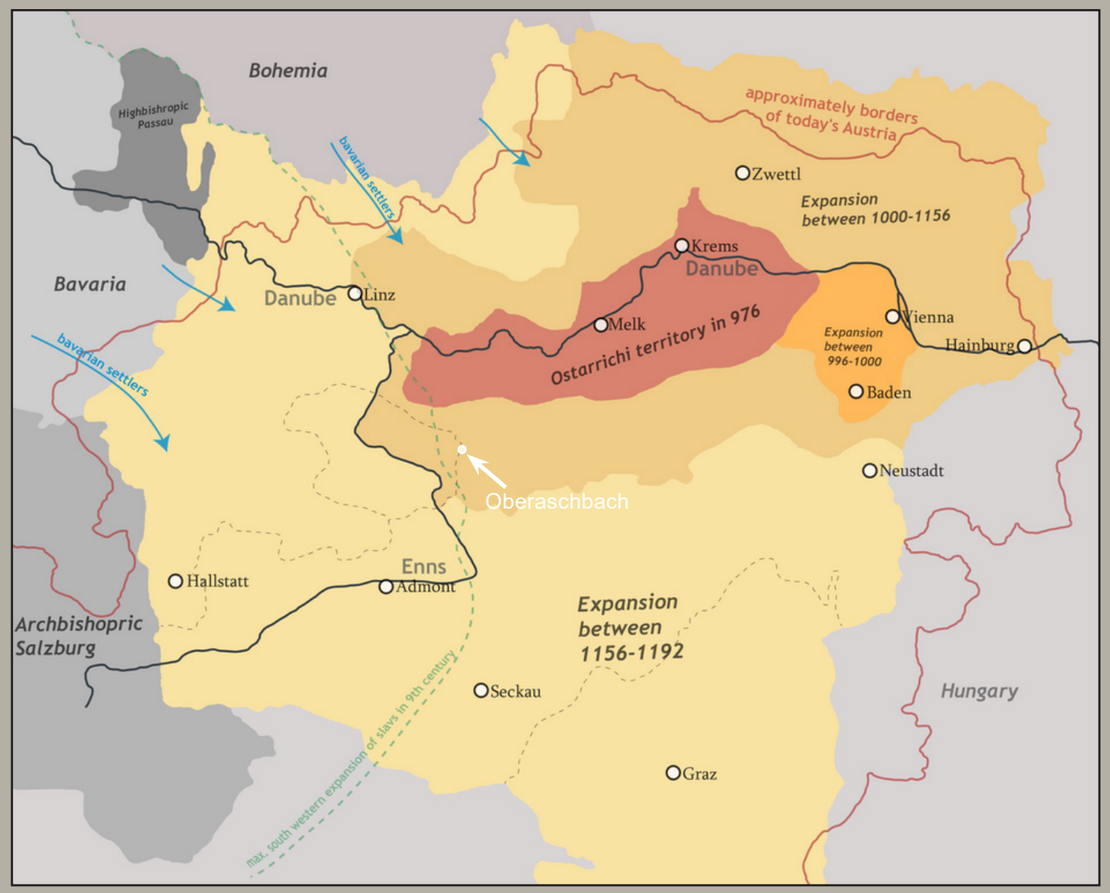


fig.25: Ostarrichi and its expansions

In the picture below the text, you can see the core region of the Mostviertel in green. The region got its name from the must. A drink that is made either from apples or pears. Here it is, the pear.
There are over 300 different pear varieties in the region, and 20 of them are particularly suitable for must-harvesting. From all the other pears, brandies, vinegar, frizzante and cuvées are made.
In the times of the monarchy, the drink was highly appreciated, so some farmers became rich, which only made the construction of the square farms possible. Hence the saying, „These houses were built by must. “

Industrialization and easier transport to faraway places turned some farms into gold mines. But after the Second World War, the drink went out of fashion, and beer and wine became more popular. Since then, pear tree populations have declined rapidly. The orchards were much larger until 1960. Since then, the number of trees has shrunk to a third in Oberaschbach.

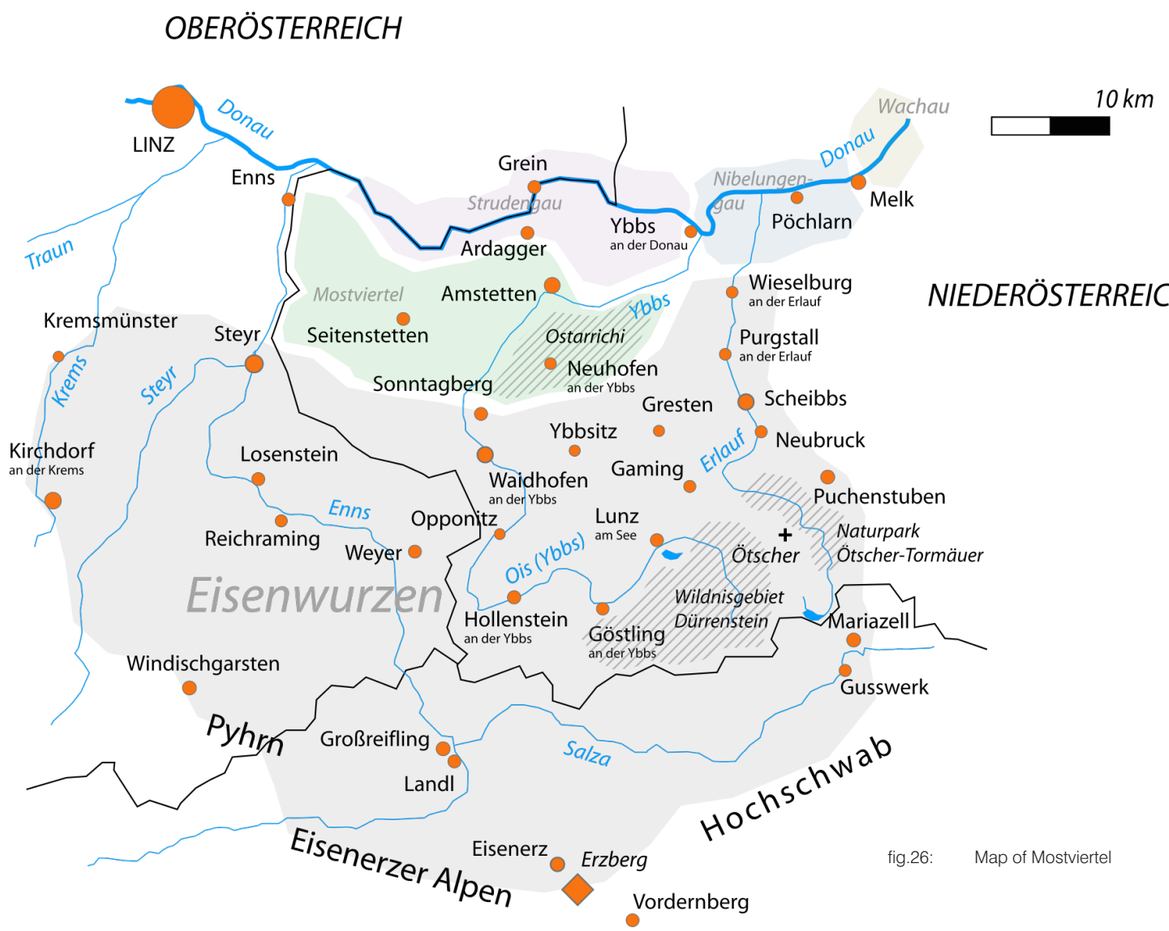


fig.26: Map of Mostviertel

2.3.2. square farm

The typical building form for the Mostviertel is the square farm. There are more than 3,000 four-sided farmsteads in this region (Dirtl, 2012). As we have already read in the last chapter, this type of building first came into existence due to the wealth of must pear cultivation.
Before the middle of the 19th century, the square houses were partly built only of mud bricks. It was not until Italian guest workers came to the country for the construction of the Western Railway that people learned to burn bricks.

The very thick brick walls offer a high heat-specific storage mass and thus provide a cool climate even on hot summer days. The walls were usually half a meter thick (in some cases, even a whole meter). This provided good heat insulation in winter, as well as protection against attackers.
On top of the walls were the beams that carried the loads for the wooden ceiling above.
There are several theories about the historical origins of this farm. (Vierkanter, 2022)

fig.27: Groundplan of an example square farm

The first theory is that due to many attacks bypassing armies in search of food, the farmers began to imitate the construction plans of the houses and castles from the Renaissance. The thick walls not only provided protection against attackers they also created a windless courtyard.

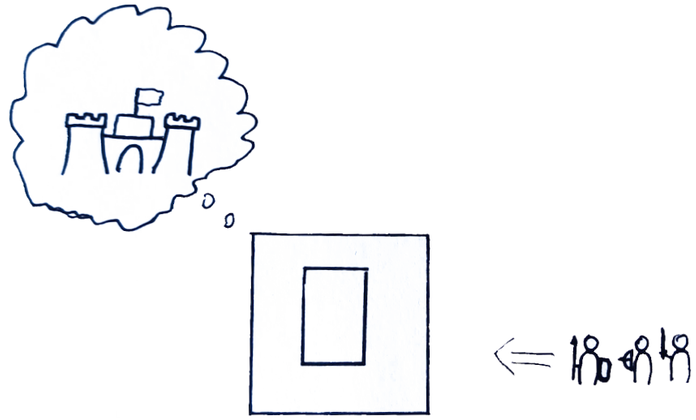


fig.28: Theory „defend“

Another theory is that due to the larger family structure and helpers of the time, a large house was needed, and the building structure was designed to increase the efficiency of work processes in short ways.

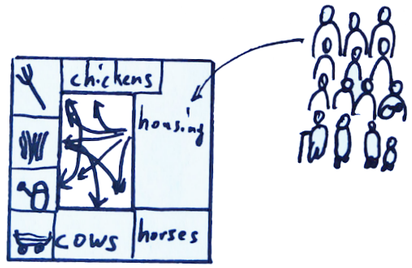


fig.29: Theory „efficiency“

The organic theory says that the square development could have happened naturally through time, as the cluster villages of that time became denser and denser.

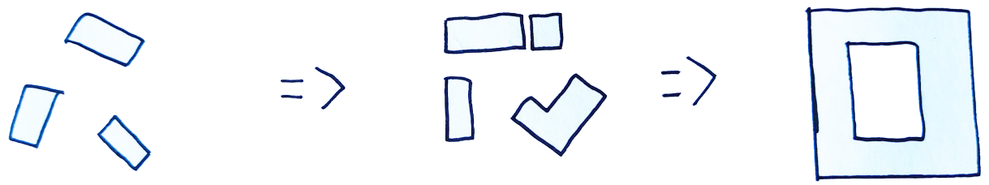


fig.30: Theory „organic“

2.4. the site - Oberaschbach

Oberaschbach is located only a few kilometers south of the Westautobahn and north of the small town of Aschbach-Markt. The village lies in a valley between the hills. The so-called „Zierbach“ stream and its small branch have shaped the landscape as it is today. Fields stretch up the hills in all directions around the village. Except for a pig farm, agriculture is currently limited to field farming. Many of the farms have not been in operation for some time, and the fields have been sold or leased out. It seems a bit like the village is mainly just for living and enjoying a quiet life.

2.4.1. transport and mobility

The village in Lower Austria is situated between several conurbations, which is perhaps the reason why it is so strongly affected by migration (see chapter 2.2.2.) Nevertheless, it is reasonably well connected due to its proximity to the Westbahn railway and the Oed motorway exit. Linz and Steyr are only 30 minutes by car. Vienna is only one and a half hours. Amstetten, 12 minutes, is the most popular commuter destination, with 392 commuters out of 1421 in the municipality of Aschbach-Markt. (Statistik Austria, 2019) An increase in inbound and outbound commuters is constantly occurring in Aschbach-Markt. (Statistik Austria, 2011 & 2019) Since the post-war years, private transport has still been the most important means of transport (see figure on the right).

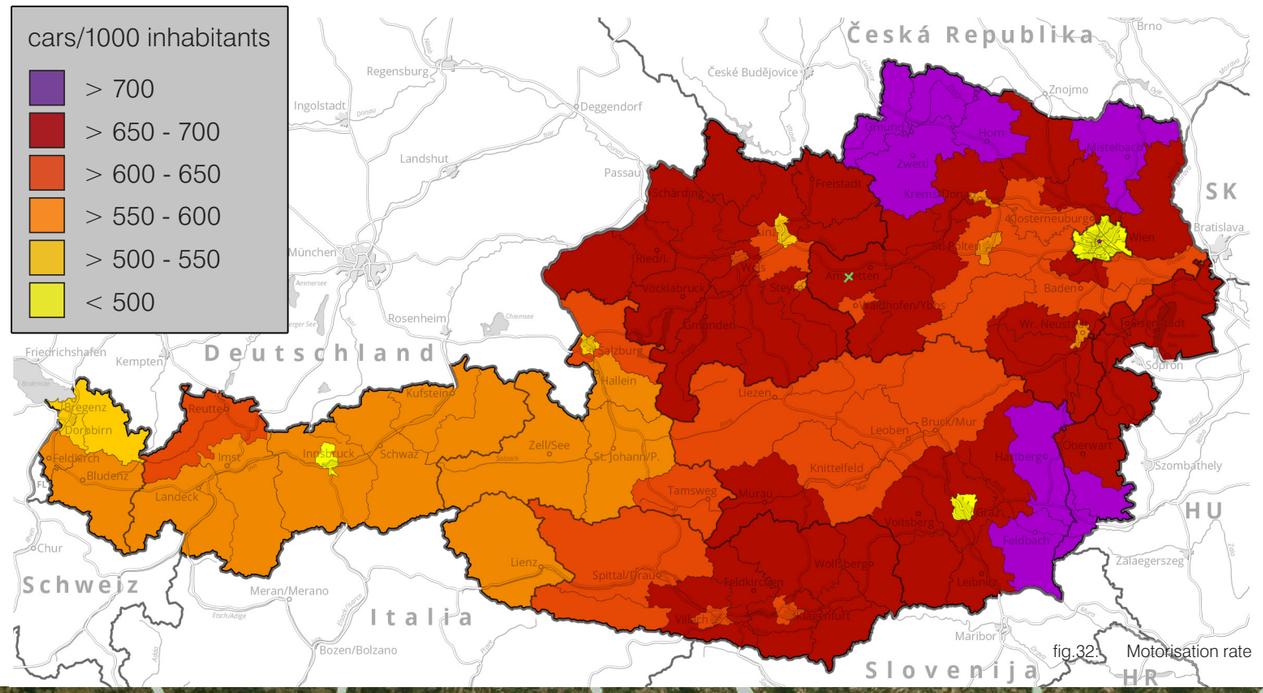


fig.32: Motorisation rate

fig.31: Traffic Map

Mo- Fr =>only on school days					
Biberbach Ort	6.11				
Biberbach Kromos	6.14				
Kematen/Ybbs Wollmersdorf	6.16				
Kematen/Ybbs Höfing	6.17				
Kematen/Ybbs Hausleiten	6.18				
Aschbach Am Riesingerberg	6.20				
Aschbach Bahnhof	6.21				
Aschbach Schulen	6.25	11.55	12.35	14.16	16.37
Aschbach Abzw. Bogenhof	6.27	11.57	12.37	14.18	16.39
Aschbach Abzw. Fimbach	6.28	11.58	12.38	14.19	16.40
Aschbach Samesbruck	6.29	11.59	12.39	14.20	16.41
Aschbach Fohra	6.30	12.00	12.40	14.21	16.42
Aschbach Gobetsberg	6.32	12.02	12.42	14.23	16.44
Egelsee bei Oed Süd	6.33	12.03	12.43	14.24	16.45
Egelsee bei Oed Nord	6.34	12.04	12.44	14.25	16.46
Oed bei Amstetten Buchleiten	6.34	12.05	12.45	14.26	16.47
Oed bei Amstetten Ramsau	6.34	12.06	12.46	14.27	16.48
Oed bei Amstetten Haaberg	6.35	12.07	12.47	14.28	16.49
Oed bei Amstetten Volksschule	6.36	12.08	12.48	14.29	16.50
Oed bei Amstetten Gewerbepark	6.40	12.09	12.49	14.30	16.51
Aschbach Abzw. Feitzing	6.46	12.10	12.50	14.31	16.52
Aschbach Abzw. Seidenberg	6.48	12.12	12.52	14.33	16.54
Aschbach Aukental	6.49	12.13	12.53	14.34	16.55
Aschbach Linden	6.50	12.14	12.54	14.35	16.56
Aschbach Halblehen	6.51	12.15	12.55	14.36	16.57
Aschbach Abzw. Neen	6.52	12.16	12.56	14.37	16.58
Aschbach Oberaschbach	**6.53**	**12.17**	**12.57**	**14.38**	**16.59**
Aschbach Samesbruck	6.55	12.19	12.59	14.40	17.01
Aschbach Abzw. Fimbach	6.56	12.20	13.00	14.41	17.02
Aschbach Abzw. Bogenhof	6.57	12.21	13.01	14.42	17.03
Aschbach Rathausplatz	6.59	12.23	13.03	14.44	17.05
Aschbach Schulen	7.00	12.24	13.04	14.45	17.06

Public transport connections are worse in comparison. The only bus that stops in Oberaschbach comes rarely and not at all on weekends or during school holidays. Therefore, the residents very often resort to their own cars. However, the way to the nearest train station can be reached by bike in less than 15 minutes. This may be due to convenience on the one hand and on the other hand to the fact that trains only run every hour and stop at every station. The fast trains with half-hourly intervals only run from Amstetten.

fig.33: public transport

2.4.2. internet access

The Covid 19 pandemic has shown that the home office works well. The proximity to the city due to the workplace has become irrelevant. This can offer the potential for rural regions with good internet access, such as Oberaschbach. The village and the surrounding farms received a fiber-optic Internet connection at the beginning of 2022. The map shows that a fiber optic connection has been completed in the dark red fields. In most communities, the fields are mostly colored orange, which represents a performance of 30Mbit/s and is based on copper wire cables.

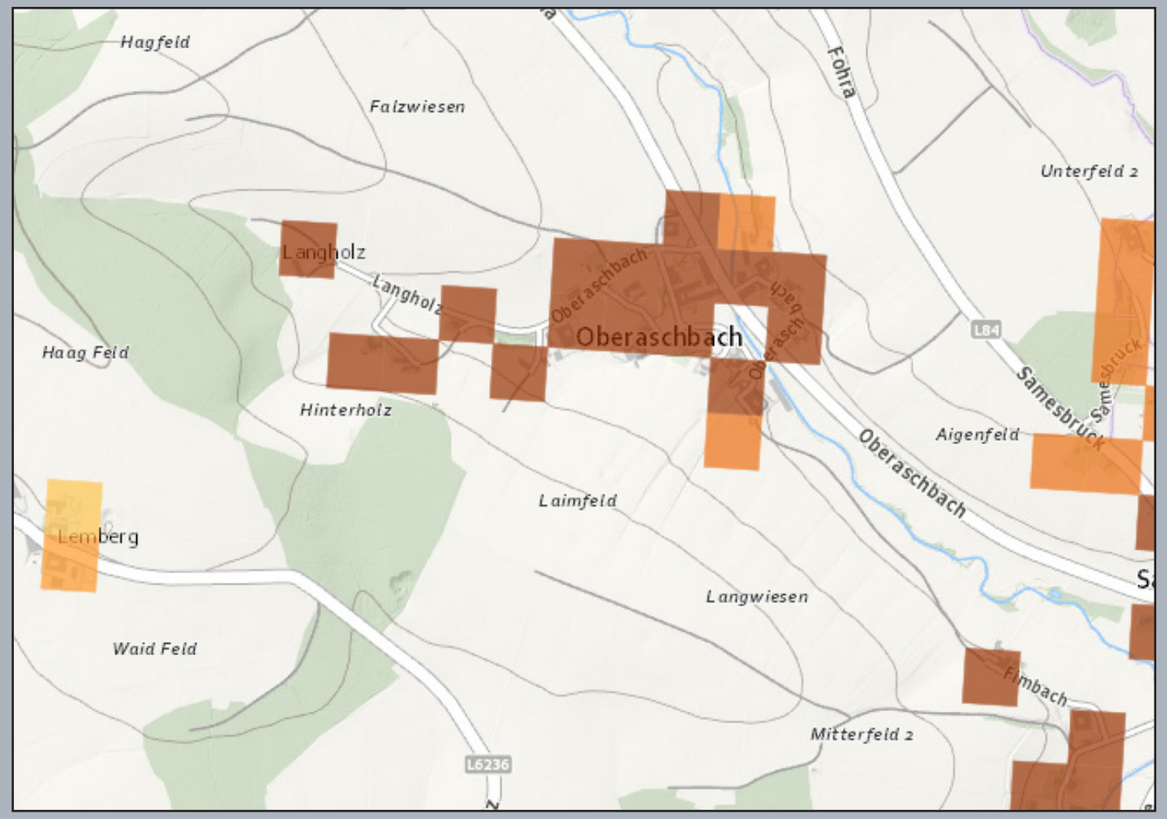


fig.34: internet connection quality

2.4.2. climate

According to the Köppen-Geiger-Climate certification, our Village is in the Cfb zone. This means a warm temperate climate with fully humid and warm summers. But only for a few years before that, it was still classified as a continental climate. (Veterinary University Vienna, 2017)
Due to man-made climate change, and higher temperatures, more water vapor can be absorbed into the air. This also leads to less moderate daily precipitation in the Mostviertel but heavier to extreme rainfall. The heavy rains lead to more landslides in Oberaschbach. Due to the higher evaporation, there is less runoff in the water bodies. (ZAMG, 2022)

The village is well protected from strong storms because it lies in a valley, and there is also a forest on the crest of the hill in the main wind direction. (see figure underneath and to the right)

Nevertheless, the cold air sinks during the night, and in order to counteract these cold air flows, the wind was diverted next to the buildings with the help of vegetation. Another advantage against valley winds is the shape of the square courtyard, which provides a sheltered inner courtyard. These old tricks for a more pleasant outdoor climate and (indirectly influenced) indoor climate are important for future buildings and outdoor spaces.

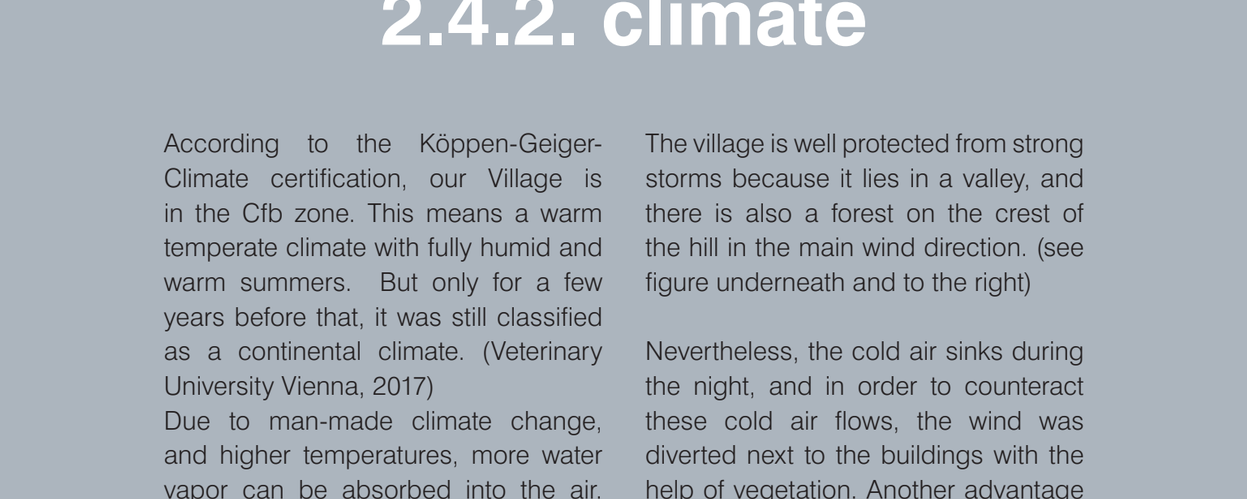


fig.35: wind over the valley

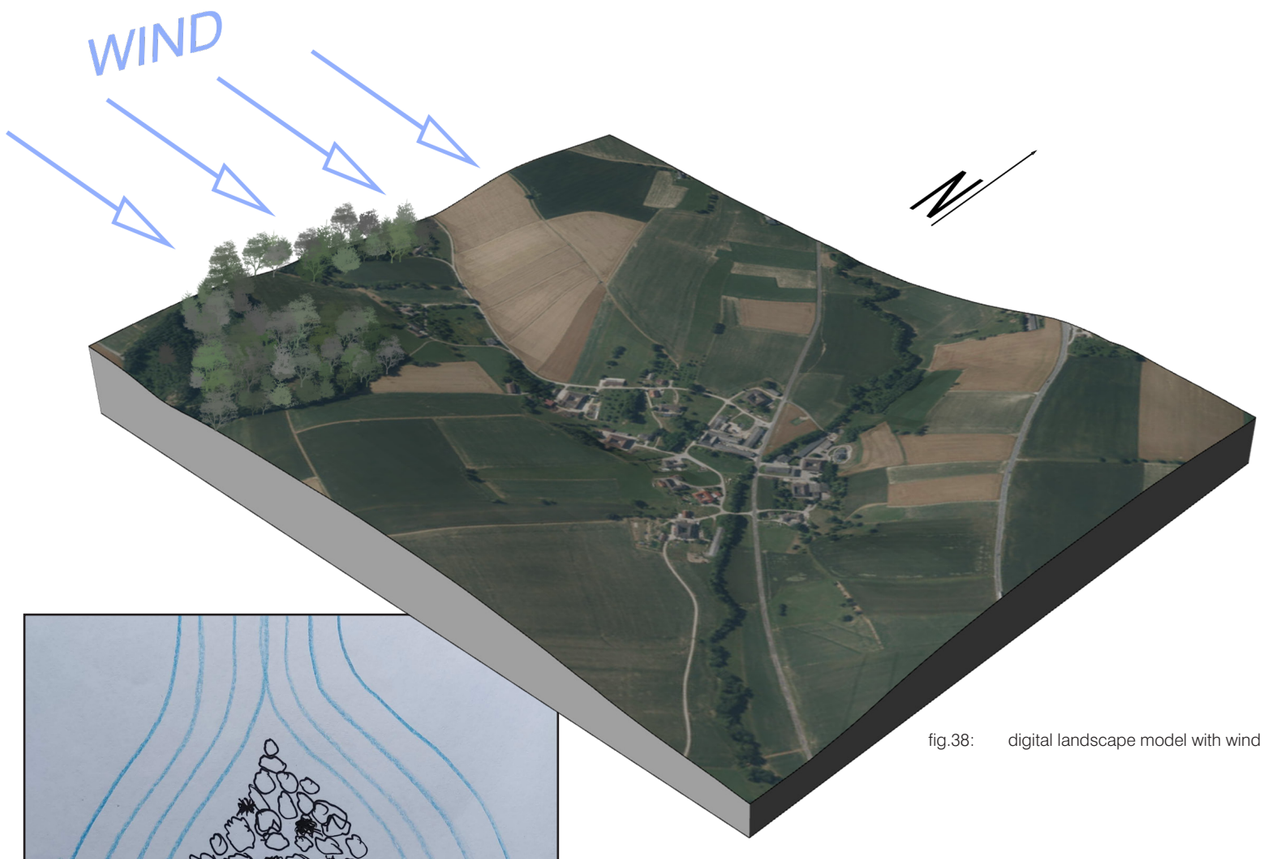


fig.38: digital landscape model with wind

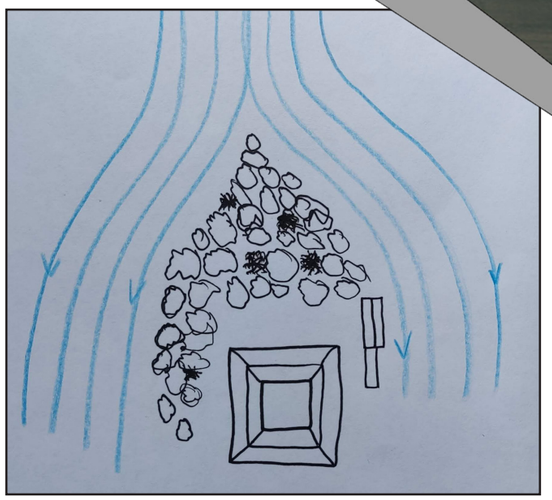


fig.36: wind derivation top view

fig.37: wind derivation cut trough

3. Reference projects

fig.39: Mesnerhof-C outdoor

3.1. co-working

The Mesnerhof-C is a co-working space on a 400 years old Mountain farm. The three refurbished houses offer space for teamwork seminars and workplaces. In the middle of the mountains, and with lots of leisure and sports facilities, this former farm manages to attract start-ups to large corporations. The charm of the old farmhouses and the proximity to nature make this co-working space in the Alps so popular.

fig.40: Mesnerhof-C indoor

3.2. elderly care

Farm as an alternative to a nursing home, the concept comes from France and Belgium and is becoming more and more popular. The retirement home in the countryside has nature, animals, gardens, peace and a stimulating environment. Involving the elderly in helping in the barn or with the harvest, or simply the contact with the animals and the exchange with different generations means that the residents are much less likely to just sit in their rooms. The change of sensory impressions prevents apathy. (bild der wissenschaft, wbg, 2021) There is no sign of a shortage of care workers in the care farm commune from Germany. There are waiting lists for residents and staff.

fig.41: elderly care on a farm

3.3. co-living

An association bought the old monastery building and 15 hectares in „Rohrbach an der Gölsen“ in 2014 and renovated it for new uses. As a result, a children's group, an intergenerational community living project, a clinic with daycare, organic vegetable farming, a fish pond and an event center were founded. The co-living „LebensGutMiteinander“ has 19 adults and eight children living under one roof. They consciously live sustainably and are involved in the life of the municipality.

fig.42: LebensGutMiteinander

3.4. commune

Niederkaufungen is a municipality that was founded in 1987. What started as a small group has become a place for 80 people who own a cash register together. The group has its own workshop and renovates aging houses. A meadow orchard provides a run for over 200 chickens, ten cows, and 10 pigs and organic vegetables are also planted; as in the Sieben Linden project, a day center was also built here. The municipality supports village life and is opening more meaningful facilities, such as a tailor shop, a farm shop and a children's group.

Communes can contribute to mainstream ecological practices that are more difficult to sustain in large parts of current society.

fig.43: commune Niederkaufungen

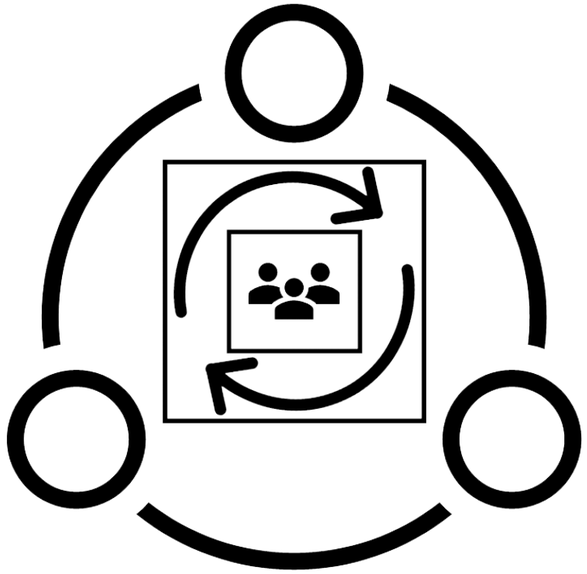
3.5. eco village example

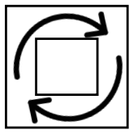
The village of Sieben Linden, founded in 1997, is the best known in Germany. In the meantime, it has grown to 145 inhabitants and 100 ha (64 ha of forest). The building materials used were mainly straw, wood and clay. Self-sufficiency for hot water and heating is provided by Sollar collectors, photovoltaics and wood heating. The ecovillage also covers 75% of its own needs with fruit, vegetables and herbs. Reuse of all kinds of waste and gentle treatment with nature.
The project is characterized by a high degree of self-sufficiency and a good community. Weekly events take place, and many visitors are interested in the village.

fig 44: Sieben Linden eco-village

4. Strategy and concept

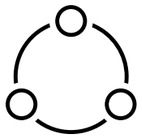
After the farm was sold, the owners mostly downsized the farm as the use for the barn and storage areas became obsolete. But these areas offer the potential for more housing or other services, as in the previously mentioned reference projects. In addition, the existing square courtyards with their sheltered inner courtyards offer a pleasant atmosphere with common areas. The following pages will show ways to reawaken these formerly lively courtyards. Furthermore, the spaces between the houses should be used for attractive new purposes.
Additionally, new forms of sustainable and circular agriculture are shown, which can provide further jobs in the village.





recycle the buildings (4.1.):
Transform the existing buildings with renewable materials in new uses: workshop, co-living, elderly care, coworking and more.

strengthening the community (4.2.):
new forms of living for a more diverse population, social indoor and outdoor spaces, shared spaces and facilities that lead to social interaction and higher sufficiency, merging into one large common farm to be more competitive with big farming companies.



creating circular agriculture (4.3.):
new jobs, closed material cycles, own food production, eco effectiveness, high level of self-sufficiency, Resistance against environmental and economical influences.

4.1. recycle the buildings

The first column of the strategy is the refurbishment and rebuilding of the existing buildings in the village. The buildings, some of which are more than 100 years old, were created for agriculture and living and will be given new uses.
In these old farmhouses, it should be emphasized to further enable diffusion openness. During the construction process, the airflow through the beam boxes must not be blocked.

Even the floor construction to the ground should be taken into account not to close the building airtight from below. For insulation, it is possible to use also diffusion open insulation materials. Without the air exchange, the wooden structures can begin to mold!

Barns are, in most cases, younger and more straightforward to recycle because of their construction and size.

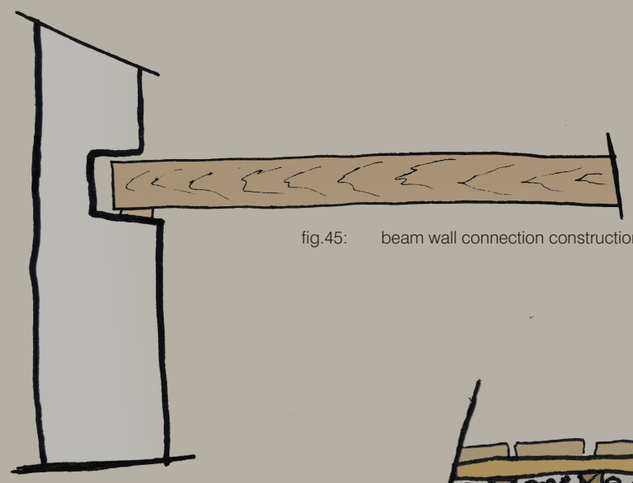


fig.45: beam wall connection construction

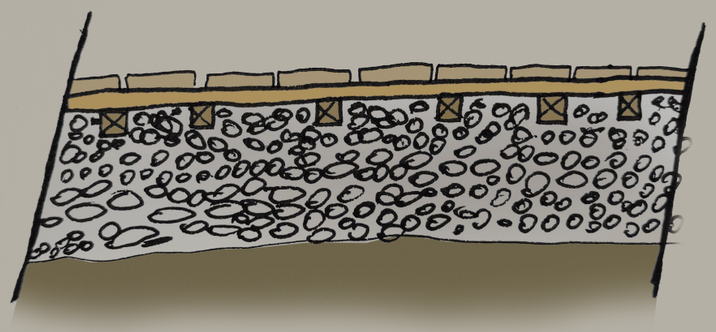


fig.46: floor construction old farm buildings

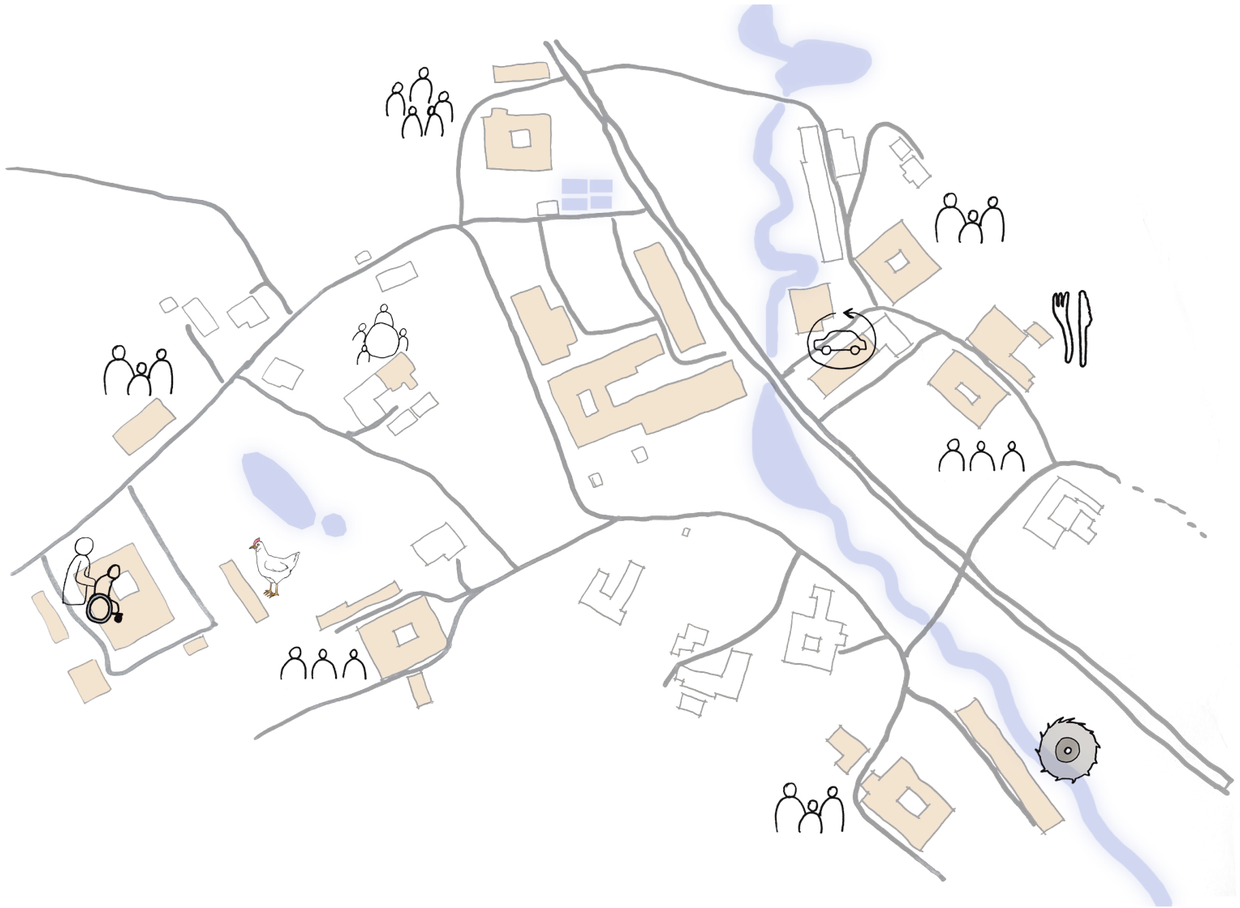
The old non-load-bearing walls can be easily replaced with newer wall structures. These wall structures are made of local renewable building materials, which can also be harvested. Wood, straw and clay. Thus, a modular system can be established that is universally applicable to recycled houses.

The wood creates the construction and is the supporting element. The straw provides good heat and sound insulation. The module can then be closed with a reed mat.
For a comfortable indoor climate and moisture regulation, the mats can then be plastered with clay.

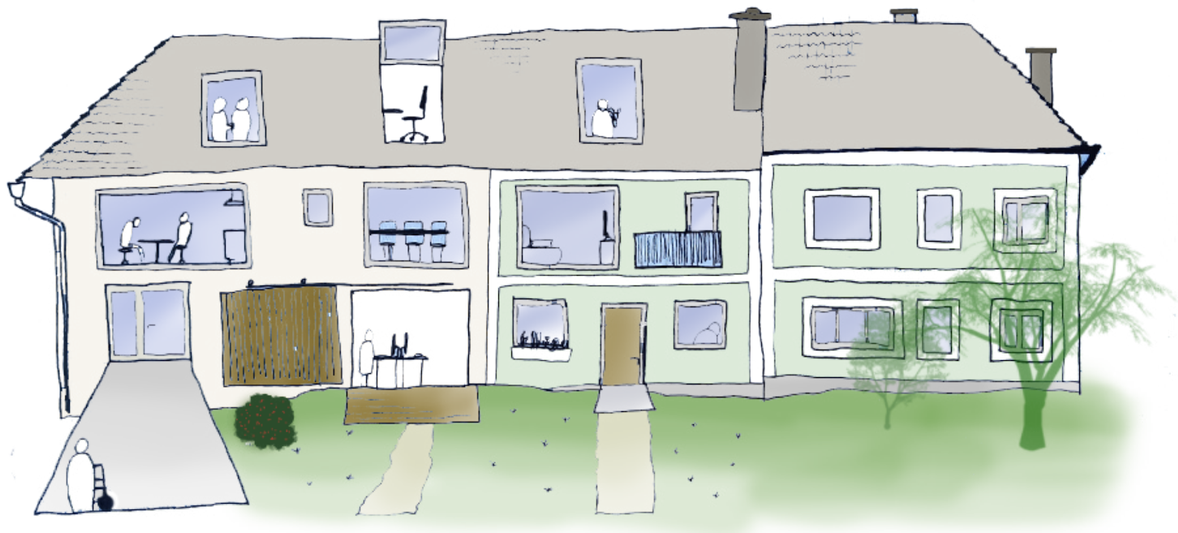
fig.47: renewable building materials

In the drawing below the text, the houses to be renewed are shown in orange. It makes the most sense to start with the workshop in the south and, from there, rebuild the other buildings. After the renovations, the new uses of the buildings are shown in symbols, such as the coworking space in the center or the retirement home in the west.

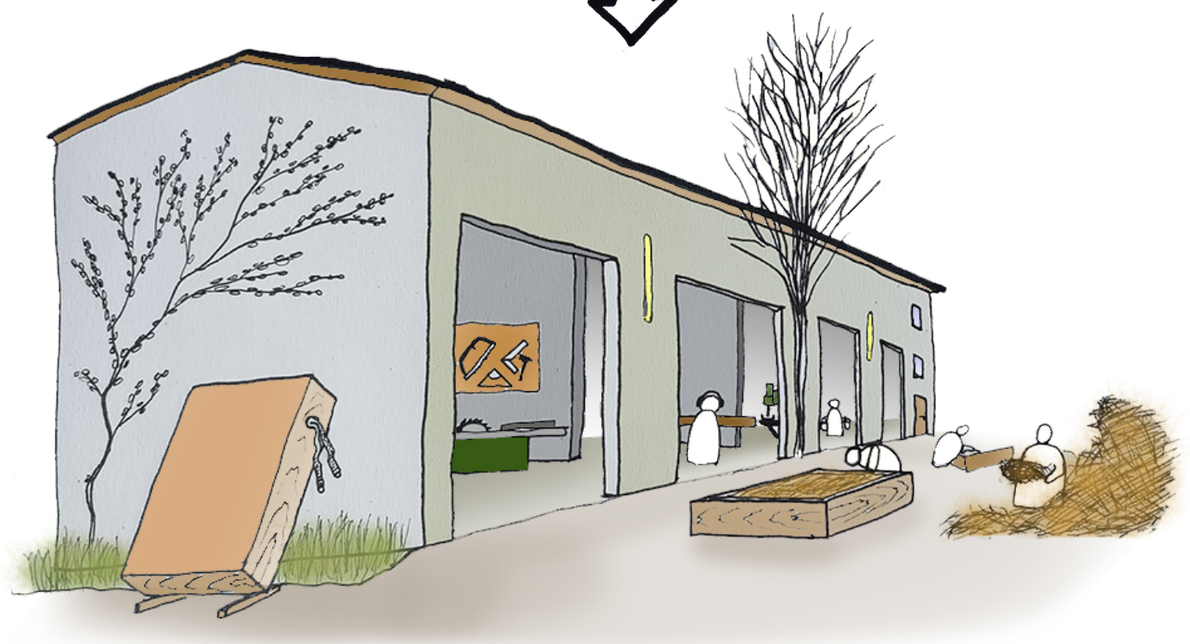
On the right side are photos of individual buildings that are either abandoned or little-used at the moment. The goal is to give these buildings new uses like car sharing, a restaurant, commune living, and a coworking space.



This former farm building gets a coworking space on the left and a new apartment in the middle. The owners of the house stay on the right.



The former stable building in the south of the village will be converted into a common village workshop.

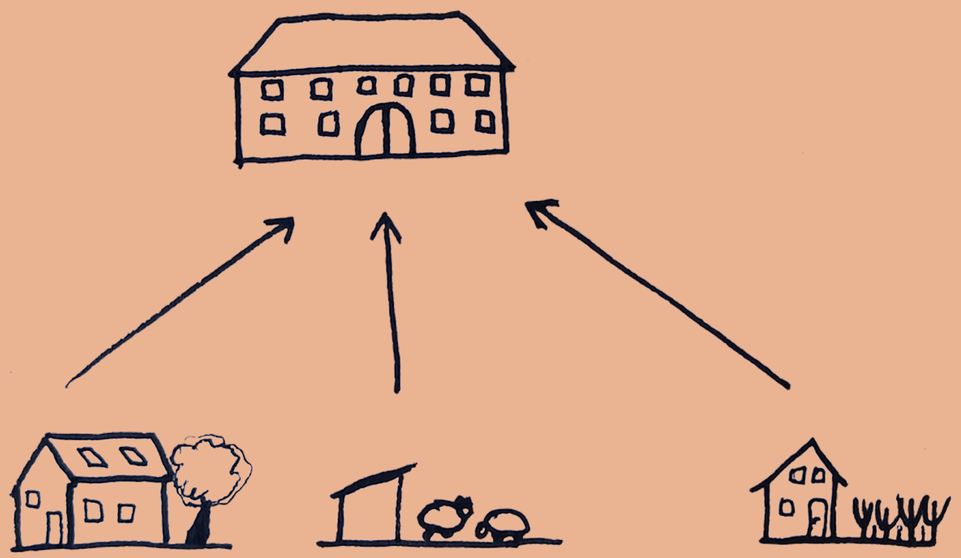


4.2. community

Different apartment sizes and concepts should attract other people to live in Oberaschbach. For example, with co-living, communes or small apartments at low prices, especially young people who like to spend time in nature should be attracted.
The diversity in apartments should attract not only young families but also students, single mothers, refugees, same-sex couples, and many more. Moreover, the new residents can continue their daily routine in the coworking space and meet with other people from the village.

The benefit compared to the city is the relatively cheap housing, the social offers, the proximity to nature, gardening together, cooking in the community restaurant, and working together on the farm. How such a collective cycle-oriented farm can function is described in the next chapter 4.3.

In contrast to many smaller farms in Oberaschbach, there is now one large community farm. Because as a large common farm, you are more competitive with the larger farms than a single small one. This community farm also offers new jobs for the villagers. Just like the elderly care home on the farm is also looking for new caregivers and attendants.

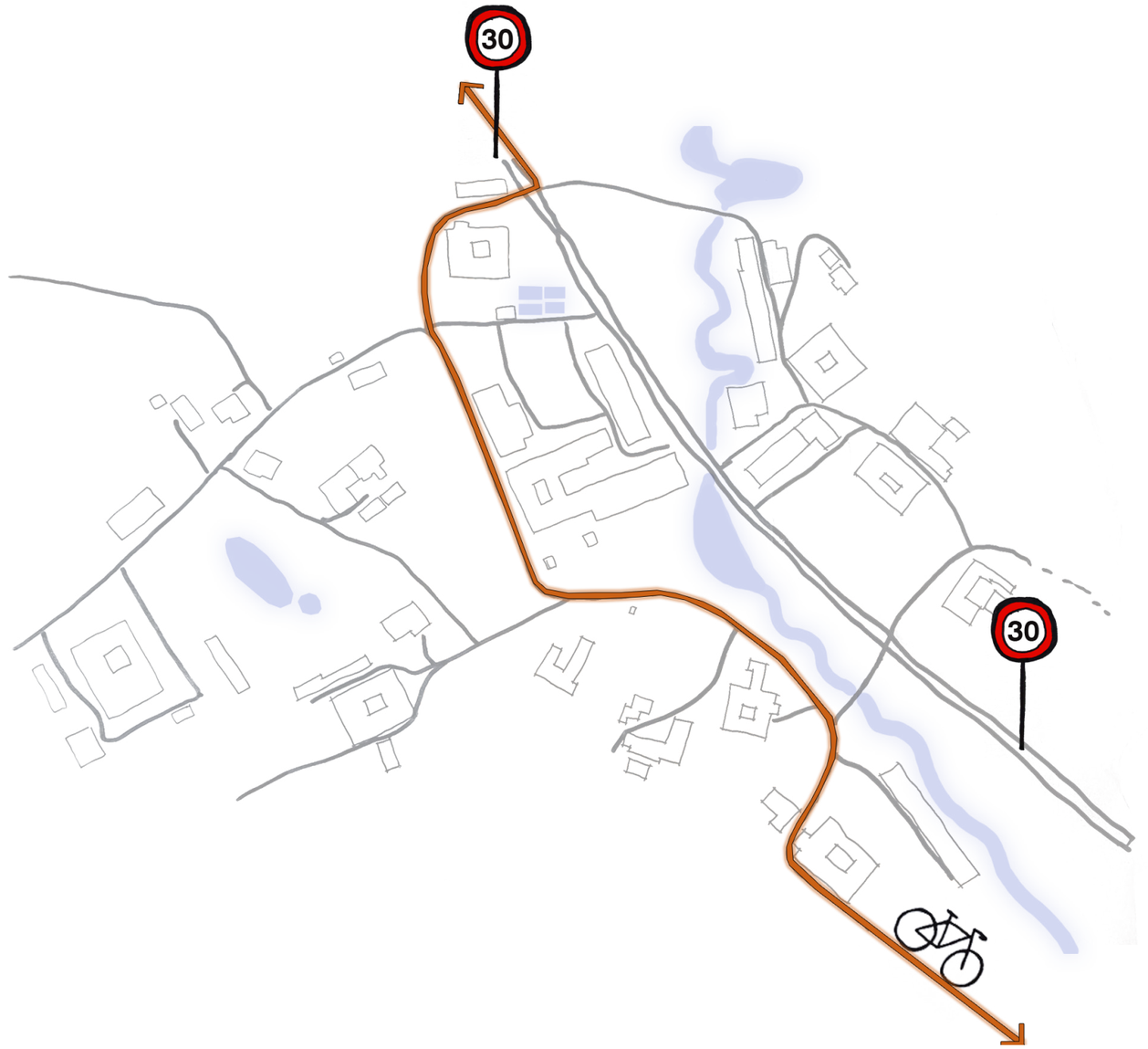


The sketch above shows the existing plots. Except for the road and the sewage treatment plant, all properties and fields are privately owned. To awaken the village life, it is essential that the ownership changes. There must be common spaces to create the communal circular farm. But also other buildings and especially outdoor areas should be rededicated for the general public. The former owners do not lose their land, they lease it to the collective at a very low price, and in return, they get a share of the farm‘s profits. Furthermore, the people in the village will also receive a more broad offer, as described on the next double page.

Here we see the new ownership. The plots marked in orange belong to the collective. These are all the fields and the agricultural buildings used in the future, the co-working space, the carsharing, the restaurant, and the workshop. Hereby fewer machines will be needed, and the existing ones will be used more often. Moreover, due to its size, the collective has more equity and can remain competitive with other farms.

A community and many shared areas bring more sufficiency to the village! Before buying a new tool, people prefer to look in the workshop. The village‘s carpool is also used much better. While one person per family usually drives the children to school, today, only one person in the entire village has to do that. For example, if one person has to go to Vienna for an appointment, he can give a ride to someone else on the electric bus. New groups are formed in Oberaschbach; through the social areas, everyone knows everyone and the willingness to help has increased.

Oberaschbach is located on a country road that is rarely traveled. Nevertheless, this is very wide, and 70 km/h may be driven. In order to guarantee a higher safety and lower noise pollution in front of the cars, the speed should be reduced. This limit should be applied to the whole village because the roads are shared by all road users, without a physical barrier. To make Oberaschbach with the mother community Aschbach and its train station accessible for non-motorized traffic, the old road can be used, which was already used as the main road before 1974.



4.3. agriculture

As described in chapter 2.2.1, current agriculture with its high carbon, nitrogen and methane emissions significantly contributes to global warming. There are already good concepts such as closed material cycles and so-called circular food systems to counteract this. circular food systems could reduce fertilizers by 80% in Europe. (Ellen MacArthur Foundation, 2016) Circular agriculture is also more labor-intensive than conventional farming, which offers a strategy to stimulate the economy in rural areas. These new jobs can be done by the new residents or the already settled residents. The figure below shows a schematic explanation of the system. With the help of this system, some residual materials that arise in production or the household can be reused. As animals, it makes sense to include chickens or fish in the cycle, as they offer high protein sources for little food (see statistics underneath). Nevertheless, the already existing pigs on the farm at Oberaschbach 6 can also make an important contribution to the utilization of leftovers. Nevertheless, sheep or goats should also be considered, as they free the orchards and other crops from weeds, are well suited as therapy animals for the old people's home, and their CO^2 emission is comparably low. (see statistics CO^2-emission small ruminant.)

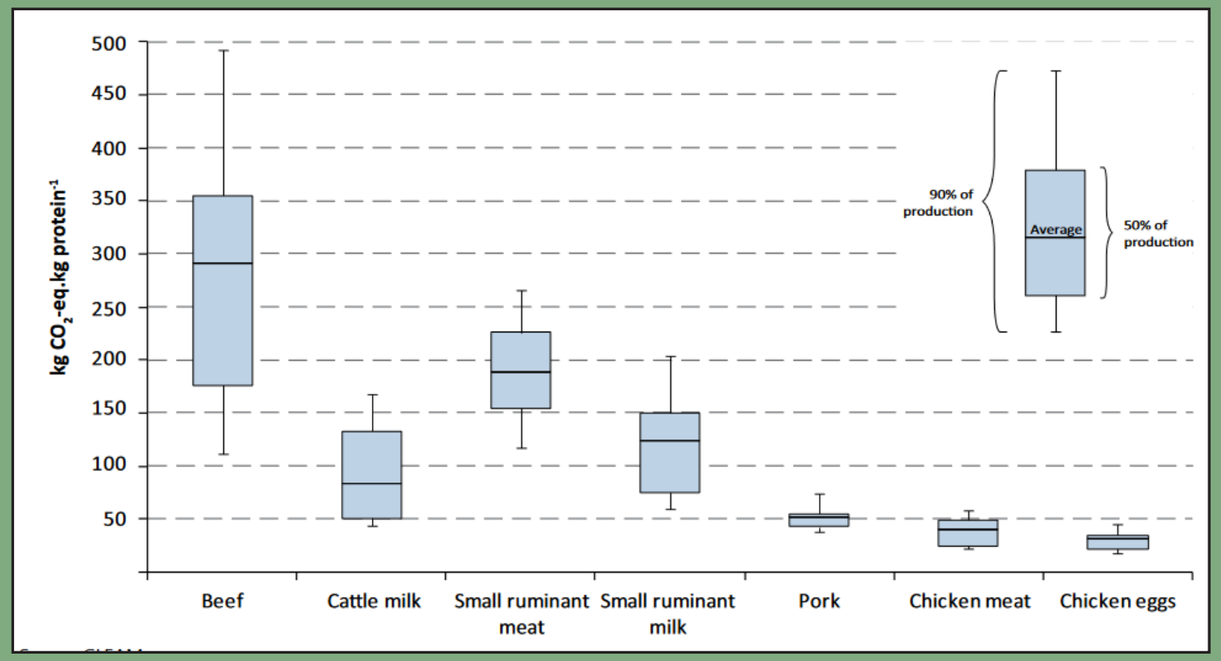


fig.48: Global emission intensities by commodity

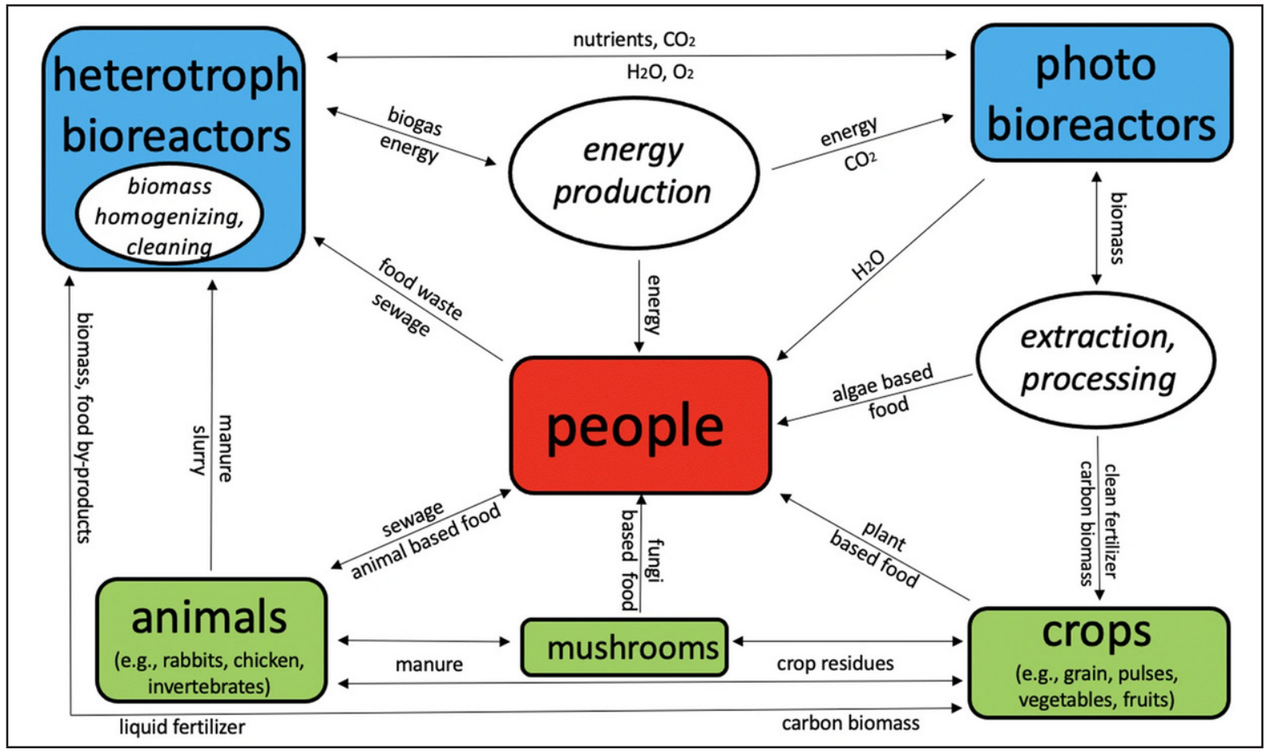
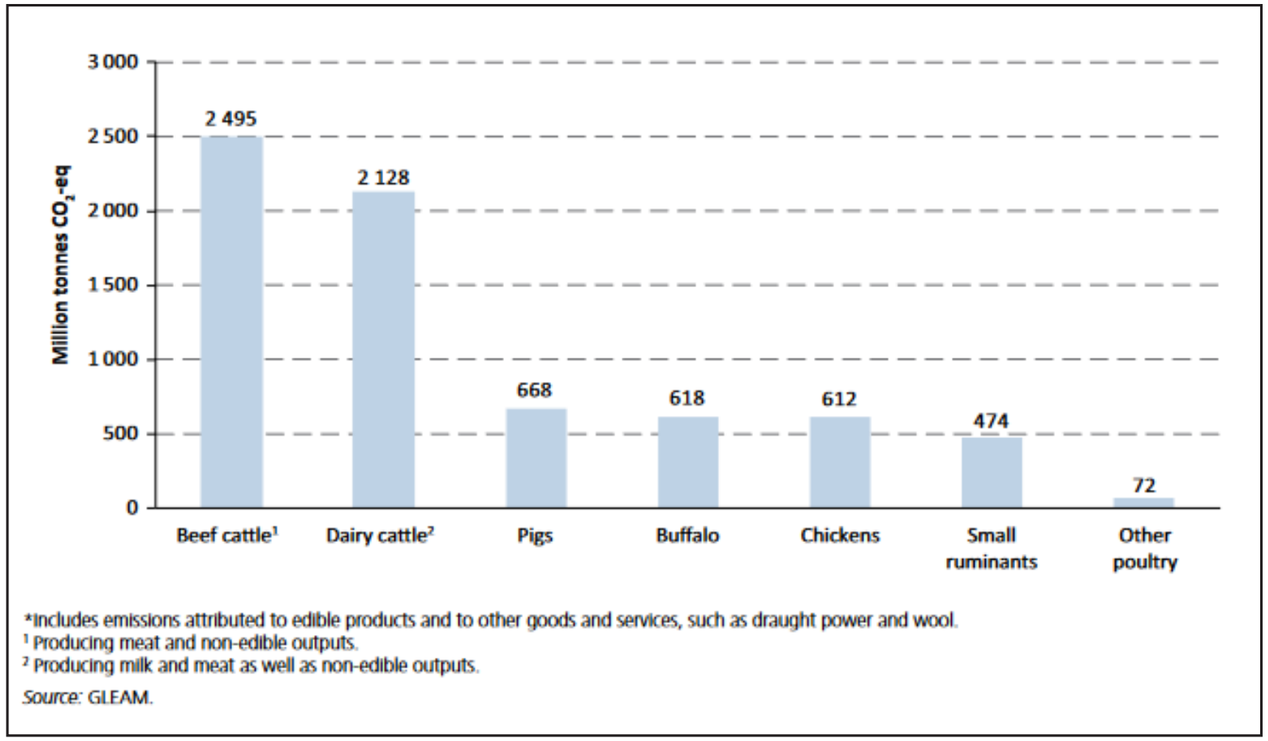


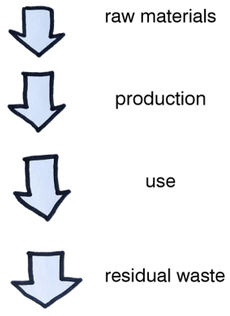
fig.50: circular farming system



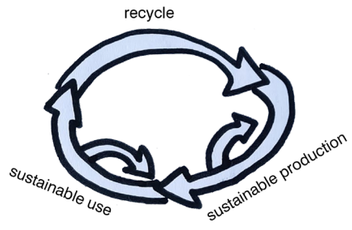
*Includes emissions attributed to edible products and to other goods and services, such as draught power and wool.
[1] Producing meat and non-edible outputs.
[2] Producing milk and meat as well as non-edible outputs.
Source: GLEAM.

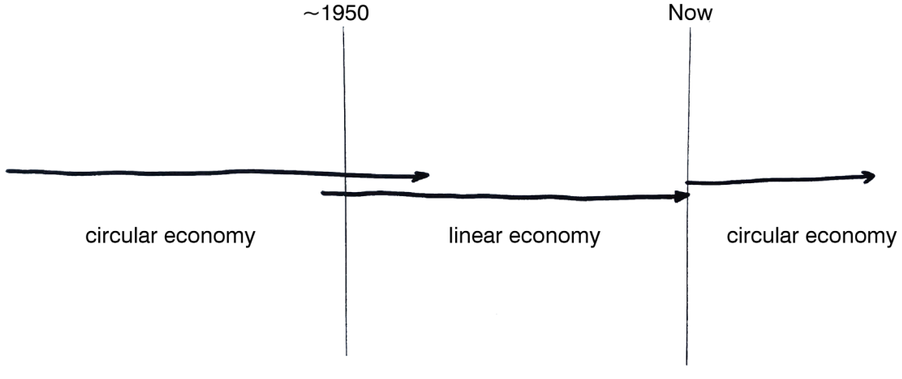
fig.49: Global estimates of emission by species

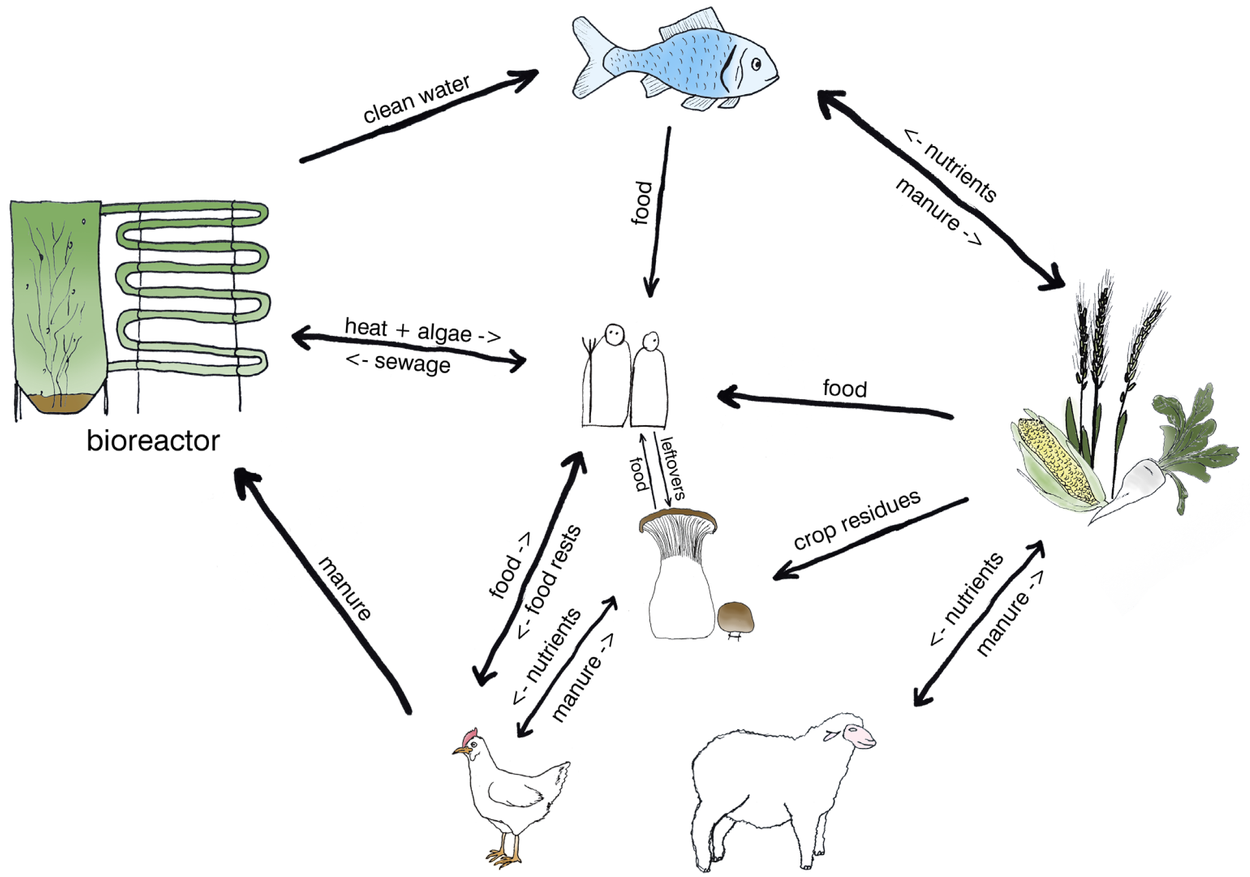
fig.51: buildings for the circular agriculture



Due to the industrialization of agriculture and the cheap transport of overseas feed, circular agriculture was replaced by linear agriculture. However, with the current impact on the environment, and strongly changing prices such as wheat or fertilizer due to the Ukraine crisis, it becomes more important to be more independent. This independence can be created through a circular economy.







In Oberaschbach, circular agriculture with closed material cycles could look like this. Here, no leftovers would be created, and there would be no need to buy-in fodder. The waste of the other animals is sufficient as fertilizer; the seeds can be used again for coming seasons. Only seeds for new plant species have to be purchased.
The range of products that the farmers can sell is more diverse, but it requires expertise in mushroom cultivation, permaculture and the use of bioreactors. The new inhabitants could cover this expertise.

fig.52: fields and trees in Oberaschbach today

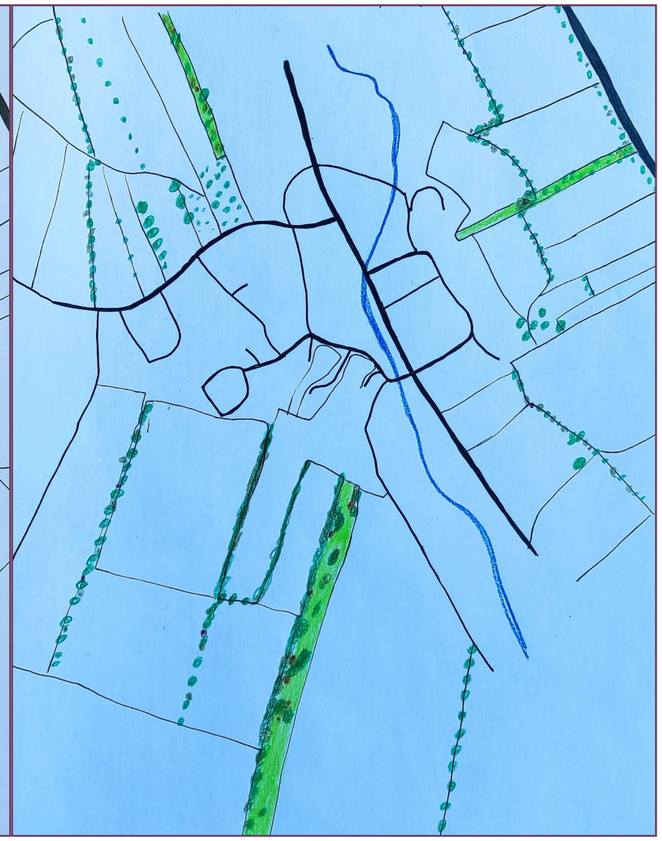
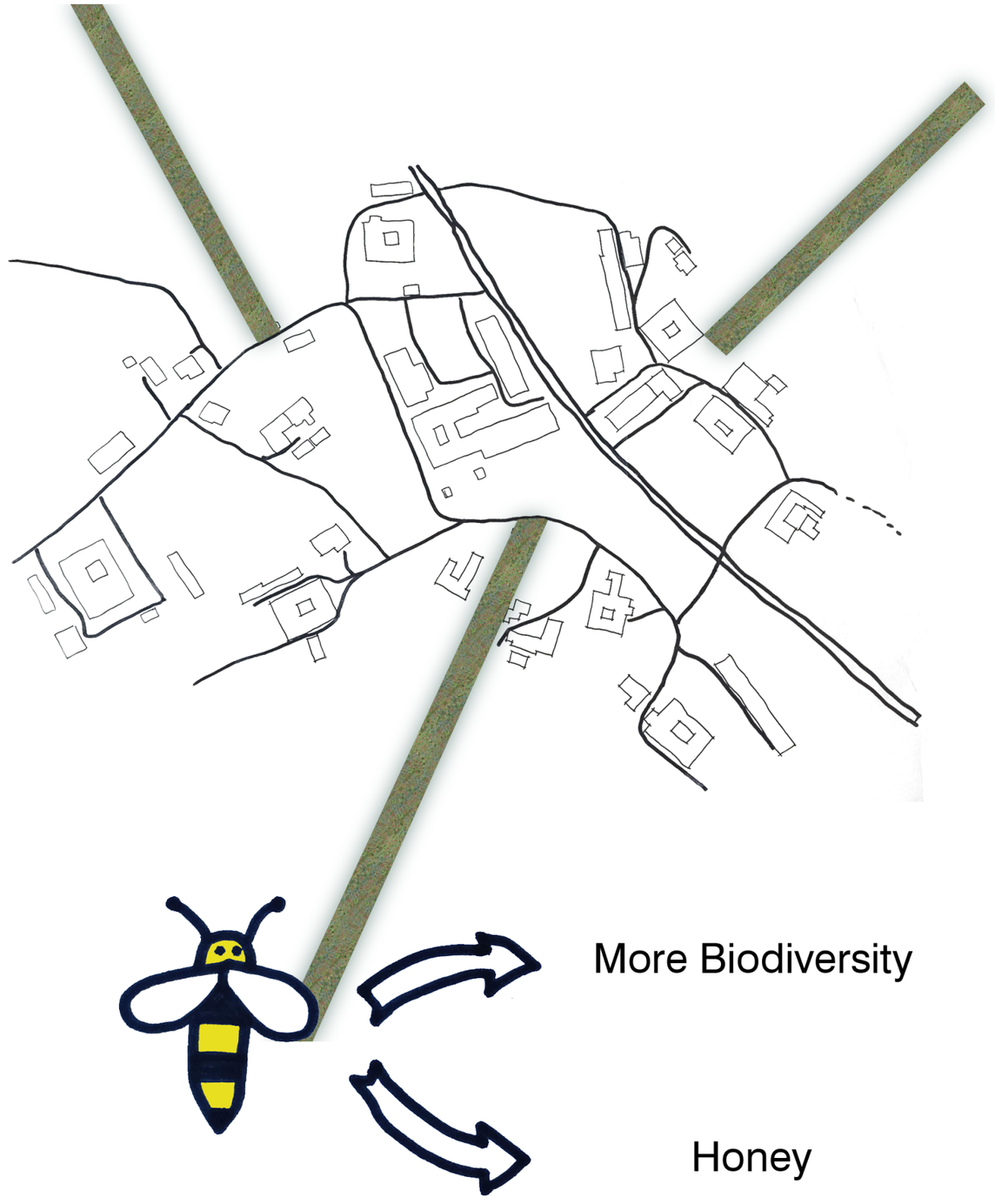
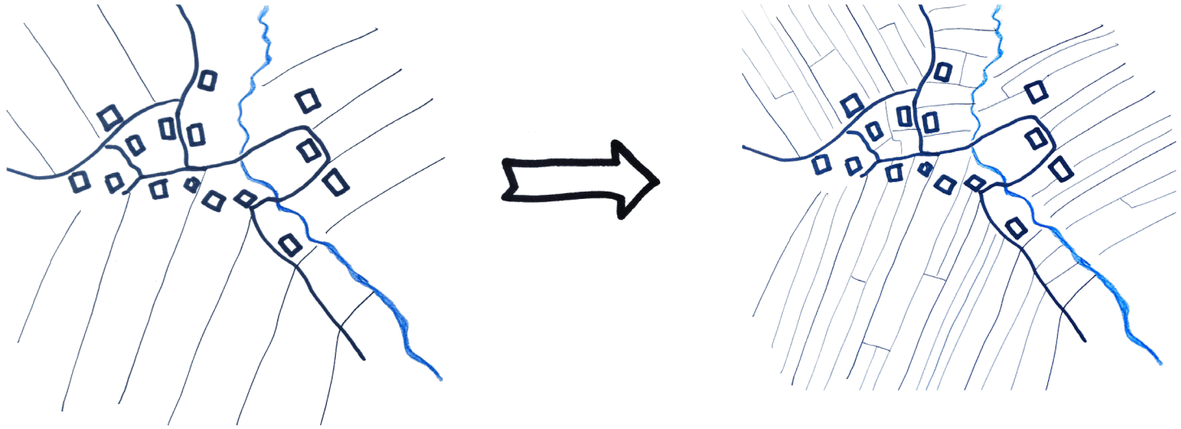


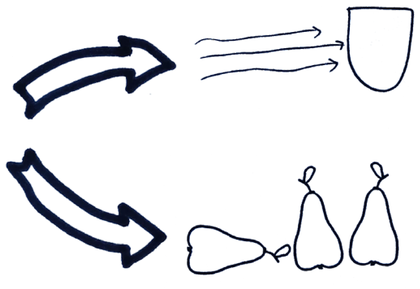
fig.53: different treespecies and flowerpatches

Due to ever-larger fields, the green strips between the fields have been lost over time, but these are very important for insects such as bees. That is why I want to plant more trees around Aschbach. On the one hand, the harvest on the fields is higher, as the vegetation provides wind protection (Ökologisches Bauen, 1986), and on the other hand, these small mixed forests with their roots also help against slope slides. (ELSA, Erosion and Landslides, 2004). Furthermore, rarely mown flower meadows (see sketch on the right in green) lead to more insects such as bees. This also benefits the pear trees and offers the possibility for honey production. However, care should be taken to ensure that these rows of trees are positioned in a north-south direction in order to guarantee good lighting of the fields.



These row trees on the green strips had been hundreds of years pear trees. They marked the borders of the fields, defended the crops from the wind, and provided pears. But through the already mentioned „Kommassierung“ in the 60s, they were cleared. Only a few remained. Nowadays, faster-growing trees or fences block the wind on the fields. The multiple-use disappeared.





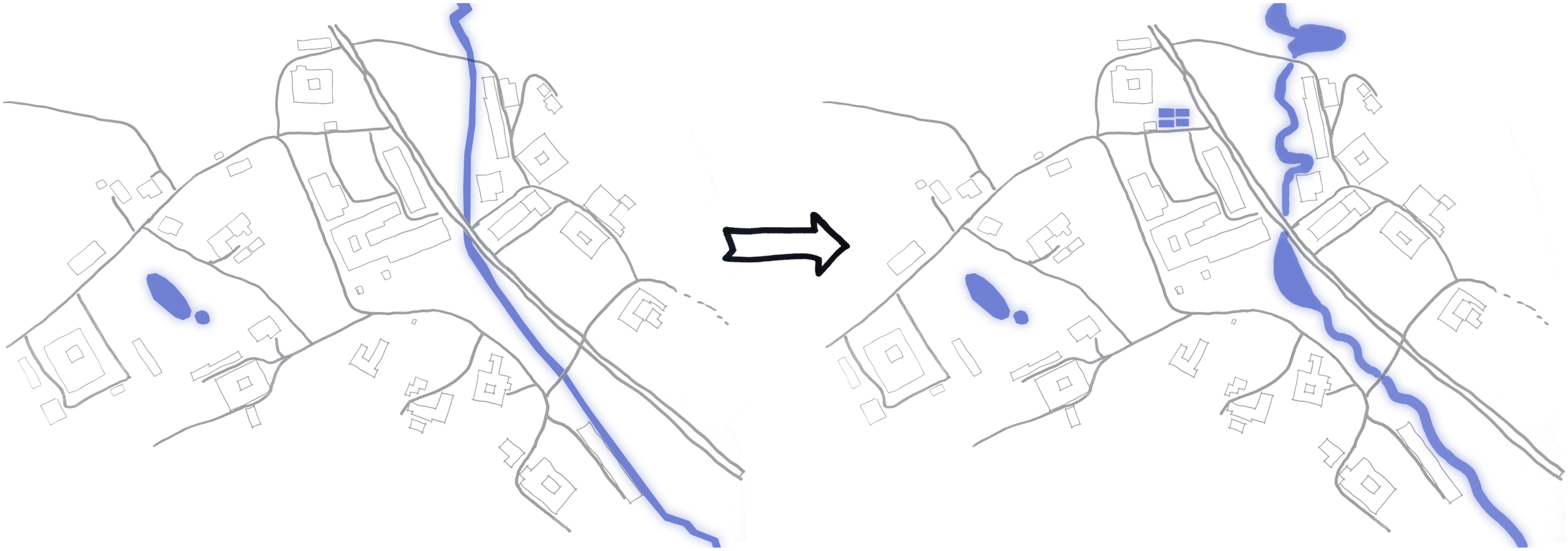
As mentioned, there is the problem of landslides. These occur more frequently due to the compaction of the soil by heavy tractors, fewer trees and hedges on arable land strips that hold the ground in place with their roots, an increase in extreme rainfall events, and the constant use of the same crop rotations in the cultivation of the fields. Intermixing in crop rotations can increase soil quality and increase harvests in the longer term.

conventional crop rotation:

mix with a viarity of different crops:

In order to be even better prepared for extreme weather events, the course of the river is to be renaturalized. The river was straightened in 1974 for the construction of the road and to gain more space for the fields. However, this can become a problem with increasingly heavy rainfall, so the watercourse is to be returned to its original floodplain form. This will lead to more biodiversity and better water quality. It will also provide recreational opportunities.

The pools in the north will be reactivated for fish breeding, and the existing pond will remain unchanged in its existing form.



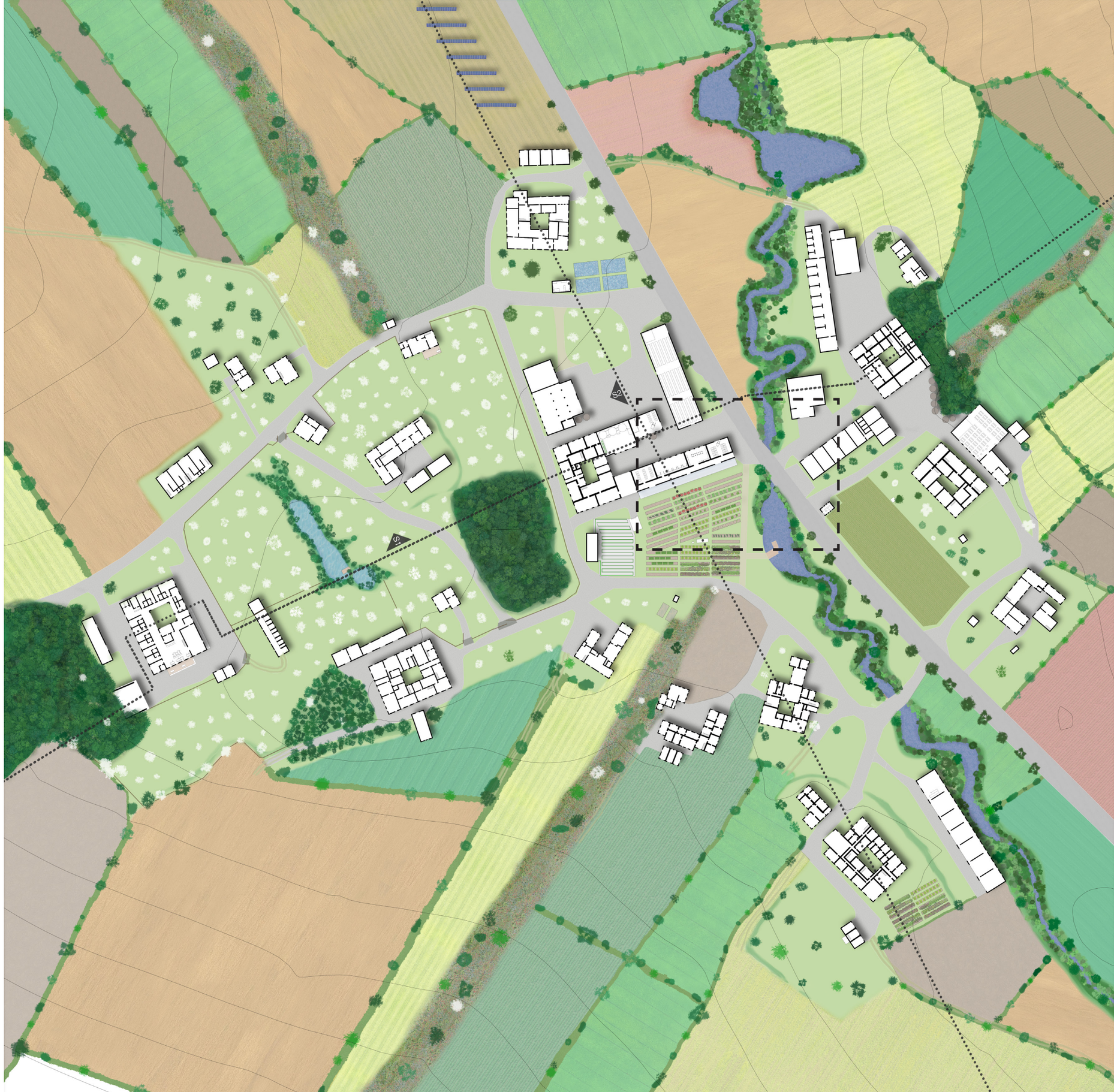
5. Design proposal

The master plan shows a variety of different crops on the fields. The green strips between the fields and flower meadows strengthen biodiversity and provide natural predators against vermin.
The river has been restored to its original riverbed, providing higher flood safety, biodiversity and water retention capacity.

The largest area of the meadow orchards is also used by sheep and other therapy animals of the nursing home, as seen through the fence.

In the center, next to the two bioreactors, one can see the typical farm of the village. The detailed plan on page 112 describes this new center in more detail.

The marked sections 1 (top) and 2 (bottom) are shown on the following pages.



The different facilities can strengthen the community even more. Various living forms like community living and communes will increase cohesion through the inhabitants. With the shared spaces in combination, life and social connections will improve.

e-car sharing & recharging

commune living

co-living

co-working

elderly care

family housing

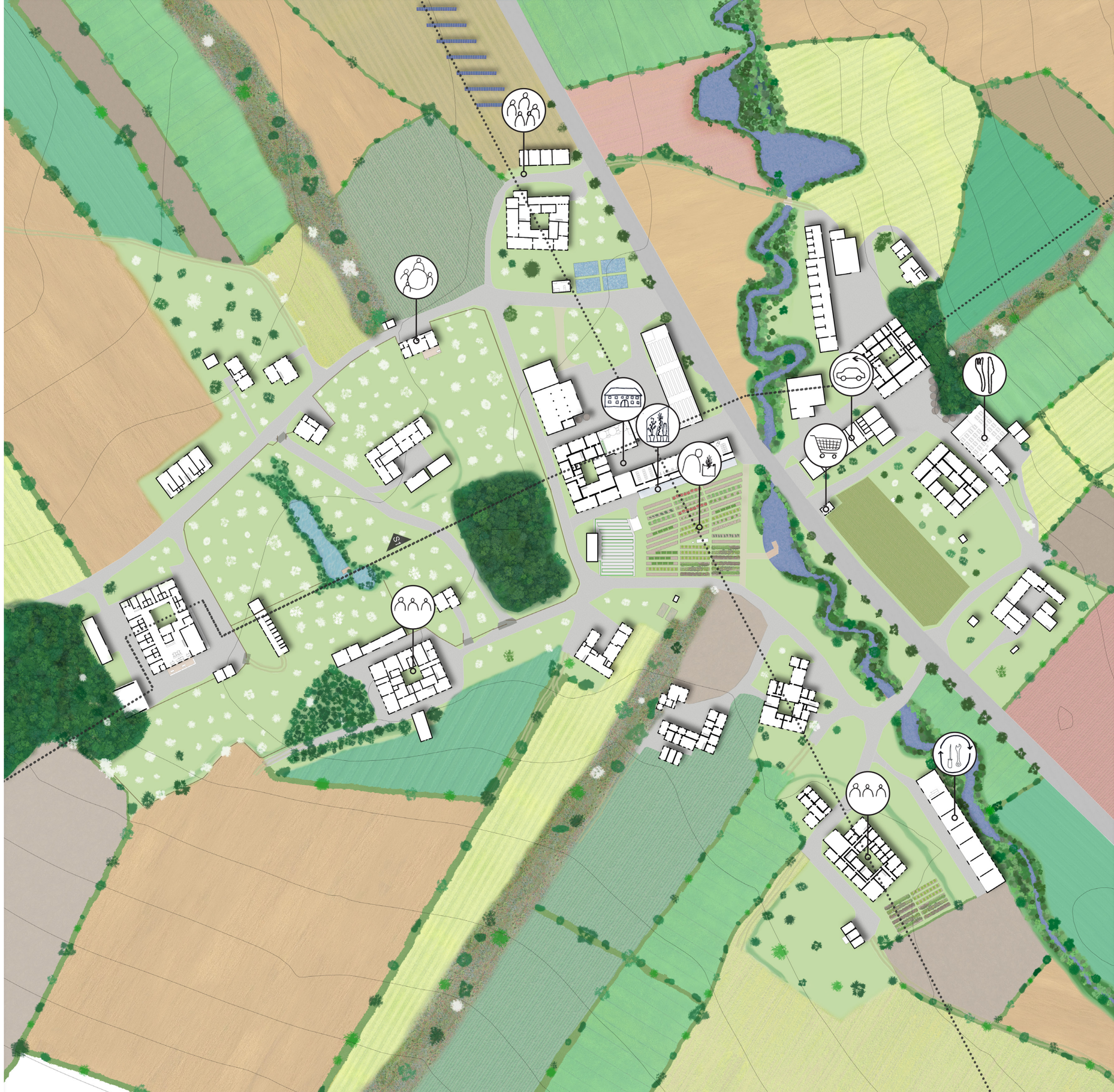
common farm

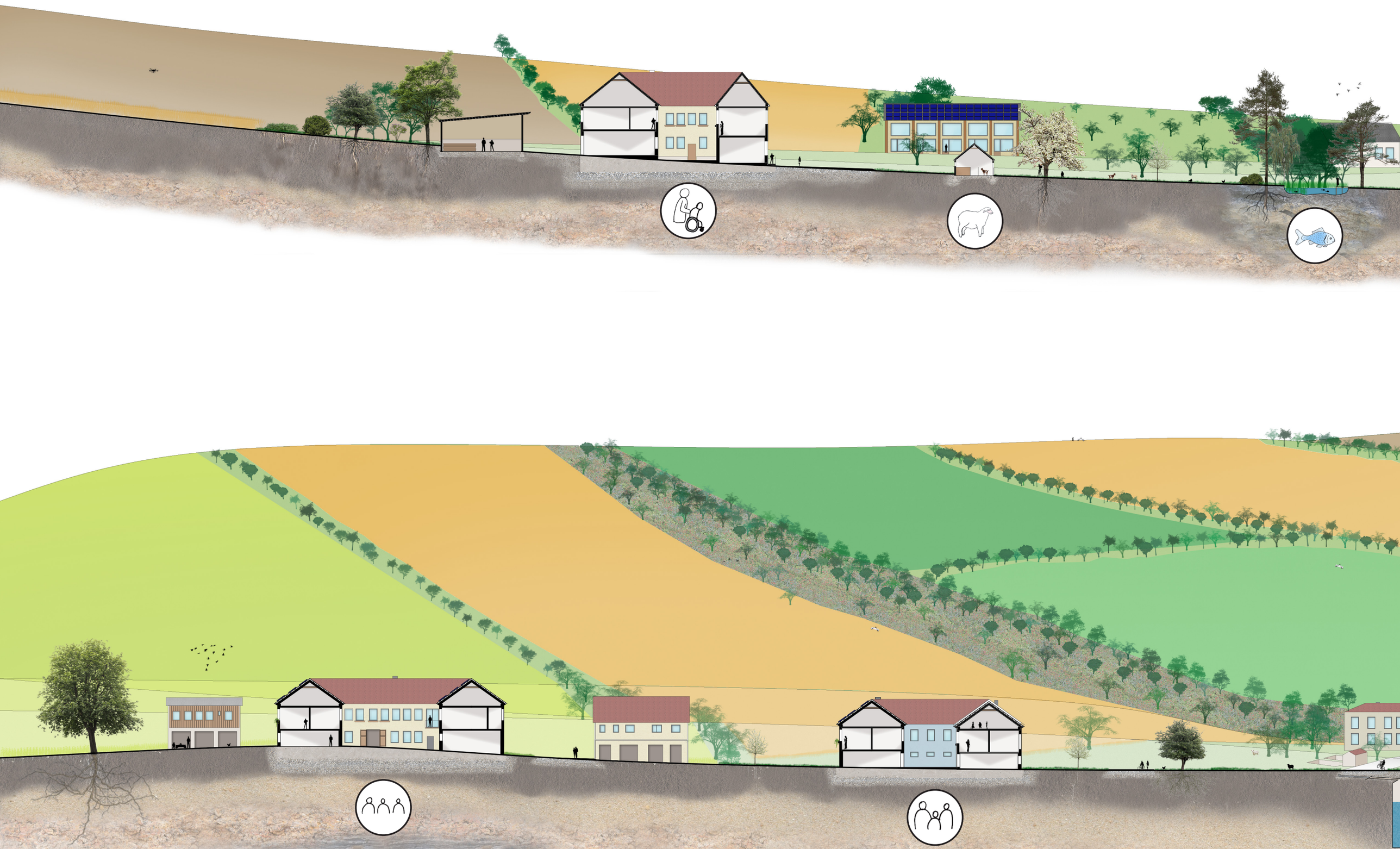
event based restaurant

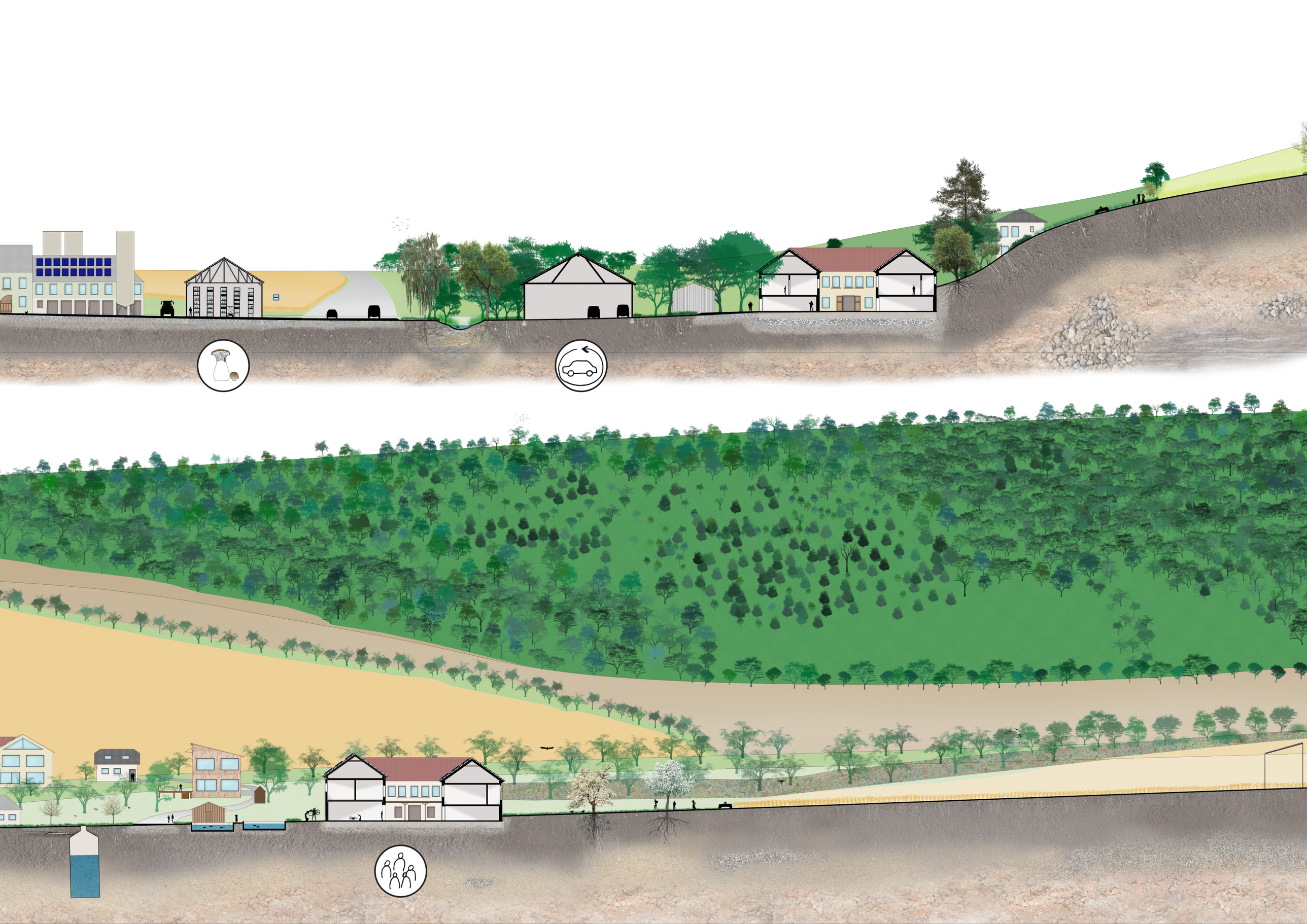
unstaffed store

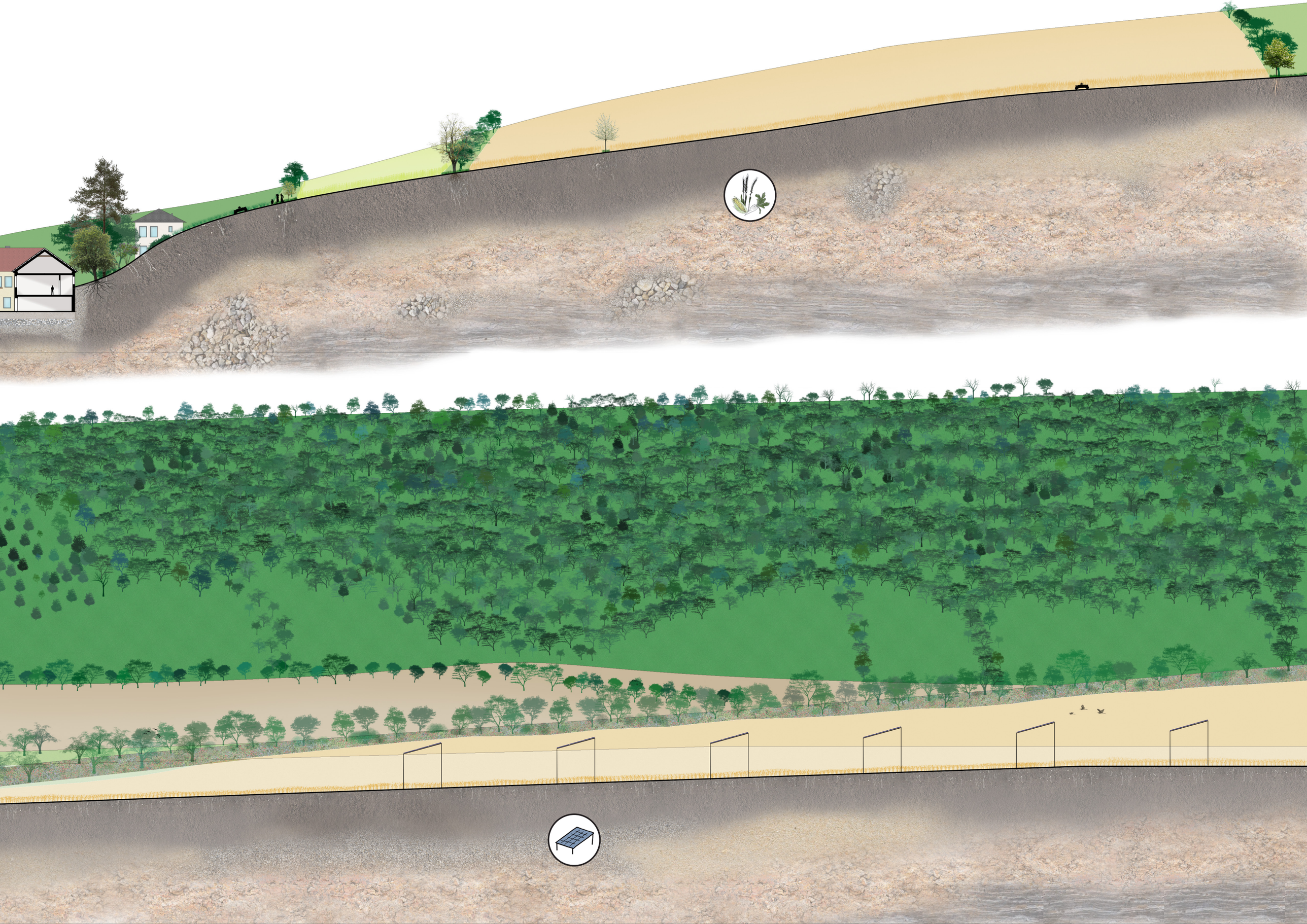
workshop

gardening









different scenarios of the weekly routine of the villagers:

Lukas

Lukas is one of seven children living in the commune in the north. His parents both work in the coworking space as well as on the farm. When Lukas feels like going to kindergarten in the morning, he is driven to Aschbach with the other children. Otherwise he prefers to be with his grandma at the sheeps next to the elderly care home.

Tina has her Ph.D. in Aquaculture and takes care of all the fish in the village and the selling. Her boyfriend Chris grows mushroom cultures in one building of the circular farm and helps Josef from time to time.

Tina & Chris

Karl has lived in Oberaschbach since he was born. He is happy that the village has come back to life. Three times a week he repairs all kinds of machines on the farm, otherwise he pursues his hobby of brewing beer.

Karl

Natasha works different shifts at the nursing home. She loves her job much more than she did in the city and so many young people live in the village. She also appreciates that after the late shifts the small store is still open. The elderly are much happier here,she says.

Natascha

After fleeing Syria, the family is happy to have been taken in by the locals. Esma is a trained programmer who works exclusively from home and Adil is the local expert for the bioreactors. Their daughter has been taken to school in Aschbach with the other children for two years.

Esma, Adil & kids

The couple was unsure at the beginning if the village might be a cult. But the fear has faded during the collective barbecues and conversations with the people. Laura is a botanist and sells plants whose profit goes to the community. Fabian commutes to Vienna once a week for meetings with four others from the village, otherwise he can be found in the coworking space.

Laura & Fabian

Josef is a trained carpenter and prefers to spend every day in the workshop. He very much appreciates the joint celebrations in the village, and is already restoring other houses outside the village with the other craftsmen in the community.

Josef

This visualization illustrates the co-working space. It is the only building that will be newly constructed. Here, people can exchange ideas and pursue their remote work.

The beehives in the flower meadows provide security for the pollination of the trees and plants and give honey. The hens are allowed to roam freely in the village. The new retirement home and the addition of new residents can create synergies for childcare, education and care for the elderly.

Detailed Plan

Here is the community garden facing the glasshouse and the community farm. A shared kitchen and the infrastructure for the drones and farm robots are in the building. The photovoltaic system powers these. The pictured terrace in the south can be used for barbecuing, making music, gardening, or more.

6. Conclusions

6.1 Conclusion

Revitalizing the village into a self-sufficient, affordable and attractive community will create a sufficiency and sustainability community. New job opportunities are created through the proposed circular agriculture and elderly care. In addition, the number of inhabitants will rise, attracted by the proximity to nature, leisure activities, good internet connection and an affordable place to stay.

It will create a farm and a village network resistant to upcoming global changes. Resilience is achieved through circular agriculture, responsiveness to local conditions, restoration of pre-industrial nature and, above all, through creative people given the space and the technical tools.
The village can become an innovative incubator village as a prototype for other towns.
Because without the countryside and their village communities, global change will not be possible. As urban designers and architects, we should look at the whole picture; rural and remote solutions are as crucial as a climate-resilient city.

Communities like a village have functioned well for thousands of years and have been torn apart by industrialization and individualism. As planners, it is not only our job to design buildings and streets that people feel comfortable in, but it is essential to shape society. It is often misunderstood that changing a climate-friendly lifestyle is renunciation or a step back into the past, but this is not the case. On the contrary, it benefits the emotions and joy of living a healthy and long life in a community and harmony with nature.

The literature mentions the following elements typically found in ecovillages but are not or only little present in current villages or cities. These could also serve as a guide for cities.:

Pooled Economy, shared work, Work-life balance, inclusive decision making, conflict resolution, limited hierarchy, dimensioned communal group, celebration, new values and common worldview, deeper personal relationships and openness, physical contact, child-centered perspective, self-development practices, inclusiveness, emphasis on arts and culture, healthy food, physical activity, proximity to nature, environmental activism and ecologically responsible behaviors. (Robert Hall, 2015)

To create richer and more fulfilling ways of life, transformations in villages like Oberaschbach are needed to counteract consumerism, the destruction of natural habitats, and urban sprawl.

6.2 Reflection

In my bachelor thesis, I wrote about the problems of the most popular housing choice, single-family homes. Furthermore, I showed projects with almost the same requirements as a single-family house but more environmentally friendly. Since then, I have seen the effects of modernism, industrialization and individualism every day. Therefore, with my master thesis, I wanted to present a concrete example that can be one recipe of many against it.

At the beginning of the master thesis, I wanted to find solutions in remote areas to prevent the steady urban exodus. The idea of the broadacre city and garden city were wrongly transformed into commuter villages that promoted living in the green but, in reality, are just small excluded housing entities. Boosted by the construction industry to a lifestyle with separated functions. In Oberaschbach, the same trend is on the way to occur. Many farms have already been converted into single-family homes. The commuting is increasing, and most the people don´t know their neighbors.

In my master thesis, I wanted further to address this problem of suburbanization and urban sprawl. Through research work, I found many projects and solutions that allow sustainable living in the countryside.

With this project, I want to show that former village structures with a communal way of living and a circular economy are a way to new resilient housing. A lot of time and love has gone into this project, as it is my concern to develop solutions that serve as a basis for other villages.

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7.2. images

fig.1: Oberaschbach orthofoto
Source: https://publicmaps.gisquadrat.com/BP/WEPM.aspx?site=GMSC&project=ASCHBACH_30504&lang=de-de&mv=23f0f448-ce56-4f75-a3d7-6a691f969dc6

fig.2: field cultivation in the past
Source: https://www.ndr.de/geschichte/chronologie/Landleben-gestern-und-heute,landleben133.html

fig.4: Slaughtering and preperation
Source: https://www.ndr.de/geschichte/chronologie/Landwirtschaft-im-Wandel-Vom-Handwerk-zur-Robotertechnik,landleben135.html

fig.3: Hay harvesting
Source: https://www.ndr.de/geschichte/chronologie/Landwirtschaft-im-Wandel-Vom-Handwerk-zur-Robotertechnik,landleben135.html

fig.5: Kitchen
Source: https://www.derstandard.at/story/2000101520790/das-idyll-vom-landleben-das-es-nie-gab

fig.6: Shared meal
Source: https://www.derstandard.at/story/2000101520790/das-idyll-vom-landleben-das-es-nie-gab

fig.11: Emigration to the city by economic reasons
selfmade sketch

fig.9: mechanism revealed more efficiency
selfmade sketch

fig.7: typical old village structure
selfmade sketch

fig.12: the large farmers can extend their fields
selfmade sketch

fig.10: and therefore larger fields
selfmade sketch

fig.8: former field division
selfmade sketch

fig.13: the first Tractors
Source: https://www.ndr.de/geschichte/chronologie/Landwirtschaft-im-Wandel-Vom-Handwerk-zur-Robotertechnik,landleben135.html

fig.14: automatic Tractors
Source: https://www.ndr.de/geschichte/chronologie/Landwirtschaft-im-Wandel-Vom-Handwerk-zur-Robotertechnik,landleben135.html

fig.15: demographics 2001
self made statistic out with the Data from Statistik Austria:
https://www.statistik.at/blickgem/gemDetail.do?gemnr=30504

fig.16: demographics 2021
self made statistic out with the Data from Statistik Austria:
https://www.statistik.at/blickgem/gemDetail.do?gemnr=30504

fig.17: Number of households per person in Aschbach Markt
self made statistic out with the Data from Statistik Austria:
https://www.statistik.at/blickgem/gemDetail.do?gemnr=30504

fig.18: Types of habitation in the course of time
sketch out of Icons,
Source: https://www.flaticon.com/

fig.19: Number of living spaces based on their size in Aschbach Markt
self made statistic out with the Data from Statistik Austria:
https://www.statistik.at/blickgem/gemDetail.do?gemnr=30504

fig.20: average living space per Person in Austria, Source: Statistik Austria, 2022

fig.21: real estate prices on the rise in cities
Source: Österreichische Nationalbank, 2022
self made statistic out with the Data: https://www.oenb.at/isaweb/report.do?report=6.6

fig.22: Land prices per m^2 of building land of municipalities throughout Austria
Source: bodenpreise.at, 2020
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fig.23: loneliness in Austria, ORF science 2022
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fig.24: Mostviertel
Source: https://www.mostviertel.at/video-mostviertel-von-oben

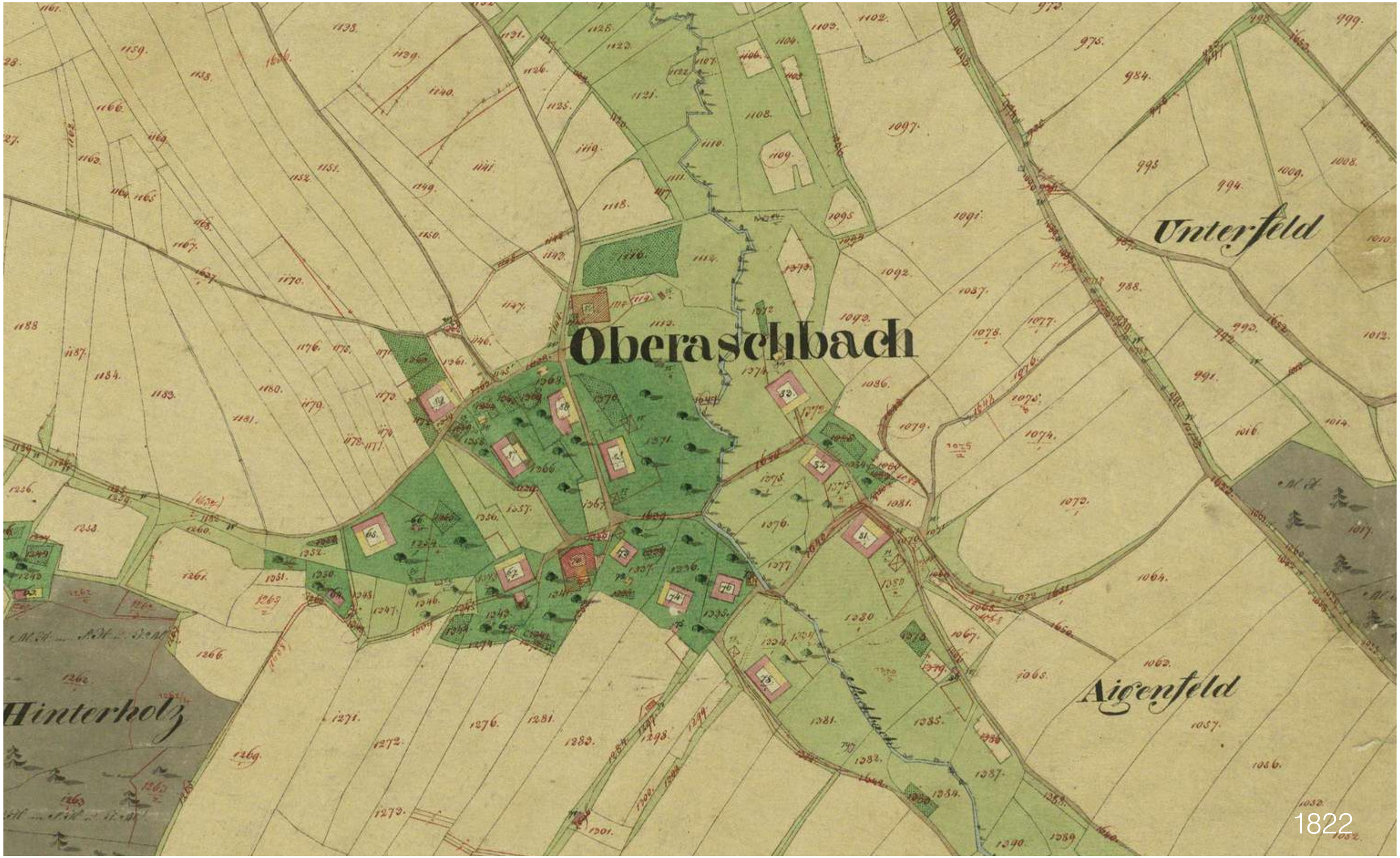
fig.25: Ostarrichi and its expansions
Source: https://www.deviantart.com/jonasgraf/art/Keltenkreuz-Minis-Episode-1-The-Ostarrichi-714376983

fig.26: Map of Mostviertel
Source: https://de.wikipedia.org/wiki/Erlauf_(Fluss)#/media/Datei:Karte_der_Eisenwurzen.svg

8. Appendix


1780


1810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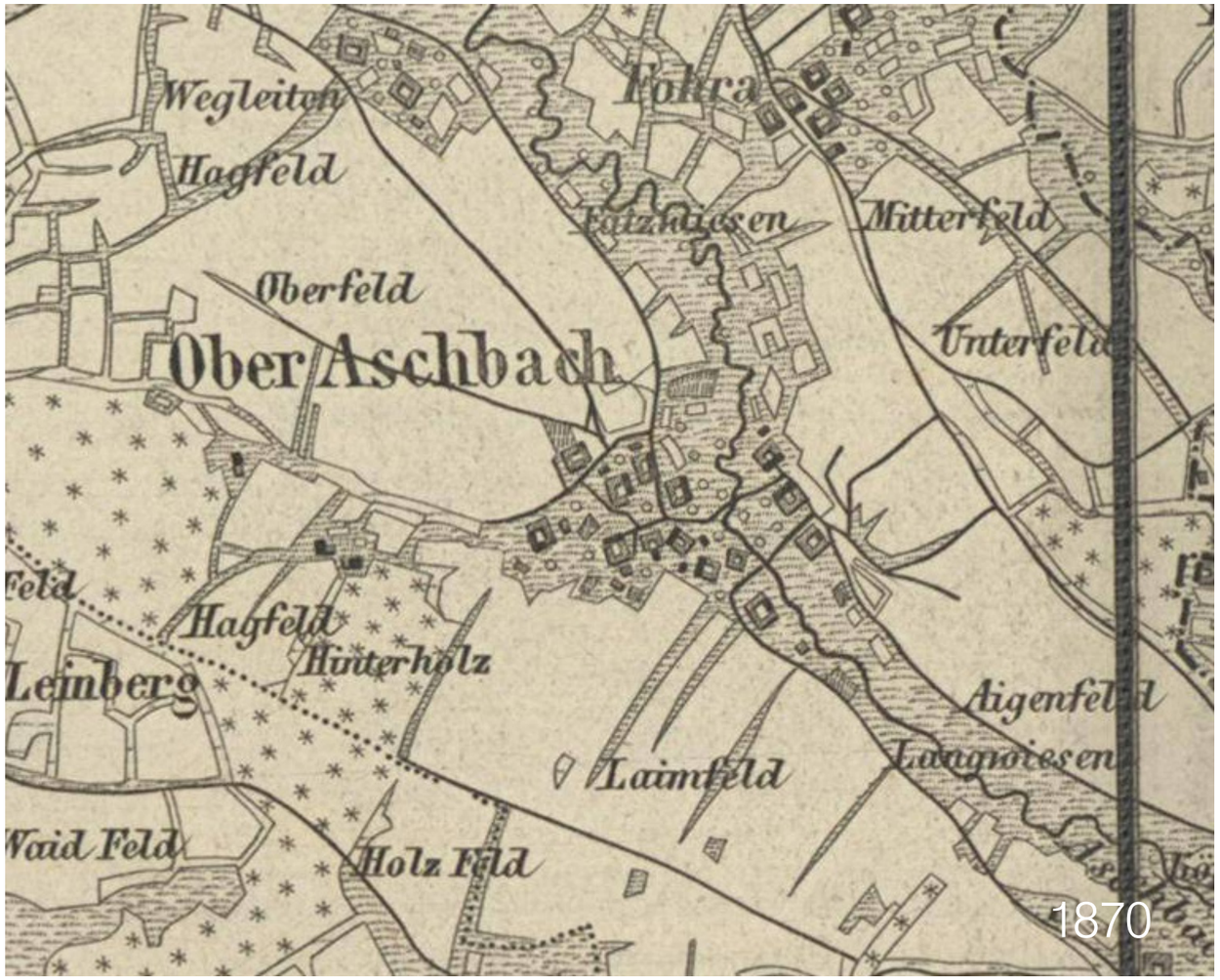
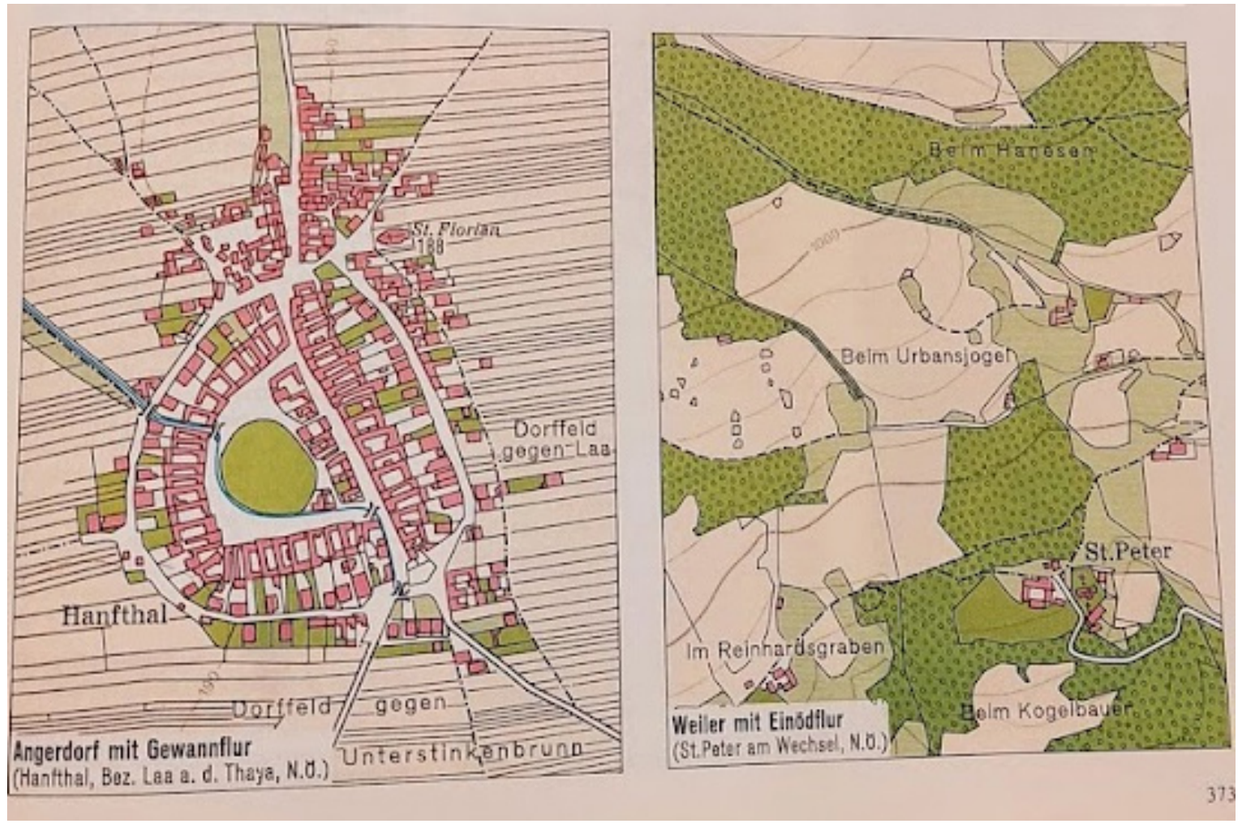
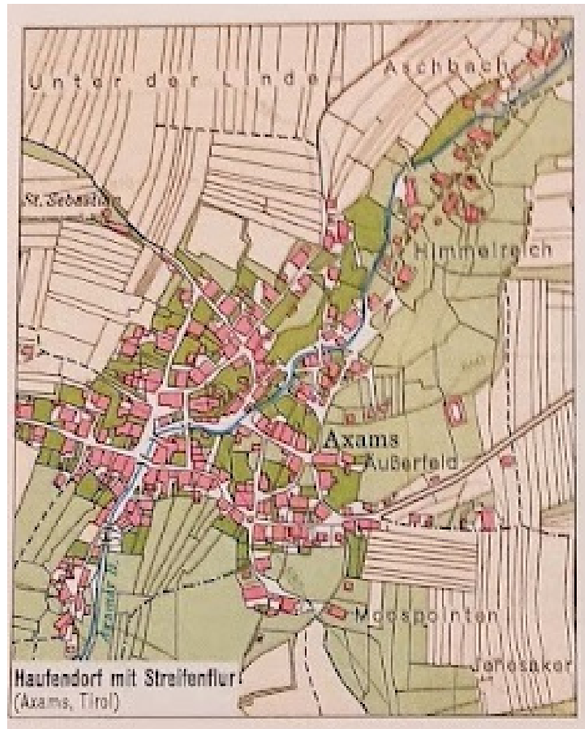
Unterfeld
Hinterholz
Aigenfeld
1822

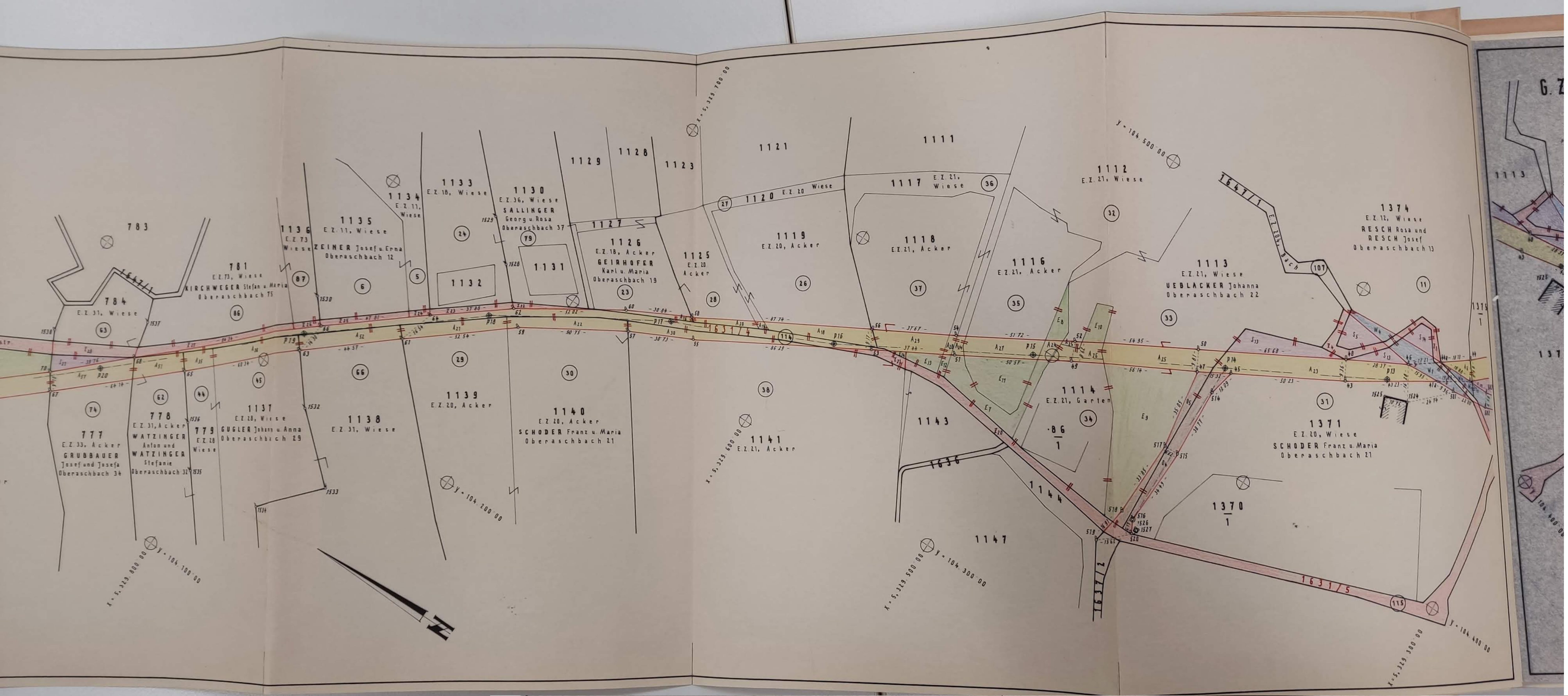


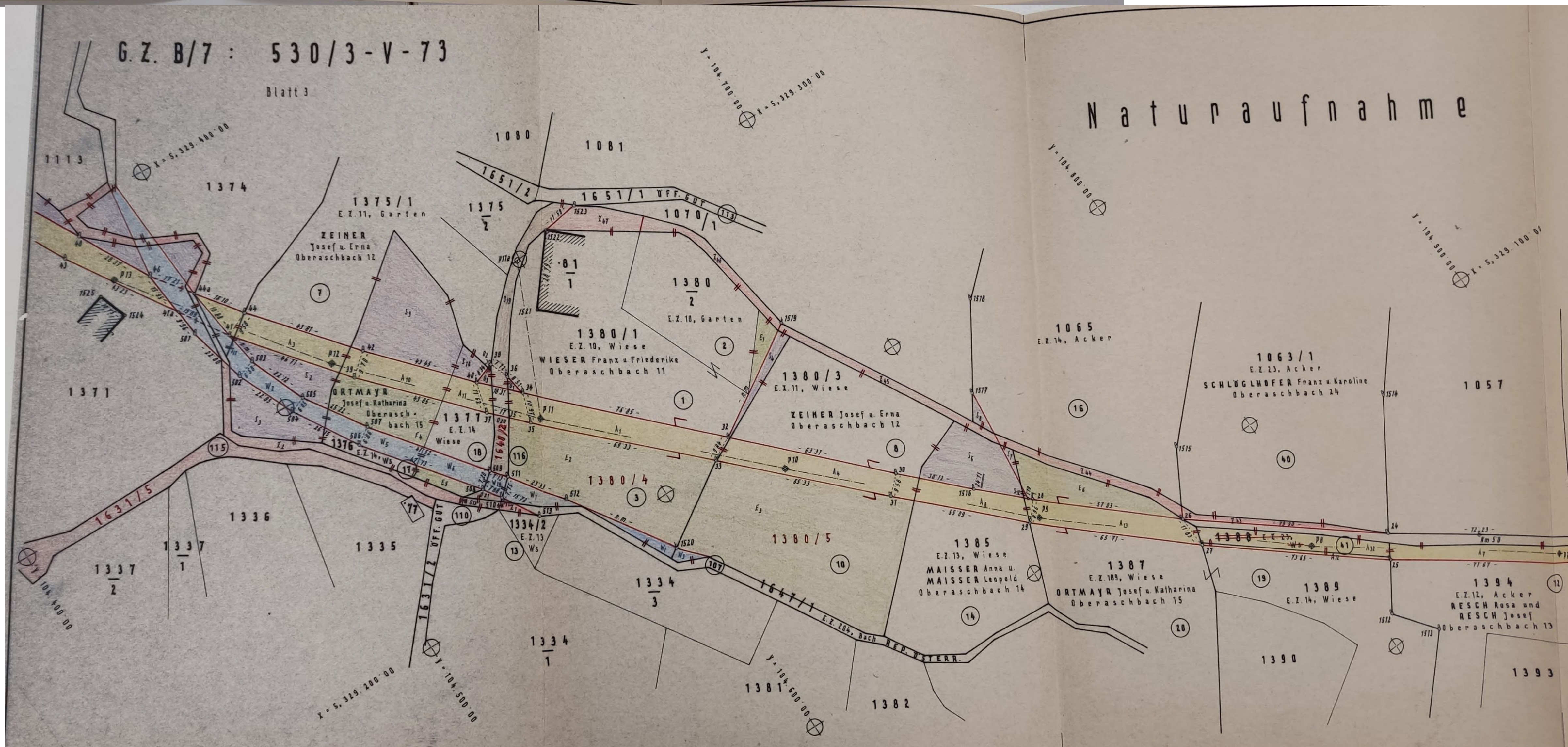




the historical plans shown on the previous pages are all from the same source.
Source: https://maps.arcanum.com/de/map/cadastral/?bbox=1639093.658169251%2C6122086.686082048%2C1641366.465432168%2C6122916.744436083&layers=3

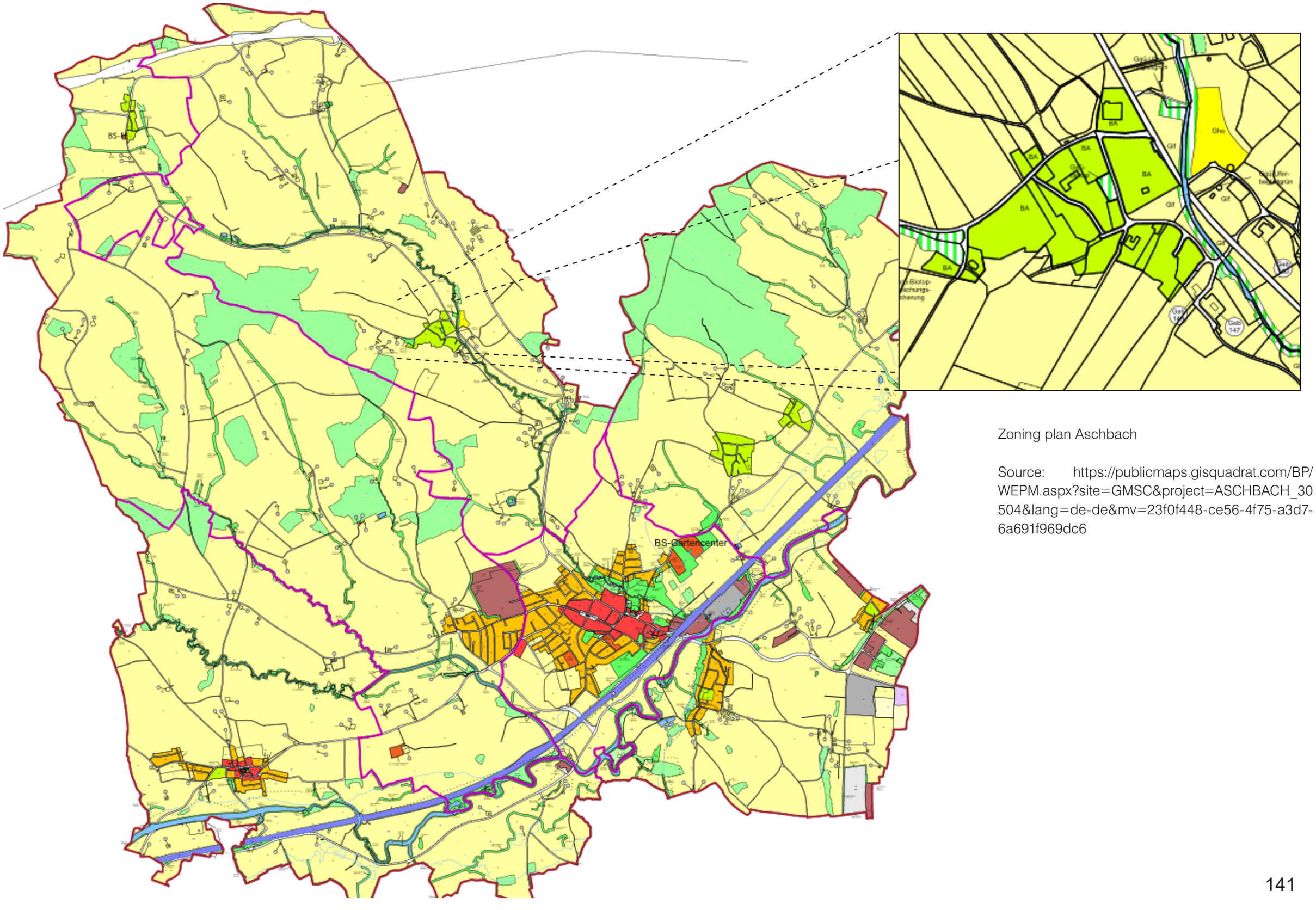
some different forms of settlements in Austria
source: Österreich von A bis Z see literature references





Plans of construction of the road and straightening of the river 1974.

Source: Municipality Aschbach-Markt



Zoning plan Aschbach

Source: https://publicmaps.gisquadrat.com/BP/WEPM.aspx?site=GMSC&project=ASCHBACH_30504&lang=de-de&mv=23f0f448-ce56-4f75-a3d7-6a691f969dc6