

**Faculté d'architecture, d'ingénierie
architecturale, d'urbanisme**

CO-HOUSING : AN OPPORTUNITY FOR SUSTAINABLE URBAN DEVELOPMENT IN RURAL AREAS ?

THE CASE OF KELMIS

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The case of Kelmis

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#0

COMPILATION OF DEFINITIONS

Defensor von Ligugé

Ende des 7. Jh. stellte Defensor (D.), Mönch des Martinklosters Locagiancense (Ligugé, südlich von Poitiers) ein moralisches Florilegium mit dem sprechenden Titel Liber scitillarum aus Bibelzitatzen (vornehmlich aus dem Spr. Sir) und Kirchenväterexzerpten (bis v. Sevilla) in 81 gleichartig gegliederten Teilen zusammen, ohne dem selber etwas zuzufügen. Diesem umfangreichen Nachge- und Bildungswerk mit spiritueller Kam in der Folgezeit eine reiche Vor- und Wirkungsgeschichte zu. Viel liefern zusätzlich eigene Prologe.

"IF LANGUAGE IS NOT CORRECT, THEN WHAT IS
SAID IS NOT WHAT IS MEANT. IF WHAT IS SAID IS
NOT WHAT IS MEANT, THEN WHAT OUGHT TO BE
DONE, REMAINS UNDONE."
(CONFUCIUS, n.d.)

Co-housing

"Co-housing are a group of homes that include some shared facilities (= areas, rooms, equipment, or services for particular activities)" (Co-housing, 2024).

"Co-housing communities are characterized by 'several, fundamentally independent housing units, which are inhabited by families, individuals or groups that cooperate on a range of activities in relation to their daily household work" (Durett, Yang, Lin, Nash & Kongkhajornkidsuk, 2022).

"Co-housing is a way of life in which residents not only get to know their neighbours and enjoy a real sense of community, but jointly manage their living environment together. As well as their own private home, each resident household benefits from the extensive shared spaces and facilities that enrich the living experience and encourage a more social way of life" (Lane, n.d.).

"Co-Housing developments vary in size, location, type of ownership, design, and priorities. Yet in our research we were able to identify four common characteristics:

- *Participatory process: Residents organize and participate in the planning and design process for the housing development, and are responsible as a group for all final decisions.*
- *Intentional neighborhood design: The physical design encourages a strong sense of community.*
- *Extensive common facilities: An integral part of the community, common areas are designed for daily use, to supplement private living areas.*
- *Complete resident management: Residents manage the development, making decisions of common concern of community meetings" (McCamant, Durett & Hertzman, 1994).*

High-functioning neighbourhoods

"Places where people feel a strong sense of belonging, identity, and accountability" (Durett, Yang, Lin, Nash & Kongkhajornkidsuk, 2022).

Public housing

"(in the US) Houses and flats that are built by the government for people who do not have enough money to pay for private accomodation" (Public housing, 2015).

Sealed area

"Sealed area is land covered with impereable materials as a result of urban development, infrastructure construction or change in the nature soil, leading to impermeability, loss of agricultural or forestry areas and ecological soil functions severly impaired or prevented (e.g. soil working as a buffer and a filter)" (Ministerium der DG, 2022).

Social cohesion

"Social cohesion refers to the extent of connectedness and solidarity among groups in society. It identifies two main dimensions: the sense of belonging of a community and the relationships among members within the community itself" (Manca, 2014).

Social housing

"(in Britain) Houses or flats that are provided by a local council or another organisation for people to buy or rent at a low price" (Social housing, 2015).

Social mix

"Refers to the diversity of levels of income, tenure and social class in a given neighbourhood. For a vast array of reasons, the term is often used in public policies to refer to the introduction of more middle class households/homeowners/private tenants in an area with a high proportion of social housing dwellings" (The meaning of 'social mix', n.d.).

#1

INTRODUCTION





"A NEW WAY OF DOING [ARCHITECTURE]
NECESSARILY IMPLIES NEW PROCEDURES."

(PAISAJE TRANSVERSAL, 2018
as cited in Avilla-Royo, 2023)

1.1 Personal perspective

Over the past few years, I have had the opportunity to work as a student at ÖWOB (Öffentlicher Wohnungsbau Ostbelgien), the public housing provider in the German speaking part of Belgium, where I have gained insights into the challenges of public housing. This master's thesis is an opportunity to delve deeper into the subject, to find answers about the progress of public housing in East Belgium, while at the same time contributing to the advancement of knowledge and experiences that can be transferred elsewhere. The German speaking part of Belgium has been conferred the responsibility for housing policy in 2020 from the Walloon Region. This includes the responsibility of public housing policies and the creation of new legislation on spatial planning. In this context, ÖWOB, as the only provider of public housing in East Belgium, wishes to find a new vision for the future of public housing (combining affordable and social housing) together with the politicians.

One of the aims of this thesis is to use different techniques to find out what public housing in the German speaking part of Belgium could look like, as there are still public development areas consisting of different plots of land that could be built in new districts. The question remains how to develop and create an active living space with a lot of diversity (age, origin, money, education, etc.) to achieve the goal of the new Leipzig Charter (European Commission, 2020).

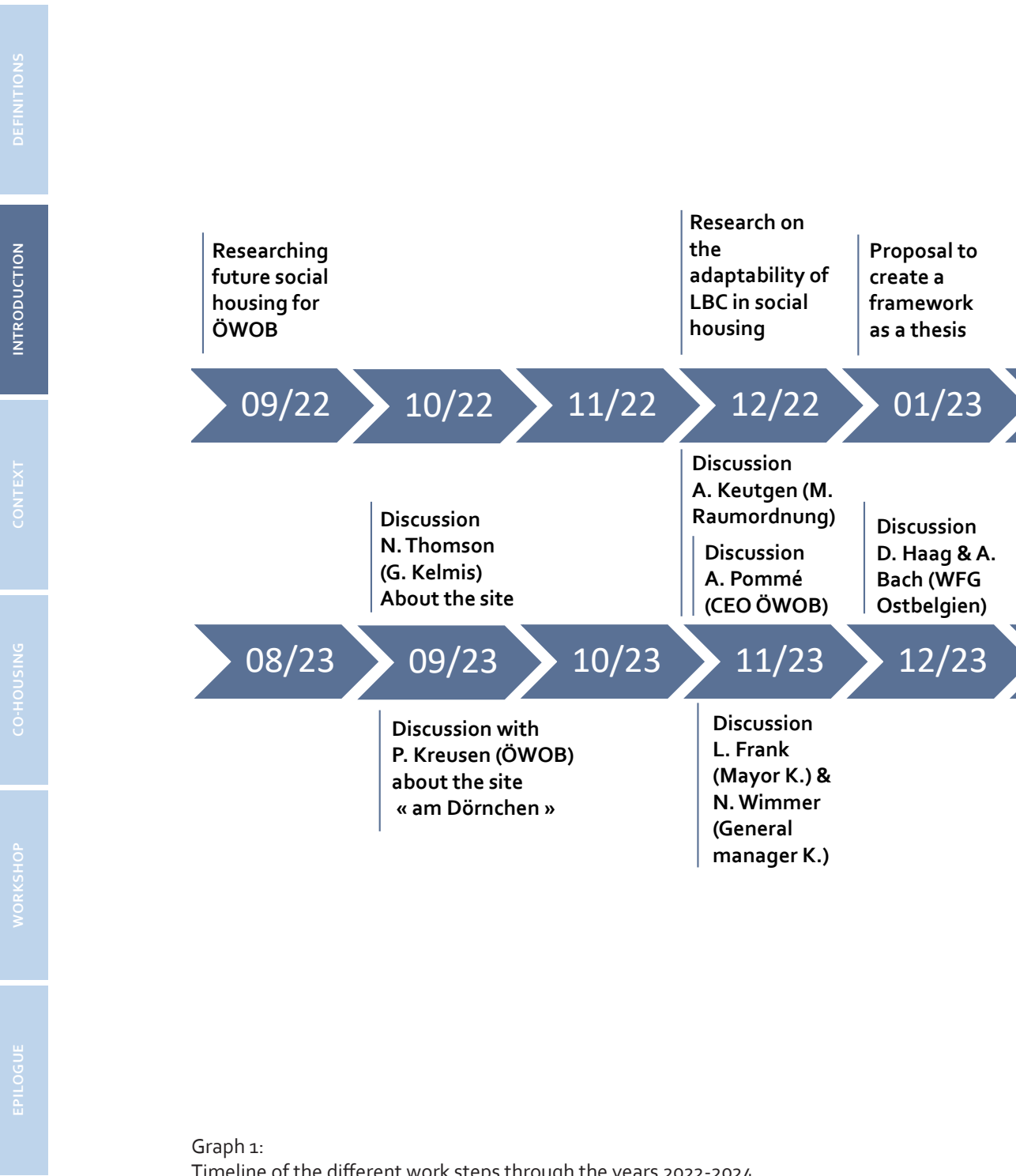
As Holzer and Reiter emphasised, architecture is a team effort that should develop and pursue a common goal, communicating an attitude but being flexible and open during the process (Holzer & Reiter, 2022). This is in line with my view of architecture, as I believe it is at its best when the design process is led by the people who will live in it, as they know best what they need. Obviously, there are other factors that must be considered as well, such as the needs of commissioning bodies (e.g. financial viability), the general direction of current and future housing policy, and issues such as the climate crisis and community integration, including the objective of achieving a certain social mixity. This master thesis presents an attempt to investigate deeper into these complex scenarios.

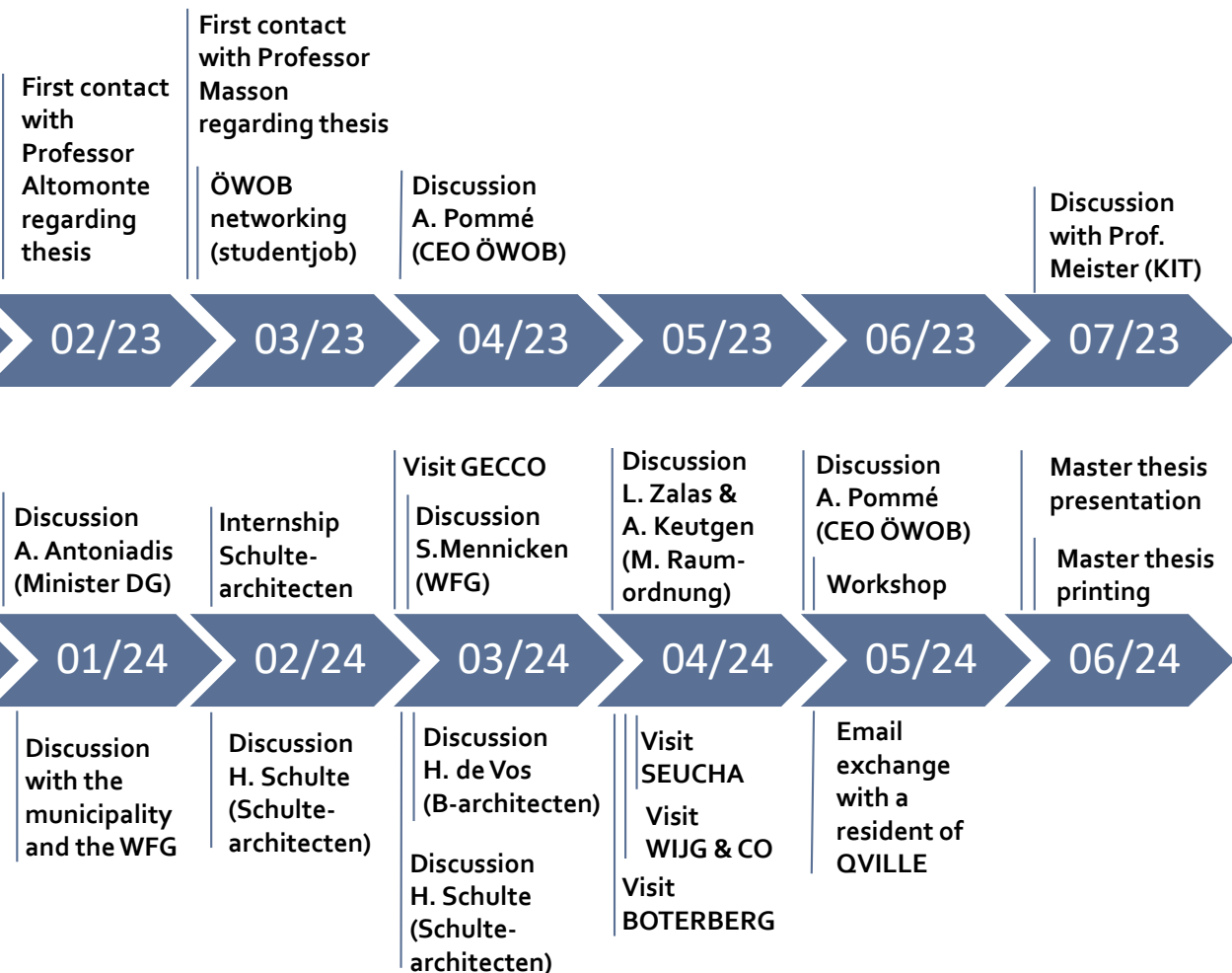
1.2 Research framework & objectives

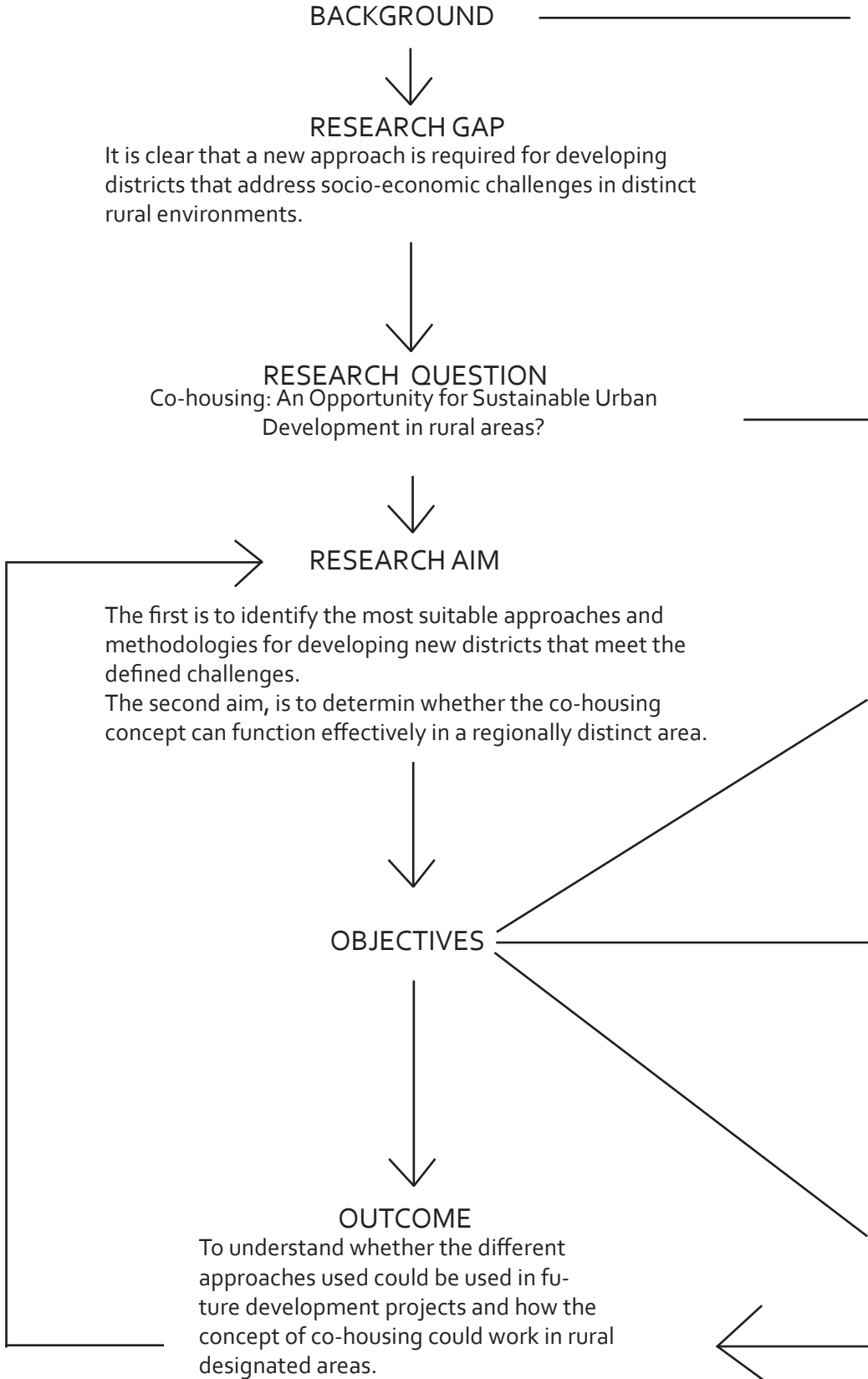
Grounded in this context and conceptual framework, this thesis progressed through extensive discussions with various stakeholders and experts in the field. These dialogues enabled the development of a clear understanding of the needs and required research. As shown in graph 1, after several months of academic and practical investigations, the exchanges helped clarify the research gaps and refine the research questions. It goes without saying, that a new approach in rural area is required for developing districts that address socio-economic challenges in distinct rural environments.

With this perspective, several hypotheses emerge. First, although the public housing agency intends to construct additional housing units due to rising demand, policymakers and other stakeholders have not embraced such objectives, as this vision fails to adequately address the prevailing social issues. Second, the delegation of new responsibilities in housing policy to Belgium's German speaking community provides an opportunity to redefine public housing and district development. Furthermore, the current challenges concerning sustainability, discussed in the second chapter, encompass social, ecological, and economic dimensions. These three pillars represents the primary problem areas facing contemporary society.

This background helped me to shape the research question for this master's thesis: "Co-housing: an opportunity for sustainable urban development in rural areas?". The research aims to achieve two objectives. The first is to identify the most suitable approaches and methodologies for developing new districts that meet these challenges. The thesis explores co-housing as a central concept, leading to the second objective: determining whether this concept can effectively address the three pillars of sustainability in a regionally distinct area.





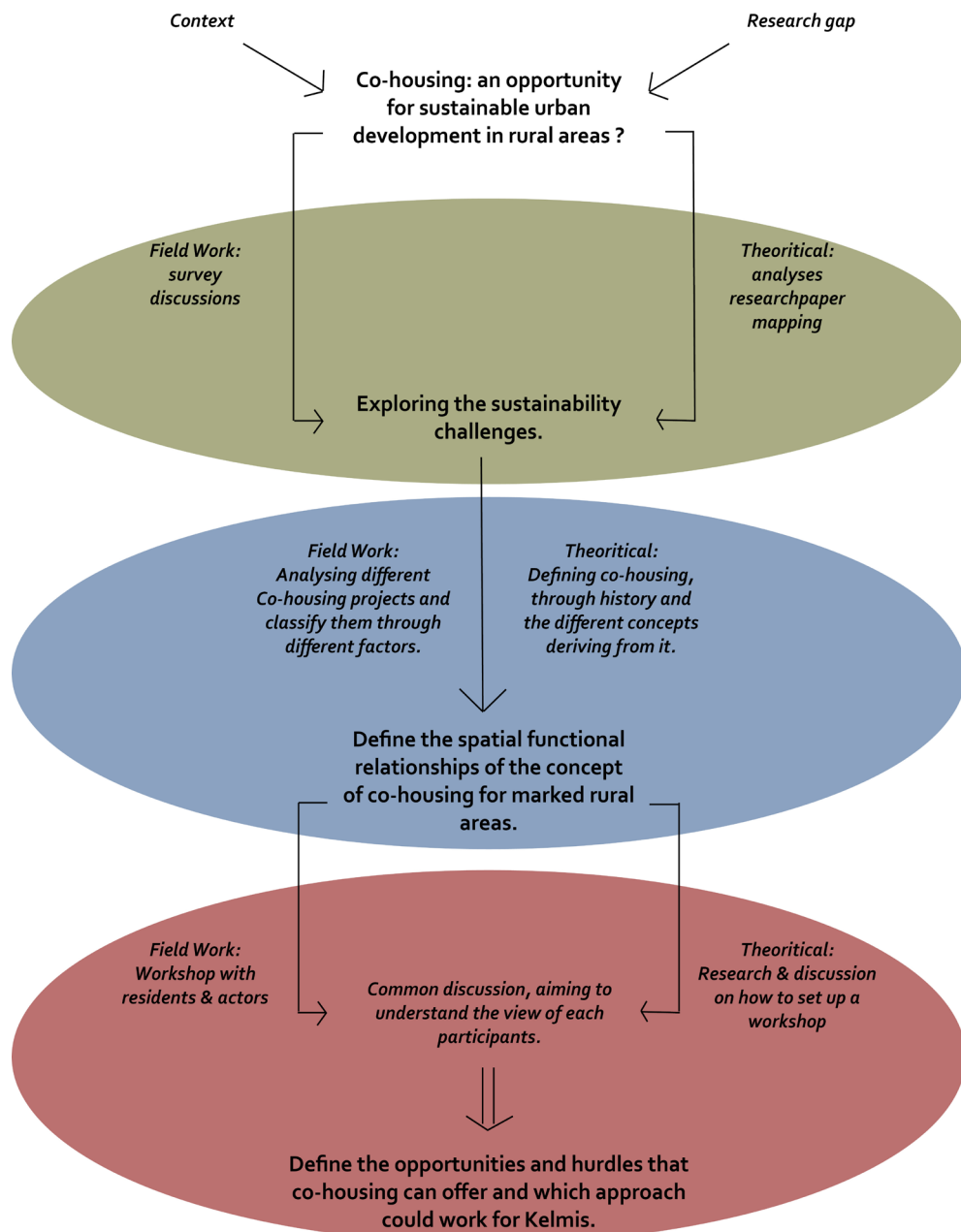


Graph 2:
Research framework

1.3 Methodology

As outlined in the personal introduction, emphasis is placed on considering the population's perspective. This viewpoint informs all objectives, which are addressed through a combination of fieldwork and theoretical approaches. This implies that the research is feasible only with the expertise of various stakeholders and specialists who are familiar with the municipality's situation and the concept of co-housing. In this regard, a significant share of the preparatory work involved numerous email and telephone exchanges to gather new background information and better contextualise the overall process. This collected data was further elaborated upon through subsequent exchanges and interviews, enabling a deeper exploration of key aspects and the main topic. Although these procedures were time-consuming, they proved worthwhile by revealing avenues that helped me to establish a coherent framework.

The primary objective, represented in green in graph 3, required an initial definition of the context and challenges of the location. The theoretical approach involved conducting urban analyses of the municipality of Kelmis, with a particular focus on its architectural and societal characteristics. In addition to urban analysis, I investigated the challenges facing both current and future populations, primarily through economic, ecological, and social lenses. To comprehensively define these objectives, a survey was also employed to directly understand the priorities of residents and gauge their openness to various approaches.



Graph 3:
Different research methods used through the thesis

Addressing the second objective, which is represented in blue in graph 3, involved exploring the relationship between architectural diversity and the ability of co-housing to meet previously identified challenges, the methodology also including a historical perspective. This implies understanding how architecture and diversity have historically interacted, alongside a review of research papers exploring these questions. To gain a more nuanced understanding of how co-housing operates and varies, the fieldwork included an analysis of existing co-housing projects, using a photographic report and interviews. This allowed the projects to be assessed across five dimensions: context, architecture, social impact, financial sustainability and post-occupancy.

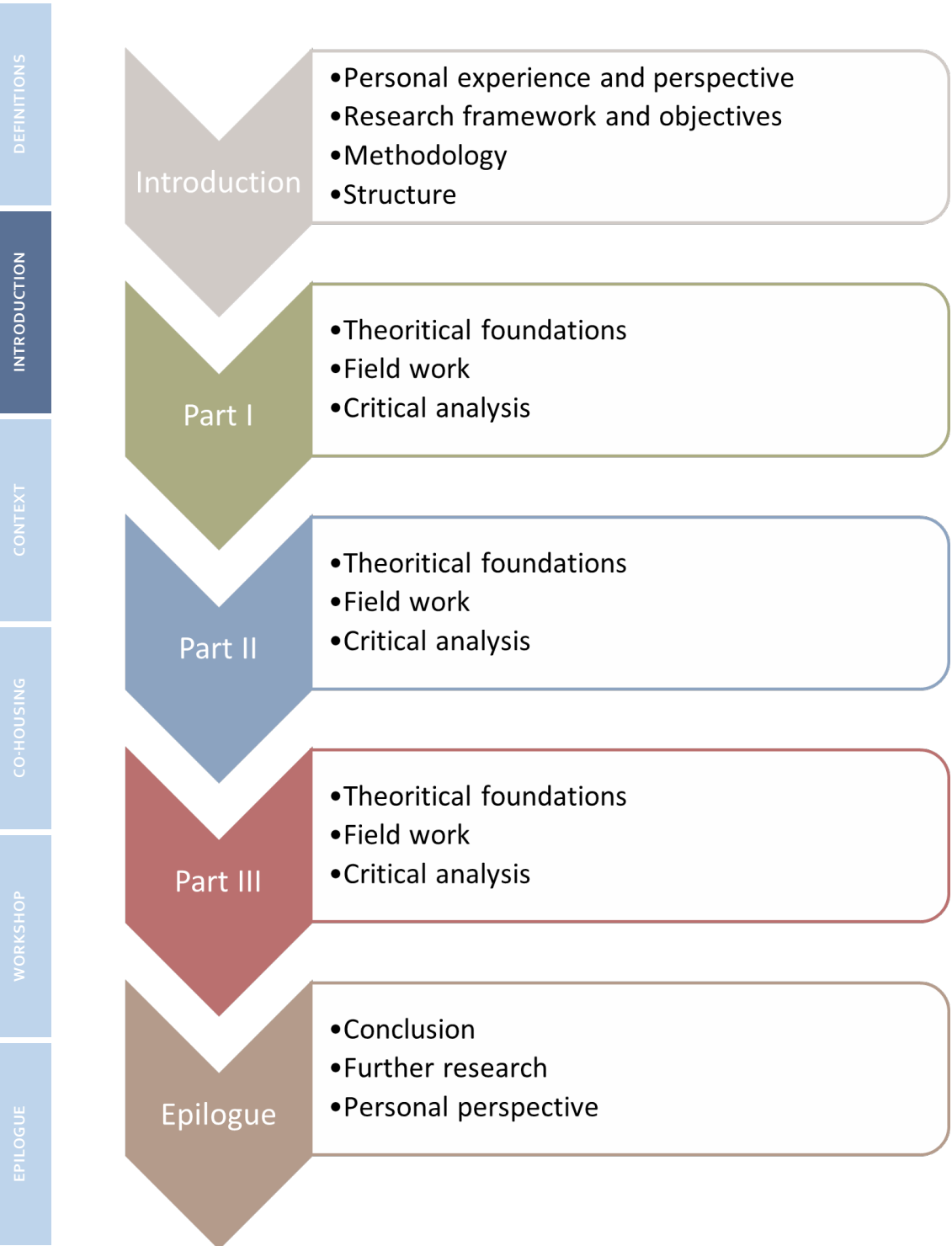
The third section, represented in red in graph 3, examined participatory architecture, beginning with a theoretical analysis of the concept and its historical development. This analysis sought to comprehend the driving forces behind this approach. This exploration also allowed to gather insights into preparing workshops and outlines key considerations in developing such a concept. Finally, the results and methodology of the workshop were analysed through written comments, final models, and a photographic report.

1.4 Structure of the thesis

The various objectives shaping the thesis and their associated methodologies establish a comprehensive framework, clarifying the relationships among these goals and how they align with the thesis overarching ambition. This holistic structure integrates all previously discussed aspects.

Following this introduction, the thesis is divided in three main parts. Each follows a consistent internal structure to facilitate a clear progression and guidance for the reader. They are subdivided into four components, including two theoretical sections. The first theoretical section addresses broader aspects, while the second delves deeper into specific topics. This is followed by a section on the fieldwork and a critical analysis of the aspects taken into consideration. This critical analysis is structured around four key points, encompassing architectural, social, economic and ecological perspectives. Each analysis is concluded with a personal viewpoint, summarising the key points and introducing the subsequent section.

Through diverse methods and approaches this master thesis will attempt to respond to its main objectives. Given that the ambition of this study is to provide stakeholders and decision-makers with a tailored framework that addresses the economic, social, and ecological challenges of areas marked as a rural environment, this thesis will emphasise potential outcomes to serve as a foundation for the advancement of future developments of new sustainable districts. This structure is summarised in graph 4, offering a comprehensive overview.



Graph 4:
Structure of the thesis



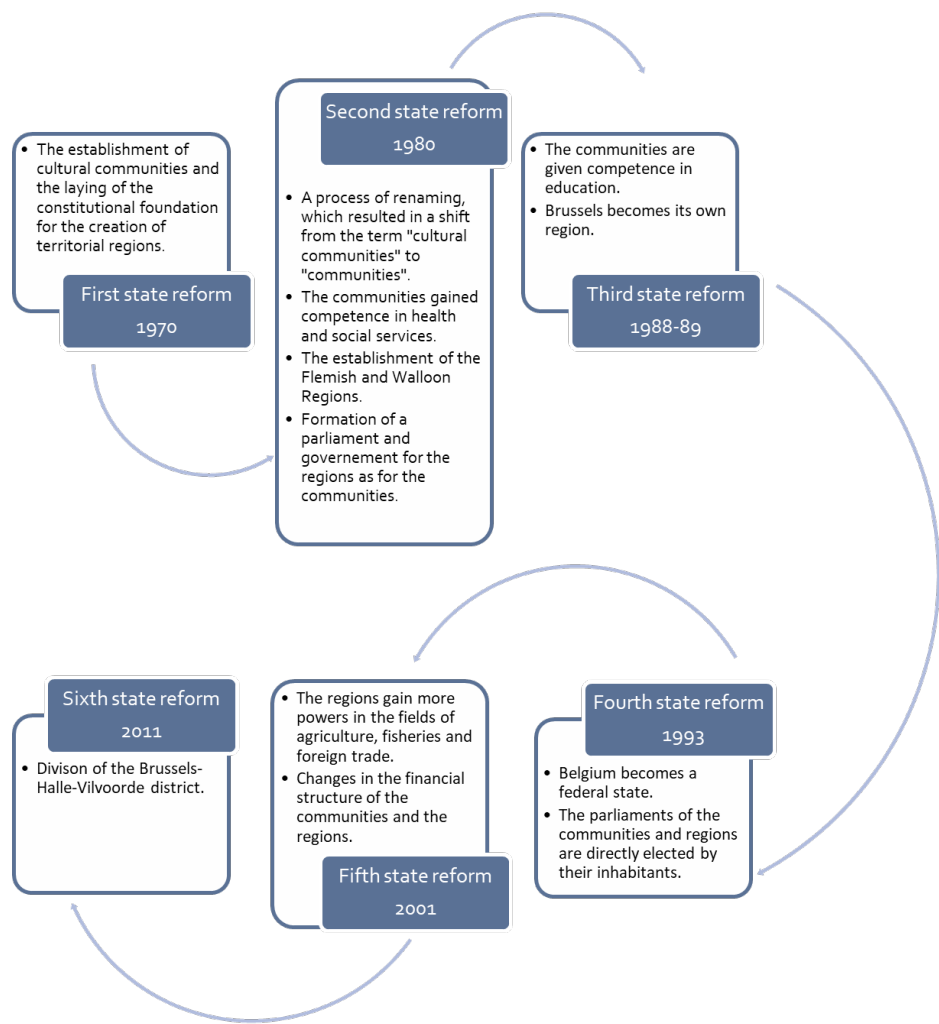
#2

PART I: CONTEXT



*"SOCIALLY BALANCED, MIXED AND SAFE URBAN
NEIGHBOURHOODS PROMOTE THE INTEGRATION
OF ALL SOCIAL AND ETHNIC GROUPS AND
GENERATIONS."*

(EUROPEAN COMMISSION, 2020, p.4, §2)



Source: belgium.be

Graph 5:
Belgian states reforms

2.1 Field of the analysis

2.1.1 The German speaking part of Belgium

The Kingdom of Belgium is a federal state composed of communities and regions. After 6 state reforms, which are represented in the graph 5, the power to make decisions on many subjects is more and more exercised at community or regional level (belgium.be, 2024).

As we can see in graph 5, the second state reform of the Kingdom made it possible to create the German speaking Community of Belgium on 30th January 1984 through a newly elected committee to the first Community Council. With the following reforms, the Community gained more and more regulatory and administrative competences. The 6th and most recent reform added competences for cultural affairs, personal affairs and education. Since 1994, the Belgian constitution has allowed the Walloon Region to transfer its competences to the German speaking Community. Over the years, the Community has taken responsibilities over the protection of monuments, landscapes and excavations, the employment, supervision and financing of the nine German speaking municipalities and tourism. It is also responsible for inter-communal and international relations, which enables the Community to conclude international agreements and treaties.

In 2019, the Walloon Parliament and the German speaking Parliament signed the decree on the transfer of responsibilities in the field of regional planning. In addition, as of 1st January 2020, the Community will be responsible for housing and parts of the energy policy. This will allow the Community to act at both executive and legislative level (Ministerium der DG, 2022).

History of the German speaking part of Belgium¹

In 1920, the districts of Eupen and Malmedy in East Belgium were, for the first time, incorporated into the Belgian state. This decision was made based on the geopolitical considerations and security interests of Belgium and France after the First World War, with the Treaty of Versailles negotiations playing a decisive role.

The integration of the German speaking population in Belgium was a complex process due to cultural differences and political tensions. The referendum to decide on the change of state was controversial, and there are doubts as to whether it reflected the true will of the population.

After the change of state, the region became strategically important to both Belgium and France, as it should have protected from a new invasion by Germany. In the years between the two world wars, politics was characterised by different visions for the integration of East Belgians. The economic challenges, global economic crisis, and political tensions had an impact on the social dynamics of the region. However, it is important to note that despite these challenges, the region persevered and continued to make progress.

Integration proved to be difficult due to the language barrier and political differences, and many inhabitants still felt German. In the 1930s, nationalist tensions intensified, and the rise of National Socialism in Germany further affected the political landscape of the region. Nevertheless, the region remained resilient and continued to work towards a better future.

During the Great Depression, economic problems exacerbated tensions, resulting in a division between 'pro-German' and 'pro-Belgian' groups that defined the interwar period. Although integration was attempted, it was only partially successful, partly due to the media's disproportionate focus on Germany and the Great Depression.

¹ This section is based on the reference: Zentrum für Ostbelgische Geschichte, 2022.



Figure 1:
The East Cantons and their large water reserves of national interest: construction of three dams between the wars at Eupen, Bütgenbach and Robertville



Figure 2:
Visit to Eupen by King Leopold III in 1938

The interwar period is often viewed as a time of division and limited communication among various opinion groups in East Belgium. It is important to note that the recognition and respect of cultural identities are essential for the successful integration of minorities into societies. This is especially true in the case of Belgium.

On 10th May 1940, the German Wehrmacht invaded Belgium, which marked the beginning of the war in the West. In East Belgium, between Kelmis and Ouren, there were varying reactions to the German invasion. However, not everyone in the region was happy to be re-integrated into Germany. While some citizens were in favour of the German soldiers because of their opposition to the Treaty of Versailles, others were opposed to the new German regime. The annexation of Eupen, Malmedy and Sankt Vith by the Third Reich in May 1940 was a violation of international law. From then on, the population lived under the conditions of the Nazi regime.

There were many reasons for agreeing to the German occupation, including the rejection of the Treaty of Versailles, the German socialisation of many citizens and the perceived alleviation of the effects of the world economic crisis in Germany. It is worth noting that pro-German organisations had campaigned in the region for a return to Germany, and some citizens supported National Socialist ideology.

Therefore, the occupation was initially met with enthusiasm, but this was short-lived as the totalitarian state increased its demands and exerted comprehensive control over daily life. The population was subjected to propaganda, which elicited both enthusiasm and resistance.



Figure 3:
The "Hufengasse" in Eupen during the Second World War. It was renamed "Josef-Kerres-Straße" by the Nazis

The German annexation policy in East Belgium was implemented in three phases: construction, stagnation, and total war. The total war phase was marked by an increase in mobilisation for the war industry, conscription, and political surveillance. The Second World War had a traumatic effect on the civilian population of the region, especially during the Battle of the Ardennes. During this battle, which took place in December 1944, the towns of Sankt Vith and Malmedy, as well as villages, were completely destroyed when the Allied Forces liberated the region.

The war still plays an important role in the culture of remembrance in East Belgium and has strongly influenced the identity of its inhabitants. The post-war period saw a purge in which collaborators were persecuted and punished. The consequences were disunity and a sense of injustice among the population. It is important to note that the purge remained a taboo subject until the end of the 1990's.

During this time, there was a noticeable trend of mutism and self-assimilation emerged as the population reintegrated into the Belgian state following their wartime experiences. To be perceived as good Belgians and to be as a sign of rejection of past Nazi regime, many East Belgians adopted French in public life and refrained from openly expressing their German culture. The linguistic situation remained problematic until the 1970's, with official affairs conducted almost exclusively in French.

After the Second World War, Belgium functioned as a unitary, centralised state dominated by a French speaking upper class. Tensions arose as demands for greater cultural and linguistic rights from the Flemish majority increased, leading to the eventual recognition of German speakers as a minority language. In the 1950's, discussions around language borders and usage began to take place, culminating in the legal establishment of language borders in 1962, which marked the beginning of the creation of the official German speaking Community.



Figure 4:

Eupen mayor Hugo Zimmermann characterised the purge in Eupen: He motivated the denunciation of collaborators, which led to a mood of mistrust among the population



Figure 5:

The Council of the German Cultural Community (RdK) and its successors (RDG= Rat der Deutschsprachigen Gemeinschaft and PDG= Parlament der Deutschsprachigen Gemeinschaft) met here from 1973

Throughout the 1960's, conversations surrounding autonomy and political participation intensified. Politics in East Belgium had been largely dominated by the Christian Social Party (CSP) until 1968, but changes in societal values and the politicisation of public life in the 1970's prompted the founding of the Party of German speaking Belgians (PDB)². The political debate in East Belgium became characterised by a contrast between the traditional parties (CSP, PFF and SP)³, which advocated gradual progress and emphasised the protection of fundamental cultural rights, and the PDB, which aimed for full autonomy, modelled after the South Tyrolean People's Party. The first state reform of 1970/1971 resulted in the establishment of the German Cultural Community and, thus, to the beginning of political autonomy of the German-speaking population. In 1973, East Belgium gained its own popular representation through the Council of the German Cultural Community (RdK), which was later in 1983 replaced by the Council of the German speaking Community (RDG). Despite some contentious debates surrounding the self-discovery and self-image of the German speaking Belgians, they were able to achieve autonomy and political participation.

The history continues until the turn of the millennium, when, with the federalisation of Belgium, the German speaking population became responsible for the political organisation of its territory. In 1993, the German speaking community assumed responsibility for the political administration of its region, which was a significant milestone in the Belgian state reforms and the establishment of contemporary, independent societies.

² The PDB lost momentum after the Niermann affair in 1987 and ceased for definitive in 2009. Indeed, the Party of German speaking Belgians (PDB) was the recipient of financial contributions from the German Hermann Niermann Foundation during the period extending from the 1970's through the 1990's. These financial endowments, however, were not publicly disclosed. Concurrently, the Niermann Foundation maintained associations with individuals espousing right-wing extremist and nationalist ideologies, a characteristic that persists to this day (Hunold, 2023).

³ CSP= Christliche Soziale Partei (Christian Social Party); PFF= Partei für Freiheit und Fortschritt (Party of Freedom and Progress); SP= Sozialistische Partei (Socialist Party)

Since 1994, the federalisation of Belgium has emerged as a key issue, involving not only a generational change and the professionalisation of politics, but also the collective demands of all parties for greater autonomy. Optimism exists that these issues can be addressed in a constructive and cooperative manner.

There is widespread recognition that federalism and subsidiarity are key principles and that East Belgian politicians have an increasing responsibility in this context. These politicians are grappling with fundamental questions about the cost and scope of autonomy and the protection of minority rights. There is an emphasis on regional cooperation, especially with the Walloon Region, with East Belgian parties advocating a "Belgium of four". With a particular interest in economic development, education and the challenges of youth employment are key topics of discussion.

Overall, the development of East Belgium as an autonomous community, increasingly aware of its responsibilities, is highlighted. It is emphasised that introspection and historical analysis are an exciting undertaking for historians in East Belgium (Zentrum für Ostbelgische Geschichte, 2022).



Figure 6:
Current parliament of the German speaking part of Belgium

On the European map

With 77,000 inhabitants living on 854 km², the German speaking Community of Belgium is the smallest national entity in Belgium, representing less than 1% of the population. Being close to the Netherlands, Germany and Luxembourg, the European connection and network is an important perspective for the community. As this means that a lot of cultural influences are seen, the ability to speak several languages is very common and promoted by the educational system. In the context of the two other communities fighting for more independence, the German speaking part got more responsibilities to become the most protected minority in Europe, with the actual minister president going so far to say that the community is one of the most protected minority in the world (Autonome Provinz Bozen – Südtirol, 2022). With all these influences, the size and the autonomy, to name just a few factors, show why many European projects in different domains take place in the German speaking territories, as well as their connection to various European cooperations and networks. The German speaking part is partner in the “LEADER⁴”, the “Euregio Maas-Rhein⁵”, “Großregion Saar-Lor-Lux⁶”, only to name some of them. Adding to that it is represented in the different institutions and can propose its own initiatives (Ministerium der DG, 2022).

⁴ LEADER-project is co-financed by the European Agricultural Fund for Rural Development. Its aim is to support innovative, cross-community projects proposed by local people and tailored to their needs (Ministerium der DG, 2022).

⁵ The Euregio Maas-Rhine, comprising the German speaking Community, the Provinces of Liège and Belgian Limburg, the Province of Dutch Limburg, and the Aachen region, is a cross-border network, aimed at fostering regional cooperation through partnership projects in tourism, economic collaboration, civil protection, technology transfer, healthcare, and language initiatives (Ministerium der DG, 2022).

⁶ The Greater Region, encompassing Lorraine, Luxembourg, Rhineland-Palatinate, Saarland, Wallonia, and the German speaking Community, focuses on economic, cultural, touristic, and social development, with aims broadly similar to those of the Euregio Maas-Rhine (Ministerium der DG, 2022).

The housing decree

Since 1st January 2020, the German speaking part of Belgium has assumed responsibility for housing, as outlined in Article 139 of the Constitution, taking over from the Walloon Region in accordance with Article 6 §1 IV of the special law of 8th August 1980 on institutional reform. Rapid changes were implemented smoothly through legislation enacted on 12th December 2019, 13th December 2021, and 15th December 2021. Concurrently, the government established working groups, often convened to discuss new competencies, comprising representatives from all parliamentary political parties and in this specific case also from the municipalities. After assuming these responsibilities, the government reconvened the working groups in a different format to produce a comprehensive report on the current state of affairs in consultation with the stakeholders (Beyer, 2022).

Meanwhile, the parliament organised a citizen's assembly, which consulted various experts over six sessions. In February 2022, these groups presented 45 recommendations to parliament (Freches, 2023). Based on this, the minister introduced a new housing policy decree, which was enacted into law on 6th May 2024. Key provisions pertinent to this thesis include Article 3, which guarantees every citizen's right to housing; Article 7, which introduces leasehold contracts as a novel way of selling land; and Articles 12 and 13, which set new criterias for the allocation of social housing to promote greater diversity. Of particular interest is Article 9, which allows investment in innovative projects that could include co-housing initiatives.

ÖWOB⁷

After the German speaking Community assumed responsibility for housing, the existing social housing company 'Nosbau' was divided into French and German sections. In mid-2021, the parliament decided to consolidate the two East Belgian social housing entities into a new organisation called ÖWOB (Barth, Kreins & Klinkenberg, 2022). As the name suggests, this initiative is not exclusively centred on social housing but encompasses public housing in a broader sense. Although the terms "social housing" and "public housing" are used interchangeably in British and American English respectively⁸, within the context of Belgium's German speaking region, the aim is to create a distinct category of public housing. While ÖWOB primarily invests in social housing, it is also authorised to fund other forms of housing and to collaborate with external partners, thus fostering a mix of housing types to accommodate the evolving needs of diverse demographics. This concept reflects an innovative vision of government-funded housing that transcends specific social classes. In this thesis, the term "public housing" will be employed to delineate this new approach and to also include what is referred to in EU-level documents of recent years as 'affordable housing' (Hencks, 2020).

This policy direction is evident in the ministry's advice to the government (Parlament der DG, 2022). Presently, ÖWOB owns 1,336 plots of land throughout the German speaking part of Belgium, with additional parcels available for new neighbourhood development. The organisation's public housing portfolio, depicted in dark blue in map 1 (p.44), reveals that units are consistently constructed in common areas, leading to a concentration of public housing. These residences are allocated to lower socioeconomic populations, resulting in demographic clustering. Political discourse increasingly recognises this issue, citing concerns about the risk of ghettoisation.

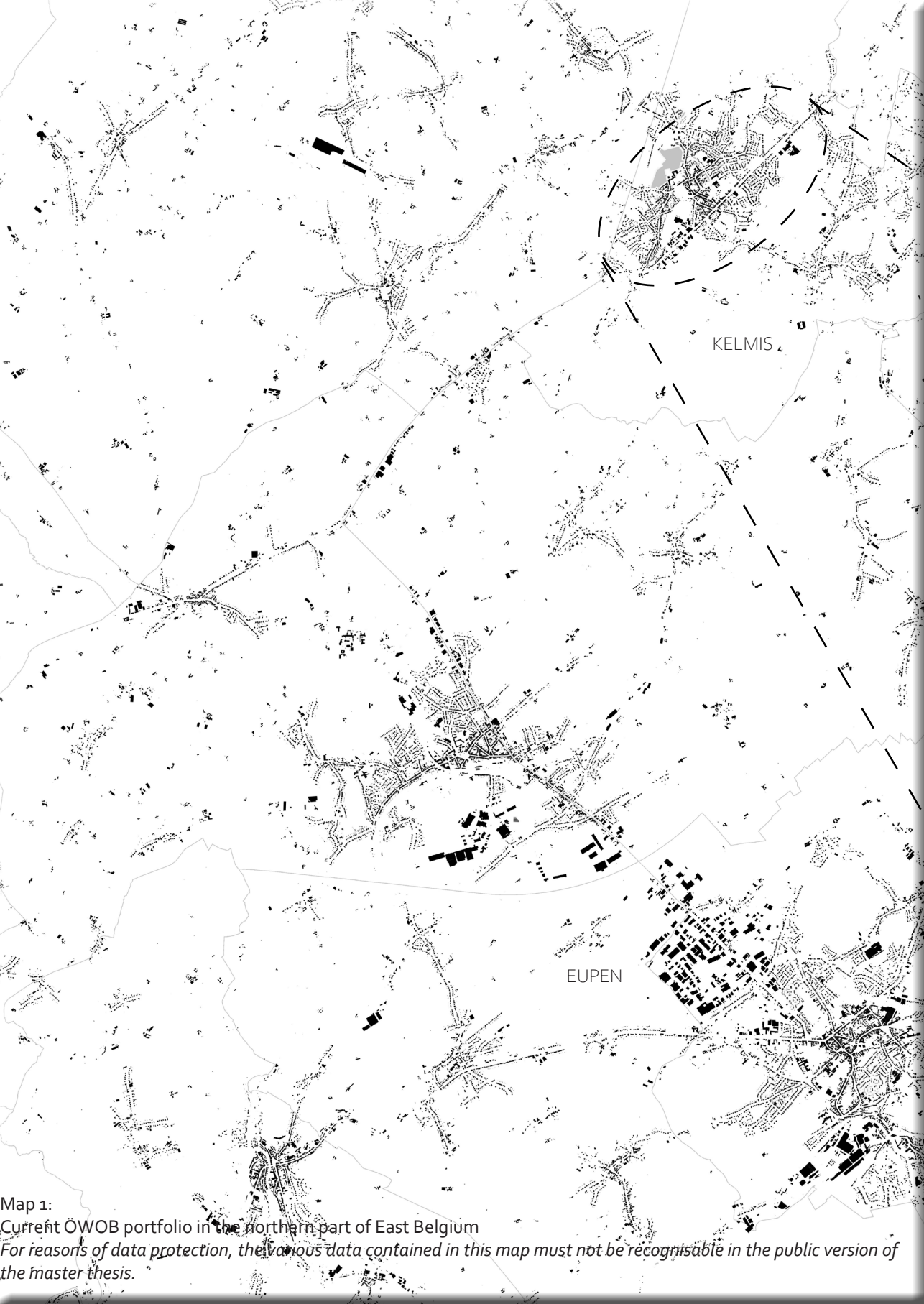
⁷ ÖWOB = Öffentlicher Wohnungsbau Ostbelgien (Public housing in East Belgium)

⁸ See chapter: o. Compilation of definitions (p.13)

Despite the rising demand for social housing and the availability of government-owned land (represented in light blue), these plots are often adjacent to ÖWOB's existing holdings. This proximity risks perpetuating the current pattern and further concentrating the same social group of the population.

In the municipality of Kelmis, the available development land, indicated in the same colour scheme as previously defined, is situated near ÖWOB's existing portfolio. This raises the question of how public land should be developed to counteract current trends and create greater demographic diversity as envisioned by policymakers.

The observations and conclusions of this thesis could, ideally, extend to future research on the redevelopment of predominantly public neighbourhoods. Additionally, the map reveals that some houses in these districts are not owned by ÖWOB. This discrepancy stems from previous sales of properties by social housing companies to promote diversity within these districts, a strategy that did not fully achieve its primary objective of more social mixity.



Map 1:
Current OWOB portfolio in the northern part of East Belgium
For reasons of data protection, the various data contained in this map must not be recognisable in the public version of the master thesis.



RAEREN

0 1 2 km



The right to access of affordable housing

First of all, it is important to define what housing is and what it means. As in one of the briefings of the Housing Europe Observatory, the abstract starts with this sentence: "For young people, just as for the population as a whole, the cost and quality of housing is key to living standards and well-being, an element of social inclusion" (Pittini, 2018a). With this sentence in mind, we can find some legal texts in the European parliament resolution of 21st January 2021 on access to adequate and affordable housing for all (European Parliament, 2024). The European parliament describes it as a fundamental right to have access to adequate housing and each member state has the obligation to define its own housing policy and take the necessary measures to ensure that this fundamental right is respected. This is also reflected in Articles 16, 30 and 31 of the European Social Charter and the European Pillar of Social Rights, which state the obligation to ensure access for all to adequate and affordable housing (European parliament, 2016) . In the Belgian constitution, art. 23 defines that every Belgian citizen has the right to a decent habitation (Moniteur belge, 1994).

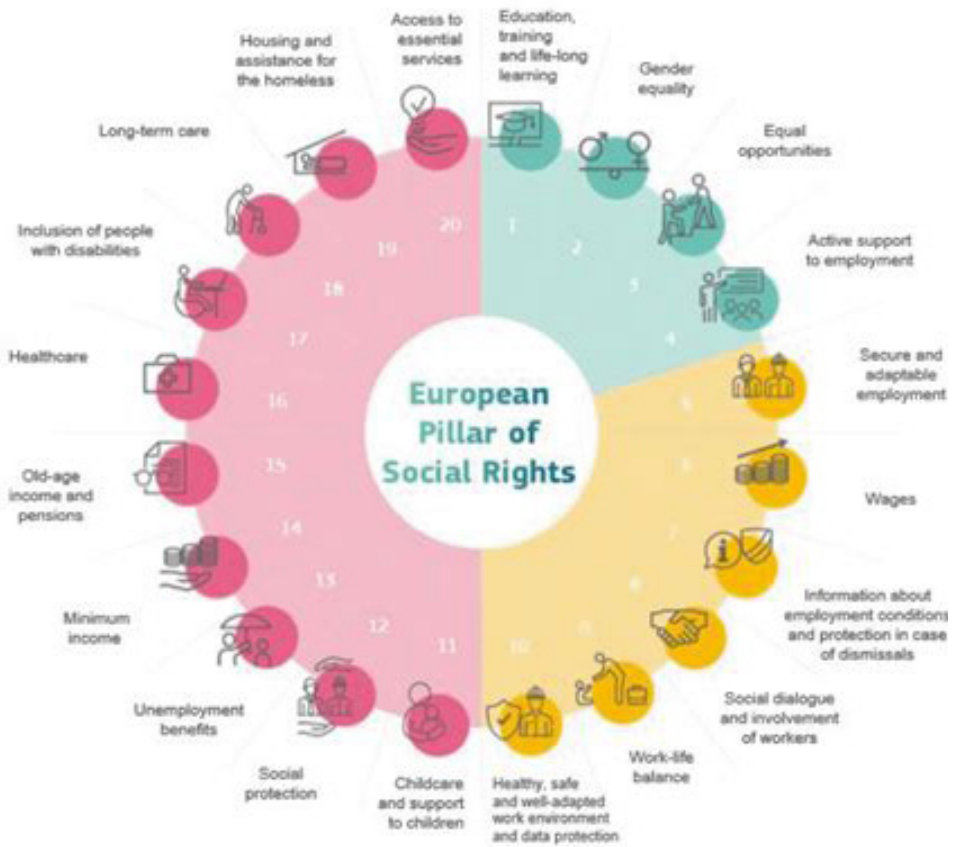
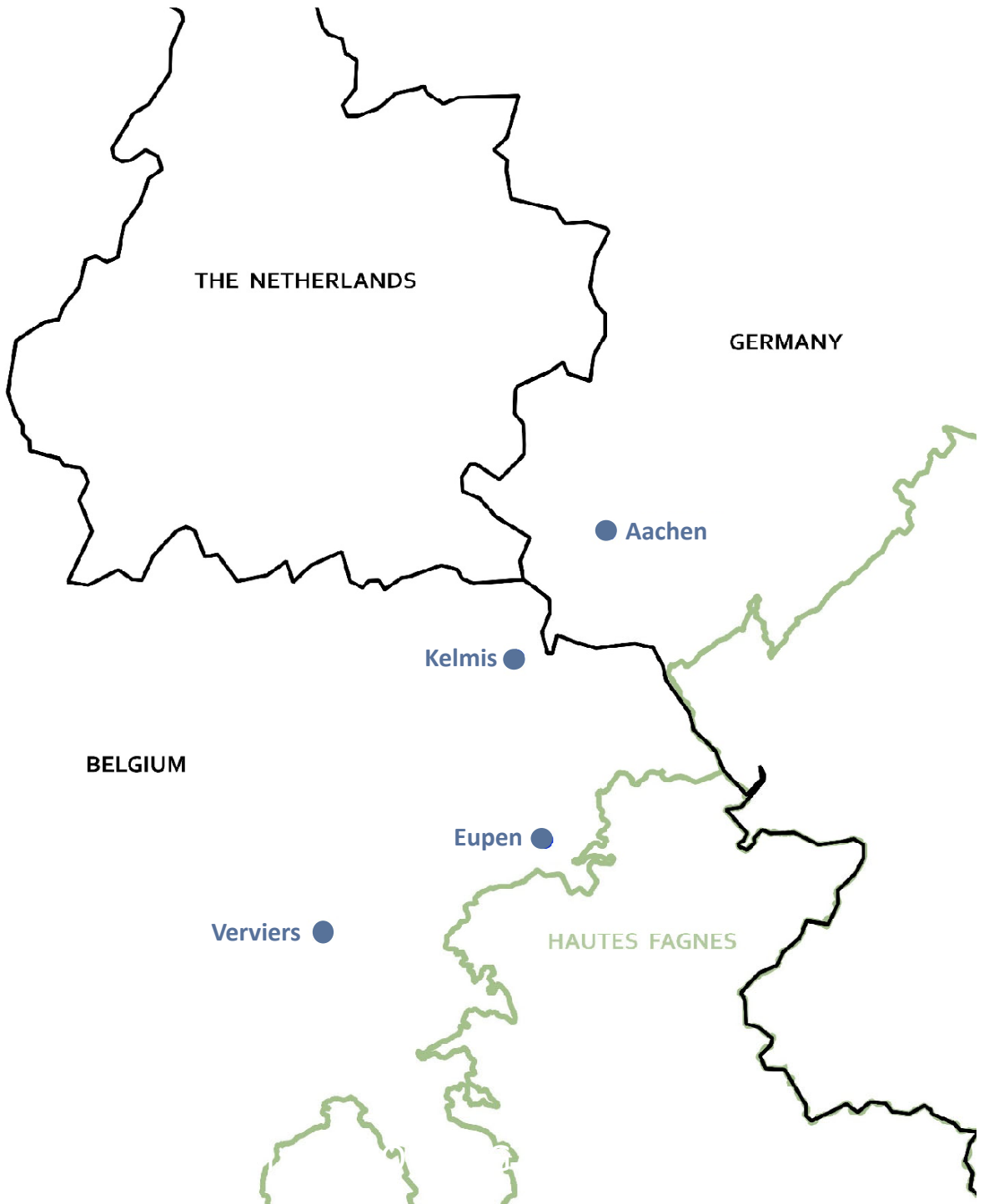


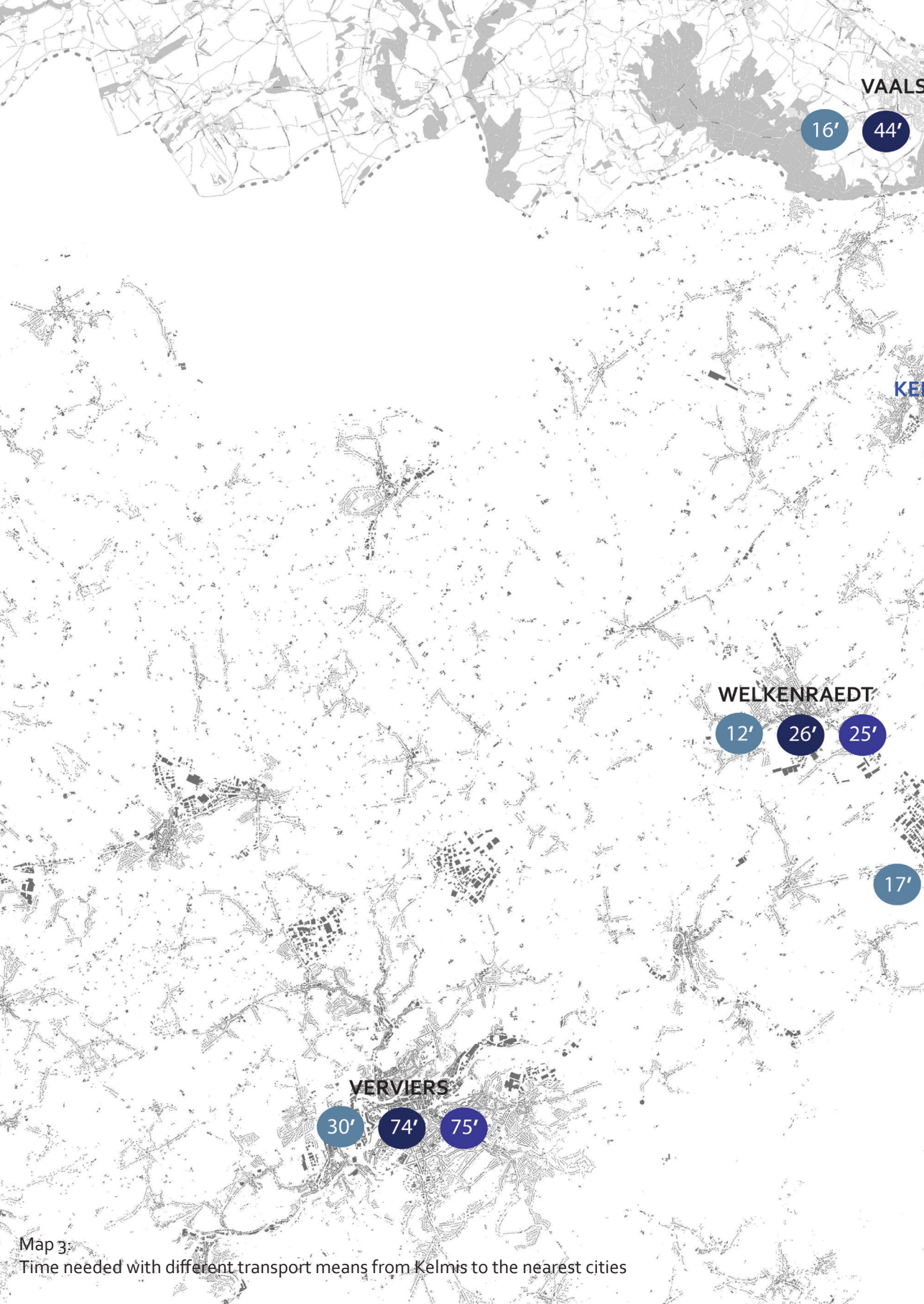
Figure 7:
The European Pillar of Social Rights, particularly principle number 19, guarantees access to affordable housing for all individuals

2.1.2 Kelmis

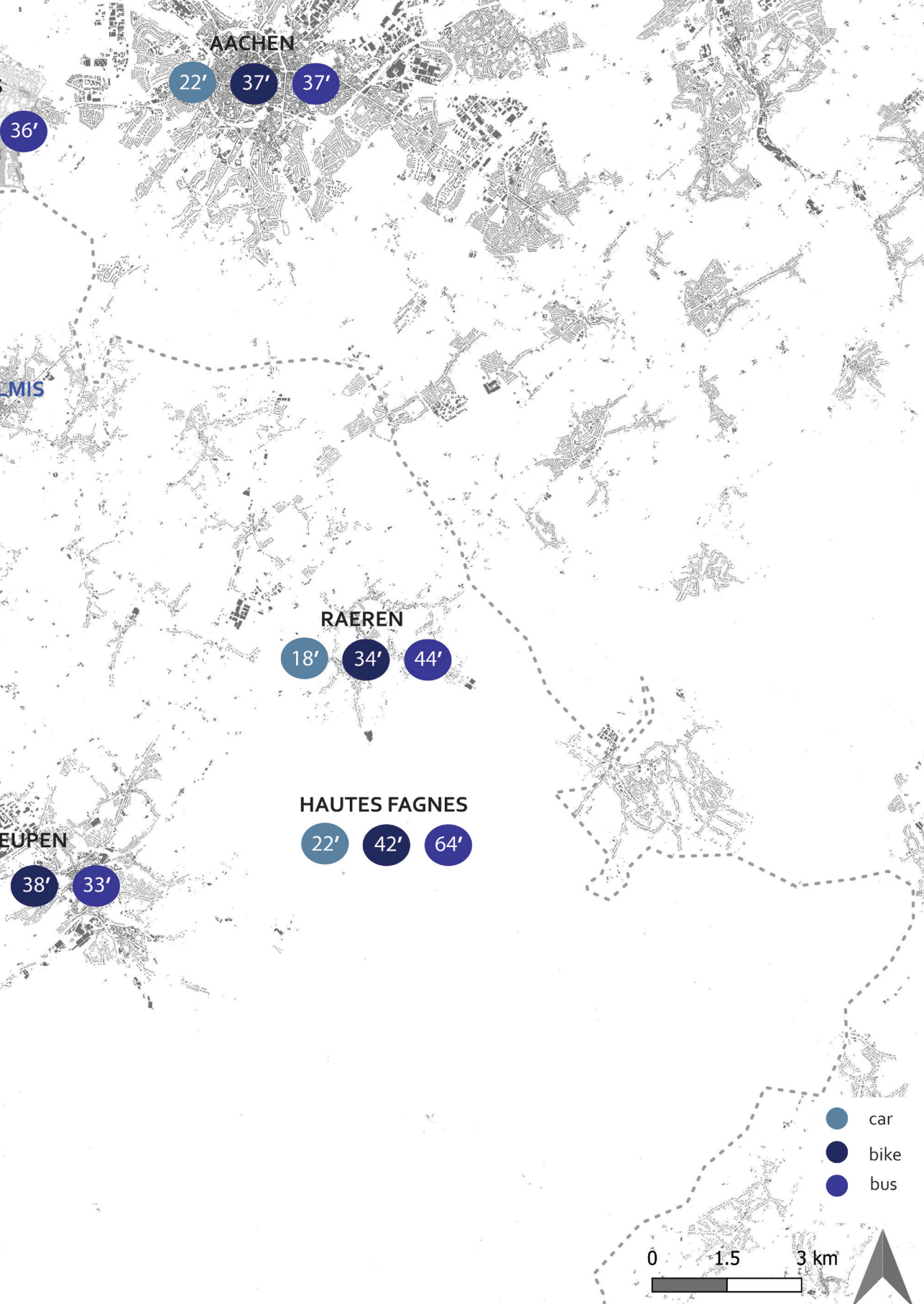
As we can see from the title of the thesis, the aim of this research is to focus on the municipality of Kelmis. This area is particularly interesting because of its strategic location in the east of Belgium. Its proximity to Germany and the Netherlands, as well as to the French speaking part of Belgium, facilitates a rich exchange between different cultures. This cultural exchange is illustrated in map 3 (p.50), which shows the travel times to neighbouring cities using different modes of transport. The municipality has been defined on a juridical aspect as a semi-rural city allowing it, with its 11,086 inhabitants in 2021 and area of 18.04 km², to have access to new subsidies and researches facilitating its development. Another characteristic is that it has the biggest density (614,55 inhabitants/km²) in the German speaking part of Belgium, with also the biggest density of social housing representing 8.1 % of all housing in the municipality. This is double the average 4 % proportional residential units of the German speaking part of Belgium, showing the relevance to focus on this municipality as a study case (Ministerium der DG, 2022).



Map 2:
Kelmis with the nearest main cities



Map 3:
Time needed with different transport means from Kelmis to the nearest cities



History

Kelmis, a town with a rich historical legacy, is renowned for various reasons throughout history. The name "Kelmis" derives from the mineral "Kelme", which was mined there from the Middle Ages until the late 19th century (Ostbelgien, 2023). Once the largest mine in Western Europe, it thrived at a time when ore mining was becoming a lucrative industry. Following the fall of the French Empire, territorial disputes between the Netherlands and the Prussian Empire resulted in the creation of an independent state known as the "Commune Libre de Moresnet," which spanned a mere 3.4 square miles and existed for nearly a century (1816-1919). By 1857, Neu-Moresnet contained 304 houses and a population of 2,572, which grew to 4,000 by 1880. This microstate encompassed the city of Kelmis, whose inhabitants cherished their independence. They even designed their own currency and postal system, although these prototypes were never utilised (Schmitz, 2016).

The flourishing mineral industry attracted immigrants from diverse cultural backgrounds, leading to an intercultural community. Due to its geographical location and political independence, Kelmis had three international railway stations. These linked it to Liège in Belgium and Aachen in Germany (Schmitz, 2016). As described in the previous section, after the Treaty of Versailles in 1919 (Hacken, 2021), the former independent nation was incorporated into the Kingdom of Belgium, only to be annexed by the Nazis during World War II and unified with the German speaking part under Germany. The territory was returned to Belgium in 1944 and has since remained part of the kingdom (Meulenkamp, 1986).

Rural area

As mentioned in the title, this thesis focus on rural areas. This term is defined by every public agency responsible for the composition of the territories. Since in Belgium these responsibilities are given to the individual regions, we will focus on the definition of the SPW⁹. The SPW defines a rural area as a statistical sector where one of the following criteria is respected:

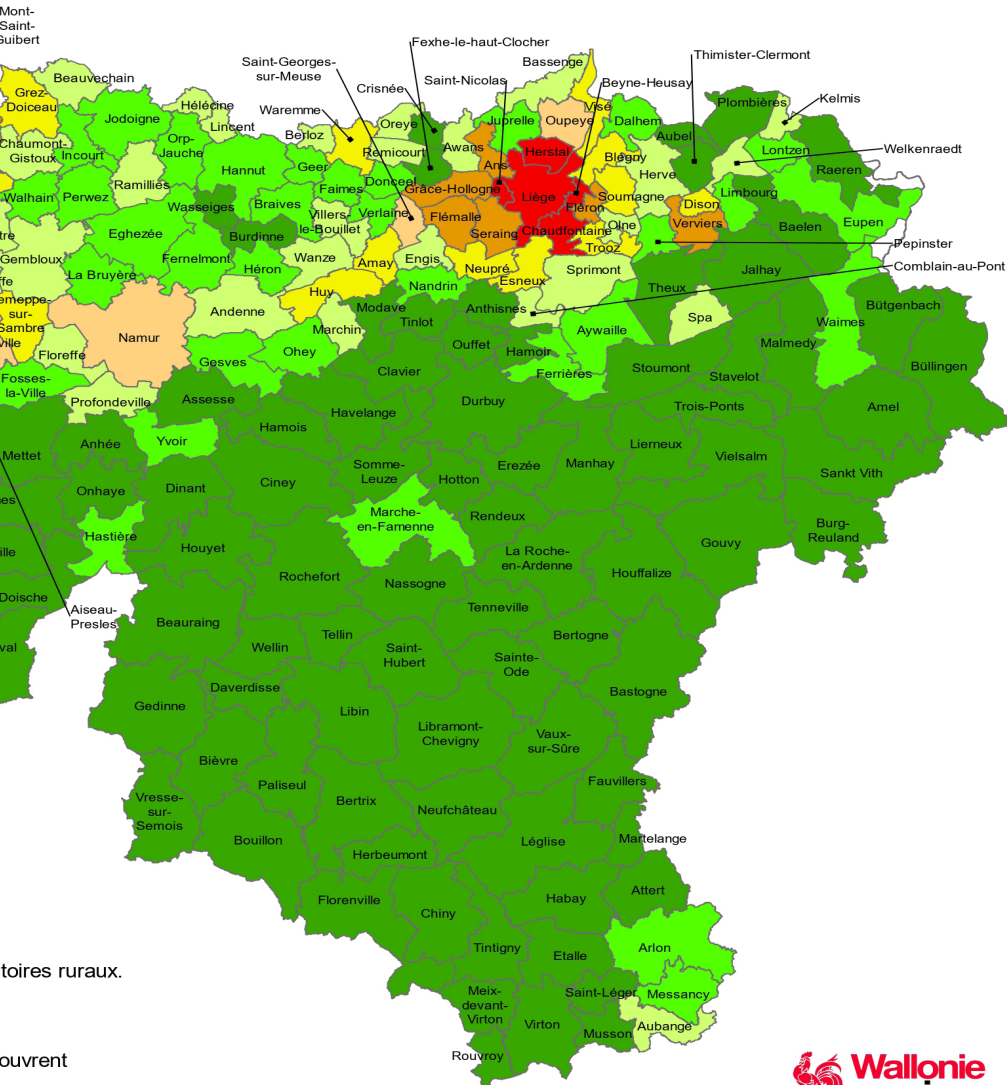
- The population density is strictly less than 150 residents per square kilometre.
- The population density is higher than 150 residents per square kilometre, but the rural area covers more than 80 % of the total surface area of the statistical area.

The degree of rurality corresponds to the percentage of the municipal territory occupied by rural areas. A municipality is considered "rural" if more than 85% of its territory is defined as rural (according to one of the above criteria). A municipality is said to be "semi-rural" if between 60 and 85% of its area is rural. A municipality is called "non-rural" if less than 60% of its surface area is strictly rural. In Wallonia this varies from 3.57% to 97.67%.

Kelmis has a percentage of 77.70 %, which defines it as a semi-rural area. Figure 8 provides a visual representation of the level of rurality of different municipalities in the Walloon region.

⁹ SPW = Service public Wallonie (public service of Wallonia)

é - degré de ruralité



toires ruraux.

ouvrent

s (non artificialisées)

0 30 40 Km

rier 2021

 **Wallonie**
service public
SPW

Sources des données :
- SPW - Walous, 2018
- Statbel, 2018



Map 4:
Different amenities in Kelmis



Amenities

Kelmis, defined as a semi-rural municipality, boasts a comprehensive array of amenities that cater to the needs of its residents and visitors (see map 4). Educational opportunities are plentiful, with facilities for all ages, including primary and secondary schools that teach in German or bilingually (German and French), as well as early childhood education centres. Healthcare needs are met through local clinics and pharmacies, with more specialised medical treatments available in nearby cities. For shopping, residents can choose from supermarkets, local shops, and boutiques offering both everyday necessities and specialty items.

The municipality also offers access to cultural and recreational facilities such as libraries, cultural centres, and sports clubs, including a swimming pool. Public transport is well-organised, with efficient bus services linking Kelmis to surrounding areas, facilitating easy commutes. Moreover, the municipality is rich in natural and historical sites, including the scenic "Preuswald" forest and remnants of old mines, which attract tourists and provide leisure opportunities for locals.

Different typologies of housing

After establishing the amenities and narrowing the focus of this thesis to residential units, attention will be directed towards the residential portfolio of the municipality of Kelmis. The objective is to gain insights into the current living conditions of the population through a comprehensive social and spatial analysis. In this regard, the housing portfolio has been categorised into four groups based on their spatial characteristics: single-family houses, semi-detached houses, town-houses, and apartments. Each category has been further defined by its spatial attributes.

This analysis was conducted via direct observation of each dwelling using Google Street View, enabling accurate classification into one of the aforementioned typologies. For each category, I analysed the age distribution and household composition of residents using data from the national register provided by the municipality. This data was initially presented in a generic Excel spreadsheet, which I reorganised to summarise the key informations relevant to this thesis.

Additionally, the mean square metre area per resident for each housing type was determined using cadastral data from the municipality. It is important to note that the cadastral data should be interpreted with caution, as not all units have been declared, and some houses are categorised inaccurately. Despite these limitations, the data presented in the following sections provides preliminary distribution into the living patterns of residents.

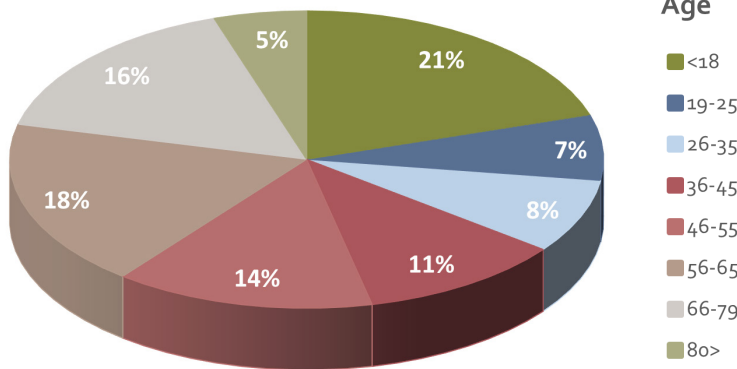


Single-family house (1,094 units & 1,891 residents)

It is a detached dwelling designed to be occupied by a family or household. The main characteristic of a detached house is that it does not share walls with other dwellings, which generally provides a high degree of privacy. These houses often have private outdoor spaces such as courtyards or gardens and can vary widely in size, design and building materials.

72 m² per resident
173 m² per unit

Source: Municipality of Kelmis

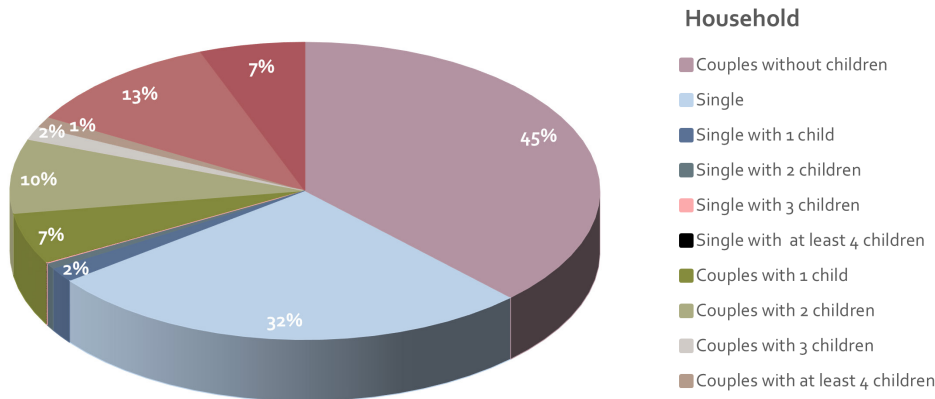


Age

- <18
- 19-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66-79
- 80+

Source: Municipality of Kelmis

Graph 6:
Age distribution of the Kelmis population living in single family houses in a 3D pie chart



Household

- Couples without children
- Single
- Single with 1 child
- Single with 2 children
- Single with 3 children
- Single with at least 4 children
- Couples with 1 child
- Couples with 2 children
- Couples with 3 children
- Couples with at least 4 children

Source: Municipality of Kelmis

Graph 7:
Household distribution of the Kelmis population living in single family houses in a 3D pie chart

Figure 9:
Single-family
house in Kelmis



Figure 10:
Single-family
house in Kelmis



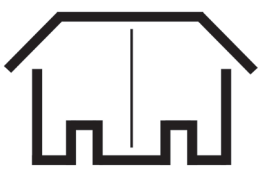
Figure 11:
Single-family
house in Kelmis





Map 5:
Single - family houses in Kelmis



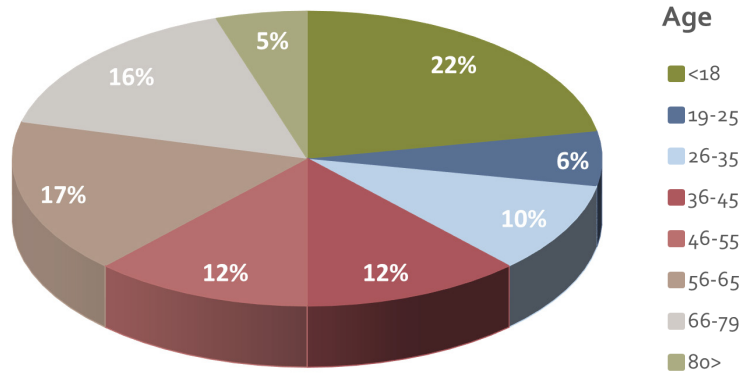


Semi-detached house
(954 units & 2,252 residents)

A semi-detached house is a single-family dwelling that shares a common wall with another house. Each unit has its own separate entrance and usually a private garden or courtyard. This design allows a more efficient use of land while still providing many of the benefits of a detached house, such as a sense of individuality and privacy in an urban or suburban environment. They are common in densely populated areas where land use efficiency is critical.

59 m² per resident
142 m² per unit

Source: Municipality of Kelmis

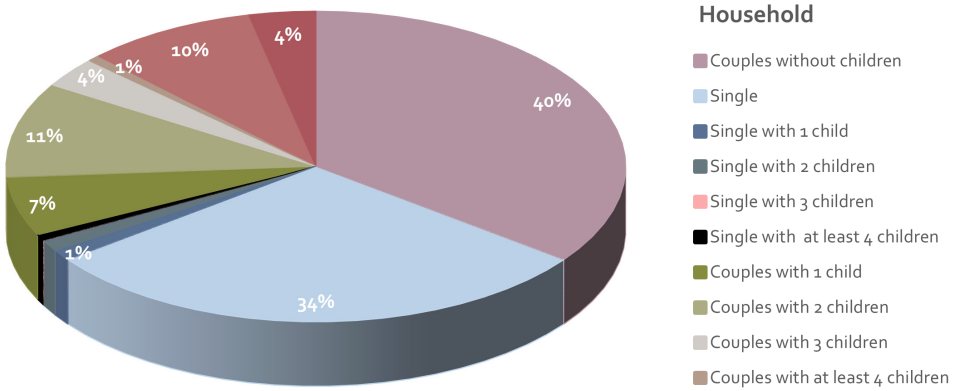


Age

- <18
- 19-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66-79
- 80>

Source: Municipality of Kelmis

Graph 8:
Age distribution of the Kelmis population living in semi-detached houses in a 3D pie chart



Household

- Couples without children
- Single
- Single with 1 child
- Single with 2 children
- Single with 3 children
- Single with at least 4 children
- Couples with 1 child
- Couples with 2 children
- Couples with 3 children
- Couples with at least 4 children

Source: Municipality of Kelmis

Graph 9:
Household distribution of the Kelmis population living in semi-detached houses in a 3D pie chart

Figure 12:
Semi-detached
house in Kelmis



Figure 13:
Semi-detached
house in Kelmis



Figure 14:
Semi-detached
house in Kelmis





Map 6:
Semi-detached houses in Kelmis



Townhouse

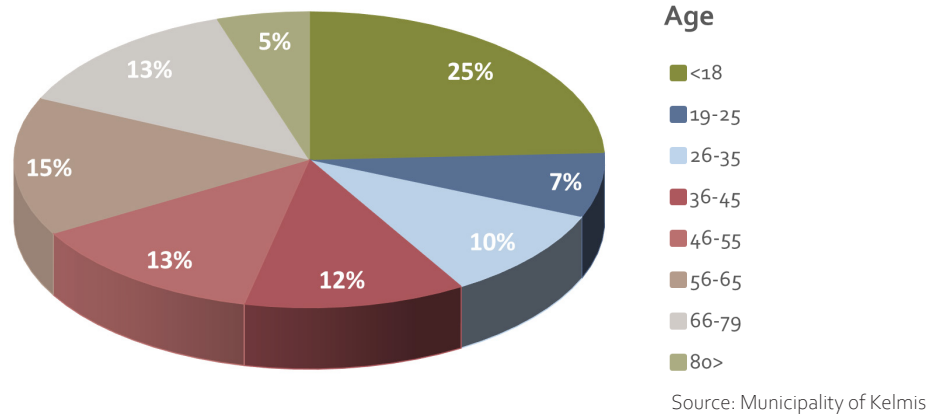
(604 units & 1,401 residents)



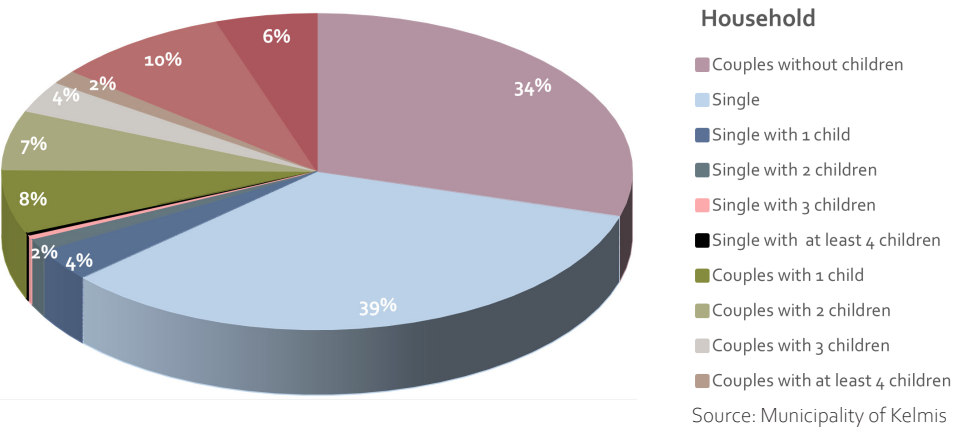
A townhouse, or row house, is a type of terraced housing with multiple floors where each house shares side walls with the houses next to it. These houses typically have a small footprint and multiple levels, maximizing space in urban environments. Each unit has its own front and rear access, and often a small private outdoor area (either a rear yard or rooftop terrace). Townhouses are designed to balance density and privacy in urban areas, providing a more house-like living environment without sprawling horizontally.

58 m² per resident
147 m² per unit

Source: Municipality of Kelmis



Graph 10:
Age distribution of the Kelmis population living in townhouses in a 3D pie chart



Graph 11:
Household distribution of the Kelmis population living in townhouses in a 3D pie chart

Figure 15:
Townhouse in
Kelmis



Figure 16:
Townhouse in
Kelmis



Figure 17:
Townhouse in
Kelmis





Map 7:
Townhouses in Kelmis





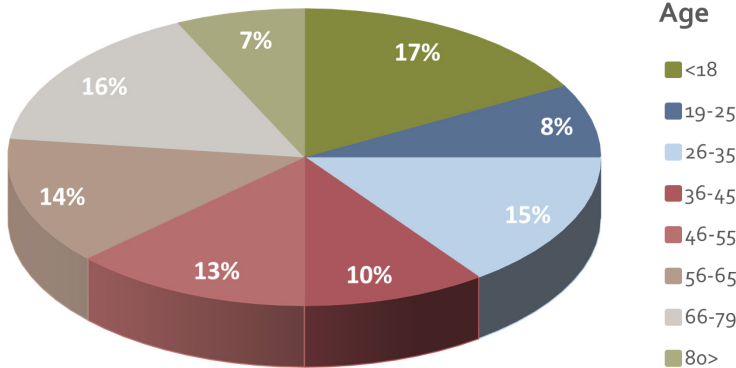
85 m² per resident
171 m² per unit

Source: Municipality of Kelmis

Apartment house

(986 units & 2,293 residents)

Apartment houses are multi-unit residential buildings varying in size and configuration, from studio apartments to large multi-bedroom units. They are designed to optimise vertical space, making them essential in urban areas where horizontal land is limited. Classified by their height as low-rise, mid-rise, or high-rise, these buildings contain self-contained housing units, known as apartments or flats, which share walls, ceilings, or floors with adjacent units, emphasising compact and efficient space use.



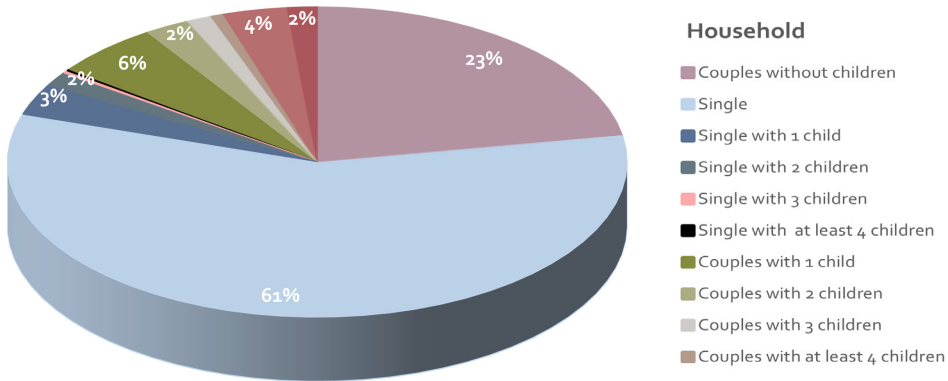
Age

- <18
- 19-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66-79
- 80+

Source: Municipality of Kelmis

Graph 12:

Age distribution of the Kelmis population living in apartment houses in a 3D pie chart



Household

- Couples without children
- Single
- Single with 1 child
- Single with 2 children
- Single with 3 children
- Single with at least 4 children
- Couples with 1 child
- Couples with 2 children
- Couples with 3 children
- Couples with at least 4 children

Source: Municipality of Kelmis

Graph 13:

Household distribution of the Kelmis population living in apartment houses in a 3D pie chart

Figure 18:
Apartment
house in
Kelmis



Figure 19:
This type of
dwelling is
also consi-
dered as an
apartment
house, as
the ground
floor has
another
use.



Figure 20:
Apartment
house in
Kelmis





Map 8:
Apartment houses in Kelmis



Analysis

After defining the four different housing typologies and their resident characteristics, including the average square meter, an analysis can proceed.

Single-family houses, the most prevalent typology in the examined area, exhibit notable features: 79% of households comprise one or two persons, with 435 residents, which represents 21% of the residents, aged above 65 (graphs 6, 7 & 15). As depicted in the accompanying images (figures 9-11), these houses typically have two levels and a garden. However, with advancing age and declining physical abilities, these features can become challenging to manage.

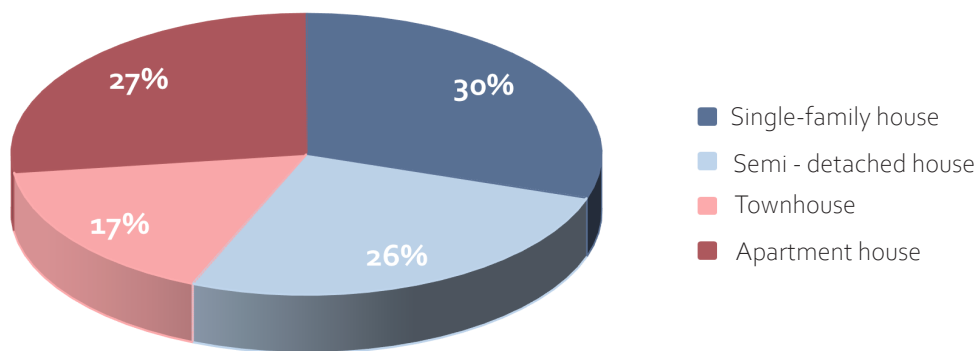
Semi-detached houses share a similar spatial configuration with single-family houses but have only three independent facades, resulting in one side lacking natural lighting. Interestingly, the proportion of one-to-two person households is similar to the single - family houses typology, reaching 75% (graph 9).

Townhouses, featuring only two independent facades, range from two to three levels in height and are primarily located in the city centre. This typology allows for individual ownership, providing each owner with a house built more densely yet retaining independent access. The number of families in this typology is highest at 27% (graph 11).

Despite the apartment typology seemingly having the highest square meterage per resident, this must be viewed critically. The analysed data were not fully decomposed into apartments, and there is a significant amount of missing data for this typology.

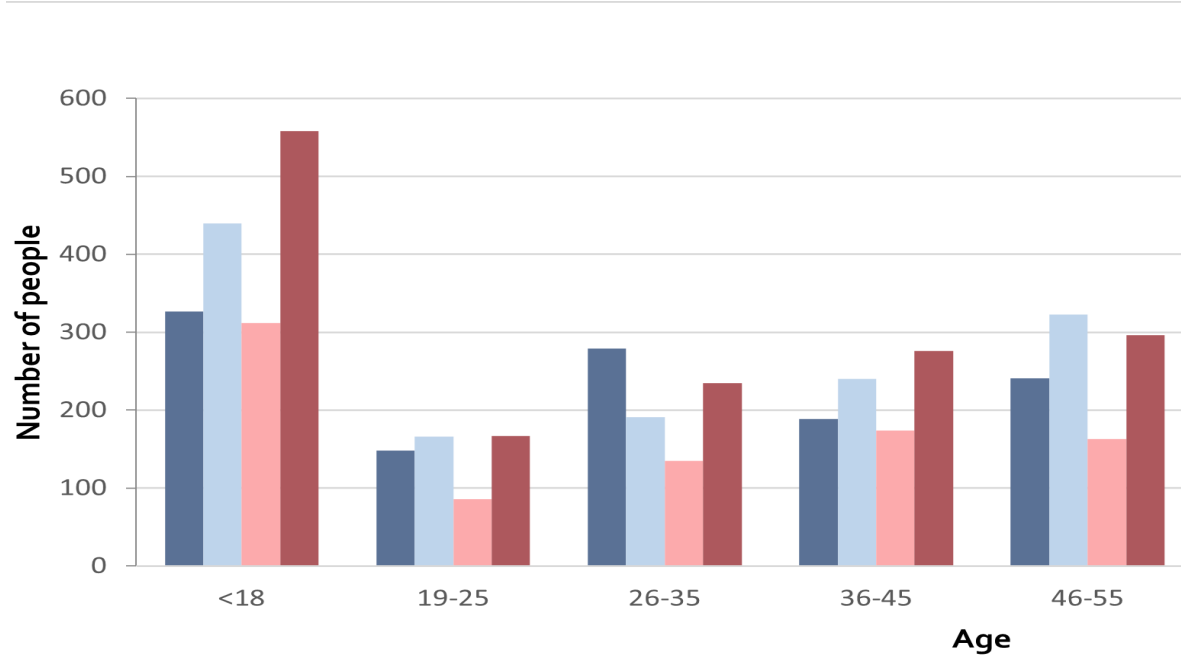
When examining all four typologies collectively, it is obvious from the images that the heights of different residences do not vary significantly, typically ranging from one to three levels. Apartments occasionally exceed this range due to multiple households residing within them. This observation serves to highlight a principal criterion of housing scale, as illustrated by graph 14. This reveals that 73% of the housing stock in Kelmis is comprised of houses and only 27% comprised of apartment houses. Furthermore, around a third of the housing stock are single-family houses. This information provides a clear overview of the urban composition of the municipality, reinforcing the concept of independent living. The graph also shows a significant number of individuals over 65 living in single-family houses. This suggests that in the coming years, older residents may vacate their homes in search of more suitable living arrangements, potentially freeing single-family houses for use by families.

Housing Typologies

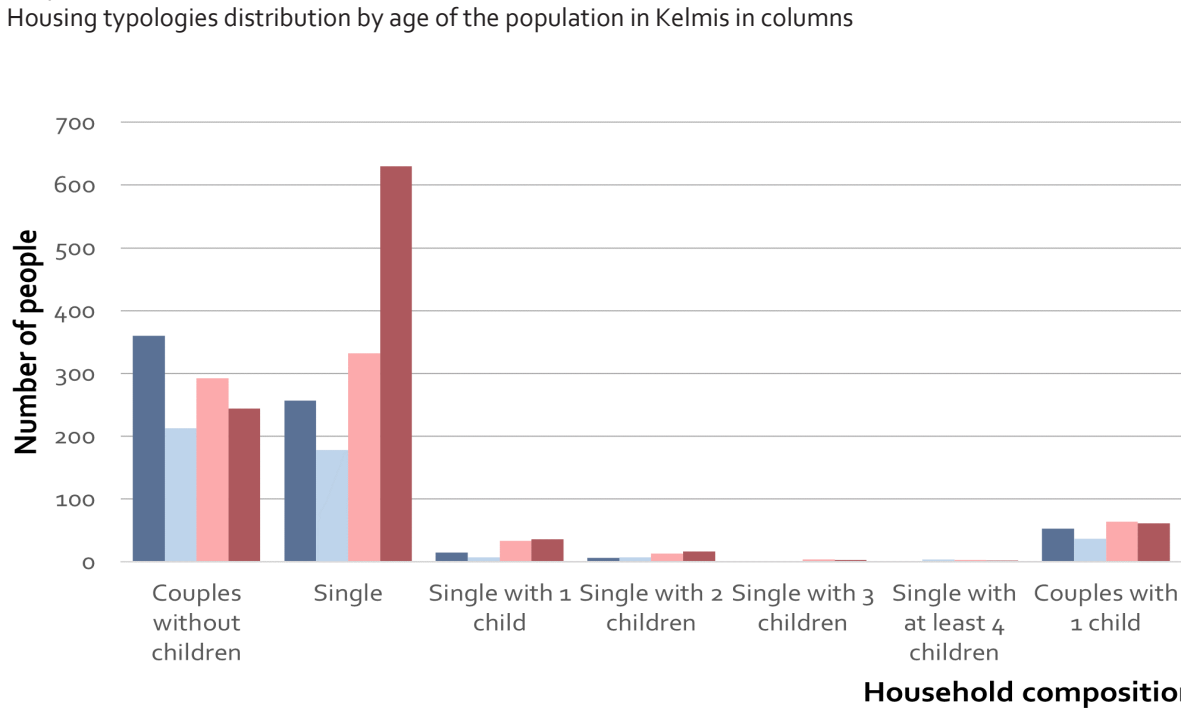


Source: Municipality of Kelmis

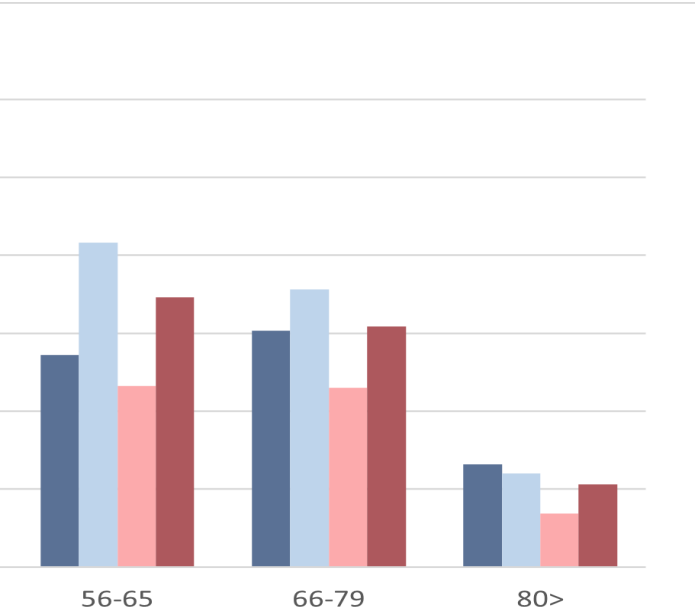
Graph 14:
Housing typologies distribution in Kelmis in a 3D pie chart



Graph 15:
Housing typologies distribution by age of the population in Kelmis in columns



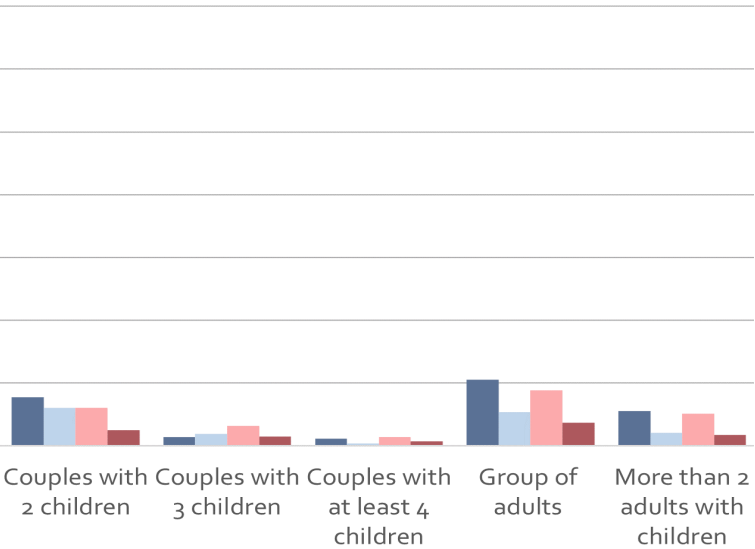
Graph 16:
Housing typologies distribution by households of the population in Kelmis in columns



Housing Typologies

- Single-family house
- Semi-detached house
- Townhouse
- Apartment house

Source: Municipality of Kelmis



Housing Typologies

- Single-family house
- Semi-detached house
- Townhouse
- Apartment house

Source: Municipality of Kelmis



Map 9: All residents housing in Kemis



- Single-family house
- Apartment house
- Townhouse
- Semi-detached house
- Buildings

0 100 200 m

Creation of a “KPLE”¹⁰

As the municipality of Kelmis is recognised as a semi-rural city, it can now take part at the Municipal Rural Development Programme from the Walloon Region. This programme allows the municipality to get subventions in different fields allowing the development of the city. The different financial aids are defined by decree. This help can be material or immaterial with the objective to help the development of rural areas. Some interesting points for this research is that subventions can be allocated to:

- the renovation, creation of dwellings,
- the creation of public spaces, like a community house
- reception, information and meeting centres, rural houses and multi-purpose houses;
- protection, improvement and development of the living environment and living spaces, including the built and natural heritage;
- the development and construction of roads and means of transportation and communication of common interest;
- the construction and renovation of infrastructure and facilities for the development of tourism, energy or social cohesion (Bach, 2024).

The financial support can be allocated on different subjects depending on what the local commission ÖKLE¹¹ decides. It is made up of local residents and some members of the Municipal Council, who play a central role: the commission represents the economic, professional and cultural circles as well as the different villages and age groups in the municipality. (WFG Ostbelgien, n.d.)

¹⁰ KPLE= Kommunale Programm der Ländlichen Entwicklung (Municipal Rural Development Programme)

¹¹ ÖKLE = Örtliche Kommission zur Ländlichen Entwicklung (local commission for rural development)

2.2 Exploring the challenges of sustainability

Based on the framework of sustainability evoked earlier in this thesis, as a concept that takes into account social, economic and environmental factors, it is necessary to reflect on the context of the analysis. As the description of the main problems is taken from studies concerning the European Union in general, we will make sure to confront it subsequently with the reality of Kelmis. Indeed, each challenge is seen differently depending on the cultural aspect from one place to another. The different themes covered are based on a research document and an urban analysis and then supplemented by discussions and interviews that I held, to better understand the situation at the scale of Kelmis.

2.2.1 The new Leipzig Charter ¹²

Before delving into the various challenges, we need to contextualise this thesis, as it emerges from a general ambition in the European Union, rewritten under the new Leipzig Charter¹³.

The New Leipzig Charter, adopted in 2020, is a strategic document guiding sustainable urban development across Europe. Building on its predecessor from 2007, the charter emphasises creating just, green, and productive cities through integrated urban policy and strong governance. It aims to enable cities to address current global challenges like climate change, technological advances, and social inequalities by implementing cohesive strategies that link local, national, and European governance levels.

¹² This section is based on the following reference: European Commission, 2020.

¹³ There is also the 'Territorial Agenda 2030', adopted by informal EU ministerial conferences on 1st December 2020, similar to 'The New Leipzig Charter'. Both documents serve as a comprehensive guide to what urban and spatial development policies in Europe should achieve and what conditions are necessary for their implementation. While the New Leipzig Charter - The Transformative Power of Cities for the Common Good focuses on urban areas (neighbourhoods, municipalities, city regions), the Territorial Agenda 2030 - A Future for All Places focuses on balanced spatial development in Europe's rural areas. Due to the significant overlap in content between the two documents, this Master's thesis will be limited to an analysis of 'The New Leipzig Charter' (Ministerium der DG, 2024).

The charter outlines three key dimensions for urban development: the just city, focusing on social inclusiveness; the green city, promoting environmental sustainability; and the productive city, enhancing economic strength. These principles are intended to be embedded in urban policies to foster comprehensive and sustainable development. The charter also encourages cities to have a more significant say in decision-making processes at all governance levels and to ensure that EU funds and investments are quickly and effectively allocated for urban development (European Commission, 2020).

The three pillars of the New Leipzig Charter are:

1. ***The just city***: This dimension focuses extensively on fostering social equity within urban settings. The charter advocates for the creation of inclusive communities where all residents, regardless of their economic or cultural backgrounds, have equitable access to essential urban services and opportunities. It emphasizes the importance of policies that address and mitigate urban segregation and enhance the inclusiveness of community participation. Key initiatives under this dimension include developing affordable housing that not only meets the diverse needs of various population groups such as the elderly, young families, and individuals with disabilities, but also promotes social integration by designing safe, accessible, and welcoming neighbourhood environments. These efforts are complemented by programmes aimed at enhancing social cohesion and empowering local communities through active participation in urban planning and decision-making processes.

2. ***The green city***: This dimension underscores the imperative of environmental sustainability as a cornerstone of urban development. The Charter calls for the implementation of green infrastructure projects that not only improve the ecological footprint of cities but also contribute to the well-being of their residents. Initiatives under this category include the promotion of sustainable mobility solutions such as cycling paths and efficient public transport systems, the adoption of green building standards to reduce energy consumption, and the enhancement of urban green spaces that serve as lungs for cities, providing clean air and spaces for recreation. Additionally, it highlights the role of cities in combating climate change through the adoption of local policies that aim to reduce carbon emissions and increase resilience to climate-related disasters by integrating nature-based solutions like permeable pavements and urban forestry.

3. ***The productive city***: This aspect of the charter delves into the economic dynamics of urban areas, promoting policies that drive economic vitality and innovation. It encourages the development of a supportive environment for entrepreneurship and technological advancement, which in turn fosters job creation and economic diversification. The charter supports the establishment of innovation hubs and business incubators that facilitate knowledge transfer and stimulate creative economic activities. It also places a strong emphasis on equipping the workforce with relevant skills through targeted educational programs and vocational training that align with the needs of a modern, digital economy. This dimension advocates for the strategic use of digital technology in public services and infrastructure to enhance productivity, connectivity, and urban competitiveness (European Commission, 2020).

Each of these dimensions interlinks with the others to create a holistic framework for urban development that is sustainable, inclusive, and economically robust, aligning with broader European and global agendas such as the European Green Deal and the UN 2030 Agenda for Sustainable Development. It underscores the need for multi-level governance coordination to effectively implement these urban strategies. This comprehensive approach ensures that cities can thrive as vibrant, resilient communities capable of facing the challenges of the 21st century (European Commission, 2020).

In this thesis, the focus will be mainly on the first dimension of the charter, the just city, which will enable us to better understand how we can respond to these needs at the scale of Kelmis, but by keeping into account the two other dimensions -the green and the productive city, which are interlinked.



Figure 21:
The New Leipzig Charter

2.2.2 Social challenges

Given the significant diversity within the population and the unique challenges faced by different stakeholders, we propose to categorise the population into segments based on age, cultural background and other relevant factors. This approach allows us to identify common issues more effectively. Our categorisation framework is based on the established classifications from the Housing Europe Institute's series of studies entitled 'Housing in the Post-2020 Era' (Pittini, 2018). These categories are further enriched with a specific focus on the issues prevalent in the German speaking part of Belgium and in the municipality of Kelmis, derived from discussions with different stakeholders from different authorities.

The first group identified is young people, which covers a wide range of actors including students (from universities and dual study programmes), apprentices and workers (both part-time and full-time as well as trainees). Despite their similarity in age, these individuals show considerable diversity in terms of their educational or employment status and family situation. While some young people are responsible for their own families, others remain dependent on their parents. This variability requires a multifaceted approach, as no single solution can adequately address the multiple needs arising from their different circumstances. Housing is a crucial factor in achieving autonomy, security and stability for young people and plays an important role in their socialisation process. According to Eurostat, young people in Europe represent less than 33% of the population, face significant challenges in securing employment, are at higher risk of poverty and tend to achieve independence later in life. However, they are also generally better educated and more actively involved in social activities, with more than 30% participating in various associations. In the European Union, 50% of 18-34 year olds still live with their parents.

The main problems, according to the EU, are that high rents do not allow people to save money to buy or rent their own property, which is a bigger problem for people who do not have a 'mum and dad bank'. In addition, landlords do not accept to rent their properties to young people because of their insecure financial situation. Housing Europe therefore concludes that the housing market is not meeting the needs of young people and that in the publicly subsidised housing sector, there is a lack of affordable housing (Pittini, 2018).

Discussions with the minister revealed that these problems are also prevalent in the German speaking part of Belgium. There is a segment of the population that is financially stable and able to repay a loan, but the current banking system requires an initial payment of 20-30% of the loan amount, which many cannot afford. This requirement puts home ownership, and therefore financial independence, out of their reach, especially for those without family financial support (Antoniadis, 2024).

Since 2015, several hundred thousand people a year have been trying to escape their countries and reach Europe because of war, conflict, extreme poverty, the climate crisis, famine and other reasons. At the same time, as mentioned above, Europe's population is ageing and the age pyramid is becoming unbalanced. So migrants may also offer a help to Europe if they are integrated. As we said migration could be a win-win solution for the EU as for the migrants, but we see that the integration remains challenging in many cases. One of the reason is the limited and inadequate housing and the slow legal path to obtaining a residence permit. Many migrants remain in an insecure situation for a long time. At the same time, they do not have the same access to education and the labour market, which makes integration even more challenging. The contact with the local population can be a benefit for both sides. In fact, if they were properly integrated, they could offer a very good opportunity to counteract the depopulation of European cities and the shortage of skilled labour.

On the other hand, there is ghettoisation. This means that there is a social concentration of different social groups in different places, which is a result of the limited availability of affordable housing. The most vulnerable groups are generally unaccompanied minors, women, the LGBTQIA+ community and people with a mental/physical disability. In this context, social housing can promote inclusion through the mix of social classes in the neighbourhood, the district and the housing community. Various social organisations are already working to provide access to education, out-of-school care and personalised support to give vulnerable target groups a better chance of inclusion (Pittini, 2018b).

In the German speaking part of Belgium we see evidence of this phenomenon, as in the analysis of 2021 we see that non-EU citizens are disproportionately represented in categories such as unemployment with 16.9% in 2020, in emergency housing with 22% and in integration income with 36% in 2020, knowing that this group of people represents only 3.6% of the total population in the German speaking part (Ministerium der DG, 2022). The use of the word ghetto is also present in the German speaking part of Belgium, where in the regional analysis we discover the use of the word more than once to talk about the localised concentration of a certain part of the population. In this analysis, they see a risk of the situation getting worse if we continue with the current concept of development (Ministerium der DG, 2022). We also see that in this context the different municipalities are not interested in building more social housing, which makes the situation worse. This problem was mentioned by the mayor and the secretary general of Kelmis during a personal discussion, as they also have to think about their budget. And people in this situation need financial help, which means that it becomes a challenge for the municipality, to be considered alongside other financial difficulties (Frank & Wimmer, 2023).

According to Eurostat, 25% of the Belgian population will be over 65 by 2040, up from 18% in 2020. This highlights the importance of focusing on the older generation as our last category. Their quality of life is highly dependent on the inclusiveness and accessibility of our society and living environment. The baby boomer generation, while often affluent, often faces cash flow challenges. For example, in 2016, 10.8% of the Belgian population over 65 lived in social housing or similar (Eurofund's Quality of Life Survey: the EU figure is 10%). There is also evidence that older people living alone are more vulnerable to fuel poverty. The pandemic highlighted that many homes do not meet the specific needs of elderly residents, such as accommodating limited mobility and providing accessible stair-free access to different floors. Some of the biggest problems for this age group are social isolation, distance to services and complex technology in buildings. In order for the older generation to live independently in the long term, health centres also need to be provided in housing estates so that people have easy access to care.

As in the German speaking part of Belgium, we can find the senior decree which shows the interest of motivating the older generation to stay at their home as long as they are independent, by proposing new ways of living, like intergenerational housing and community focus district. One of the primary goals is to help elderly individuals remain in their own homes, as there is insufficient space in care facilities for the growing elderly population. Additionally, many older residents report feeling isolated in their homes (Ministerium der DG, 2022). In the municipality of Kelmis the aim is also to create a night service allowing older people to live at home and still have access to the care they need. This political will and aim of the municipality still needs to find a way to be financed (Frank & Wimmer, 2023). Next to it we see different projects starting, like senior co-habitation, where the minister stresses that people come because they find the concept interesting, but then when it is time to actually live in such a concept, it is hard to find residents (Antoniadis, 2024).

But next to the minister's comments, we see in the analysis of the German speaking part that at the moment we have more than 15,561 residents over the age of 65 and this number is expected to rise to 21,000. This is important because next to it we see that about 19.7% of them are at risk of financial or social isolation, which shows the importance of finding a solution (Ministerium der DG, 2022).

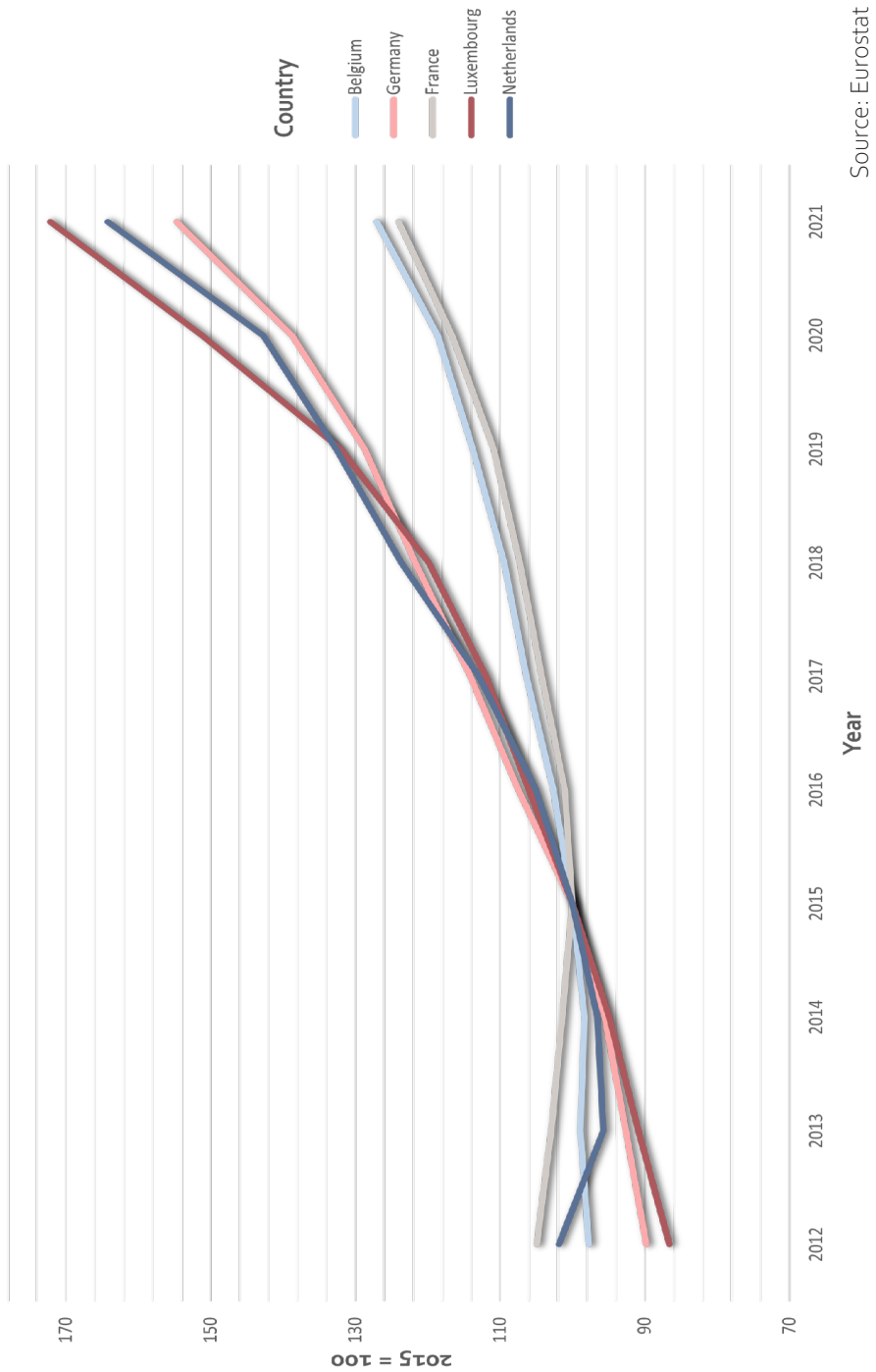
2.2.3 Economic challenges

House prices have been rising across the euro area for almost a decade. The increase has been exacerbated by the pandemic. This can be seen on the graph 17.

The fact that there is a shortage of affordable housing in many EU countries means that the problem is affecting the middle class and is starting to spread, making the problem even more acute. In the short term, this means that more housing is needed for vulnerable households on very low incomes, but also for middle-income households (The State of Housing in Europe: 2022 mid-term update, 2022).

In Belgium, house price growth varies according to location. In the German speaking part of Belgium, house prices increased by up to 16.5% between 2014 and 2018, compared to a 5% increase in Wallonia (Ministerium der DG, 2022). Adding to that we see in the last years a trend that people want more sqm in their house. As revealed by the WFG Ostbelgien¹⁴ the sqm per inhabitants rises but the average of people in an household decreases. As in 1995 the sqm per person were by 36.5 sqm per inhabitants and in 2021 it rose up to 47.7 sqm. This means that more sqm are needed. But the prices are also rising which shows us that we need to find new ways of living. For this reason a campaign was started to sensitise the population and attract them to smaller properties (Weniger Wohnraum, mehr Lebensqualität: WFG Ostbelgien nennt Vorteile, 2023).

¹⁴ WFG Ostbelgien = Wirtschafts- und Regionalförderung Ostbelgien (Economic and regional development for East Belgium)



Source: Eurostat

Graph 17:
House price inflation in Europe from 2012 to 2021

Another indicator for this trend is the waiting list of the number of candidates for social housing which stands by 700 households in 2022 by the ÖWOB. It shows the need for new social housing. For this reason the government allocates special funds from the European recovery funds to help to renovate and construct new buildings (Barth, Kreins & Klinkenberg, 2023). In the interview, the minister also highlights the difficulty young couples face in saving the 20% deposit required to secure a mortgage in the region.

In Kelmis, the population is expected to increase by 4,000 people over the next few years, with the aim of attracting people who can add financial value to the community and help the municipality's financial situation. In fact, Kelmis is the municipality with the highest density of people on government housing assistance in the German speaking part of Belgium. This situation places a heavy financial burden on the community, forcing it to find a solution. Motivating new residents to settle in Kelmis in the future raises the question of where they should live. There is also the need to analyse the occupancy of each house and the age group living there to see how more compact living spaces can be created. As we have seen, people live in larger houses than they need when their children have left home, like the ÖWOB houses, where 35% are underused. As the mayor pointed out, it is not possible to buy an apartment by selling your house, as the value of new apartments is often higher than that of old houses (Frank & Wimmer, 2023).

The minister confirmed this when interviewed on 12th January 2024, stating as follows: *"The concept of quality of life encompasses the affordability of housing, which is a particularly pressing issue in the current economic climate. If housing costs consume a significant proportion of a person's income, it leaves little room for other essentials such as food, clothing, cultural activities, sports, socialising and so on. These are all fundamental aspects of quality of life. Furthermore, the location of one's residence can influence this through the price factor. Therefore, I believe this is an important area for further investigation."* (Antoniadis, 2024).

2.2.4 Ecological challenges

There is a growing policy objective to minimise sealed areas and halt their expansion. The European Union does not currently have legally binding targets specifically to control urban sprawl and soil sealing, but ongoing efforts and policies aim to address these issues comprehensively by 2050. The EU's broader environmental strategies include significant reductions in land use and soil sealing as part of its commitment to biodiversity and climate resilience (European Commission, 2021).

Urban sprawl, the expansion of urban areas into rural or undeveloped areas, is a major environmental challenge. This expansion often leads to land sealing, where land is covered with impermeable materials such as concrete, which reduces biodiversity, reduces natural water management capacity and increases greenhouse gas emissions. The European Environment Agency (EEA) has reported on the continuing growth of urban sprawl, highlighting the need for effective monitoring and management to mitigate its negative impacts. They suggest improving the density of existing urban areas to curb sprawl, and suggest using sprawl analysis in urban planning to assess and manage the impacts of new developments (EEA, 2016).

In response, the EU has proposed an 'EU Soil Strategy for 2030' as part of the broader EU Biodiversity Strategy for 2030. This Soil Strategy proposes that Member States set voluntary targets to achieve no net land loss by 2050, in line with broader sustainability and climate resilience objectives (European Commission, 2021).

At the regional level of the Walloon Region, a comparable initiative, designated as 'Stop Béton' (or 'no more concrete' policy), is designed to impede the expansion of built-up areas with the objective of mitigating urban sprawl and safeguarding natural landscapes. This policy is part of Belgium's wider green transition efforts, which also include improving energy efficiency in buildings, increasing the use of renewable energy and improving the sustainability of the transport sector. The main objective of the Stop Béton policy is to limit new construction on undeveloped land, thereby reducing the amount of space taken up by new urban development. This includes limiting the expansion of residential and commercial buildings in order to preserve green spaces and agricultural land, thereby reducing environmental impacts and promoting sustainable urban planning practices.

Belgium's approach to this policy involves careful land-use planning to ensure that any development is consistent with regional sustainability goals and existing urban frameworks. The policy promotes more compact, efficient urban areas that minimise ecological footprints and support biodiversity conservation and climate resilience. The goal is to halt the consumption of undeveloped land by 2050 (Hanin & Halleux, 2022; Marechal, 2020).

This approach to urban sprawl and sealed areas is also evident in the German speaking part of Belgium, where political parties such as Ecolo organise events to educate the population about the importance of good land management (Ecolo Ostbelgien, 2023). This concern was echoed by the minister, who in the interview emphasised the potential impact on sealed areas that a co-housing project could have, especially with the addition of a community house (Antoniadis, 2024).

2.3 Field work

As explained in the methodology, during the whole process of the research a main point has been to take into account the perspective of the population, as change occurs only if people want and support change. In this context, after the theoretical and conceptual part focusing on the sustainability challenges, the research delved deeper into the desires and aspirations of the population to have a more complete understanding.

2.3.1 Survey

Before defining the questions of the initial survey, it is important to characterise the sample of the population that will be questioned. Van Campenhoudt, Marquet and Quivy (2017) in their "Manuel de recherche en sciences sociales" explain that scientific knowledge, especially within the social sciences, has every interest in taking the knowledge and intellectual capacities of those involved seriously and mobilising them in the research process itself, provided that appropriate and rigorous methods are used. The aim of the initial short survey was to gain an insight into the views of the inhabitants of Kelmis on the factors they consider crucial to their quality of life. The aim was to give the population a voice in this work, without claiming to be exhaustive or even representative of all the inhabitants of Kelmis. In other words, a "first round" of enquiry avoids committing to a task that would exceed the research limits in terms of time, material resources, intellectual capacity, and professional experience. A cross-analysis of the dependent and independent variables will only be of secondary interest in the context of this approach. Nevertheless, a cross-analysis could possibly reveal a link between preferences that are seen as necessities for an attractive habitat and a given independent variable. Hypothetically, this could be used to better target the future population when designing the neighbourhood. Extensive research would be all the more useful for this kind of theory, yet bearing in mind that sociology, even quantitative sociology, is not an experimental science.

Just because the relationship between a social environment variable and a dependent variable is observed in a given sample does not mean that the relationship is constant or even casual. " In other conditions, in other contexts, it may disappear " (Van Campenhoudt, Marquet & Quivy, 2017; De Singly, 2020). This stage of the research was limited to a small sample in order not to exceed the resources available in terms of time and means within the framework of this thesis. Yet, collecting views from the population could help to avoid being guided by our own preconceptions or those of politicians.

The target group of the survey was the current inhabitants of Kelmis, in order to gather answers consistent with the current situation. To widen the potential collection of responses, the survey was distributed as an online link, a QR code and via a paper version. The whole survey was written in German and French as the population speak either of the two languages. The survey was principally administered via direct contact with the people at the local Christmas market, over in December 2023. Additionally, the survey was shared on various Facebook groups, although in this case the response rate was limited. This also shows that, for such data collection, a direct approach with the population is often more efficient. However, it is important to be aware that specific events (e.g., the Christmas market) may attract only a particular group of the municipality's population.

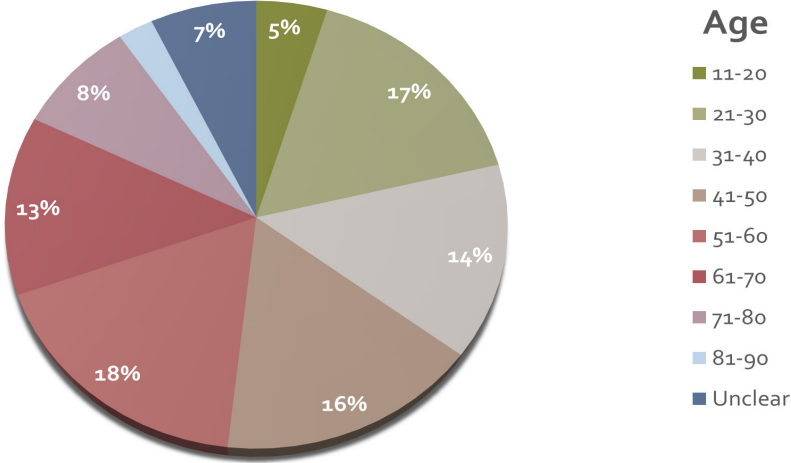
The survey allowed to collect 85 responses. The data were analysed through descriptive statistics (e.g., means and distributions) to compare the responses.

The survey was structured in three main parts. The first focused on gathering general informations about the participants, which allowed us to analyse which part of the population answered the survey. This section included questions about the age, gender, housing typology and ownership of the participants.

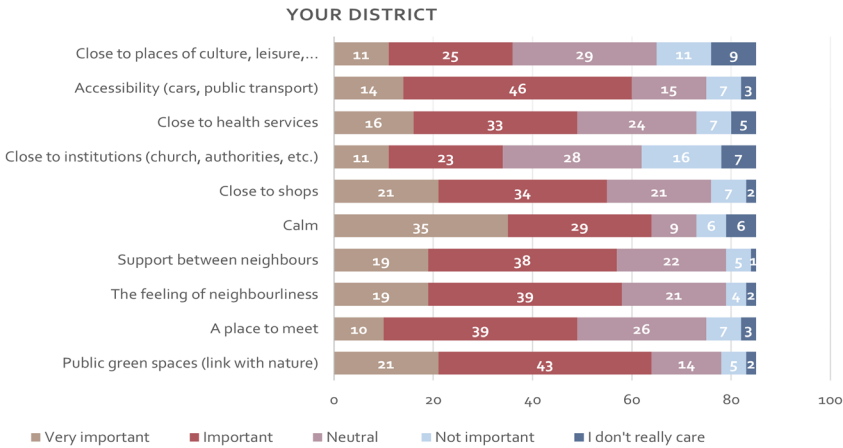
The second part of the study involved asking participants to rate the importance of various elements in their district and homes on a scale from 1 to 5, with 1 being very important. The final section of the survey consisted of open-ended questions aimed at determining participants' receptiveness to a new concept of housing and whether the challenges outlined in the theoretical section aligned with their interests. An unfilled version of the survey can be found in the appendix.

The results of the first part show that the majority, 59 % out of the 85 participants, are property owners as reported in graph 20 (p.101), with a fairly proportional distribution of gender and age. The results of the second part indicate a clear pattern of respondents that prioritise privacy, tranquillity, intimacy and affordability as shown in the graph 21 (p.101). In fact, 76 respondents answered to the relevance of intimacy as an important to very important aspect of their life. On the scale of the district, which can be seen on the graph 19 (p.100), the indicated priorities consisted of access to green spaces, along with support from neighbours, with 64 and 57 respectively out of 85 participants indicating that this aspect is at least important. The results of the third part indicate that the majority of participants are willing to engage in more communal activities with their neighbours. When asked about living in a more compact housing unit with shared facilities, people were in general hesitant to consider this new approach. However, more than half of the respondents expressed some interests, or were rather uncertain, indicating a potential for the introduction of new housing concepts. A vast majority (72%) of respondents were open to moving to the city centre to be closer to amenities.

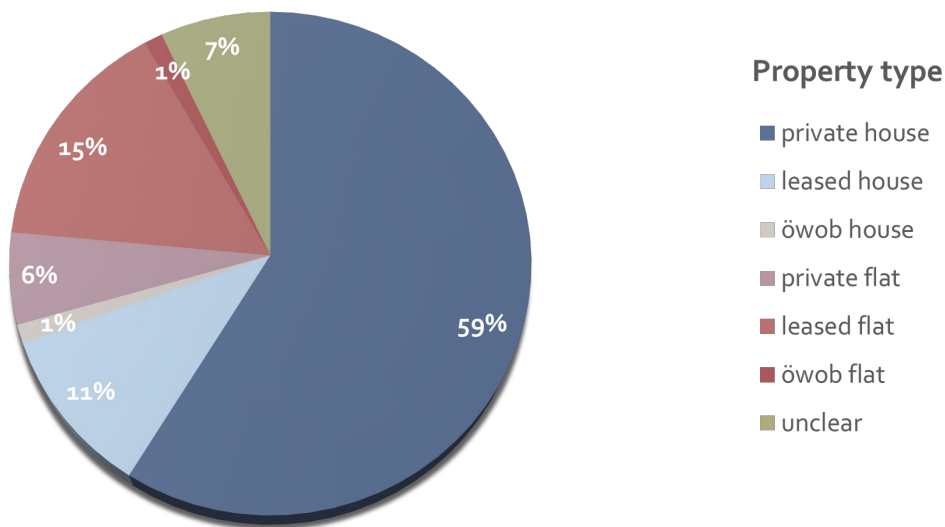
The results of the survey indicate that, based on this sample, there is potential for new concepts to be introduced around the topic of community activity, yet keeping attention to the importance of privacy and intimacy in their homes.



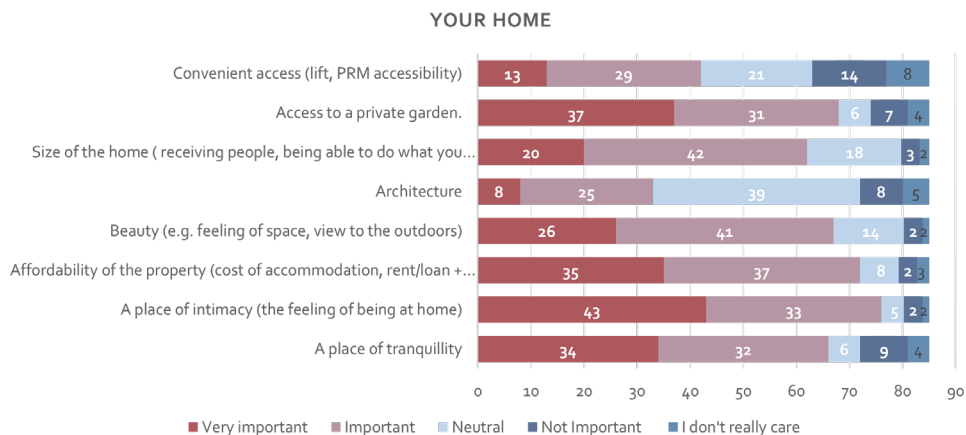
Graph 18:
Age distribution of survey participants



Graph 19:
Results on the importance of different elements in their district



Graph 20:
Property type distribution of survey participants



Graph 21:
Results on the importance of different elements in their home

2.4 Critical viewpoint

This chapter has provided a comprehensive overview of some of the key aspects relevant to this research, highlighting the different components, key challenges and primary objectives.

From an architectural perspective, we have defined the scale of the different housing types. Most residents have their own entrances, and the majority of dwellings are one to two storeys high, with only blocks of flats exceeding this height. In addition, the square metres per resident are relatively consistent across the different housing types, suggesting that the scale of houses could be standardised for future developments. Privacy is a highly valued attribute and architectural design, including access to green spaces, can significantly influence this aspect.

The study addresses the diverse challenges faced by the semi-rural population, with a particular focus on Kelmis. It highlights the need for a range of responses to meet the different needs of different demographic groups: affordable housing for young people; neighbourhoods that facilitate the integration of migrants; and community housing that accommodates the physical limitations and tackles the risks of isolation for the elderly.

Economic factors are also highlighted as having a significant impact on social aspects. As a result, innovative approaches to neighbourhood construction are essential to reduce both initial construction costs and long-term running costs.

The environmental dimension is becoming increasingly critical, as evidenced by initiatives such as "Stop Béton" in Wallonia and by statements by government officials stressing the importance of minimising sealed surfaces.

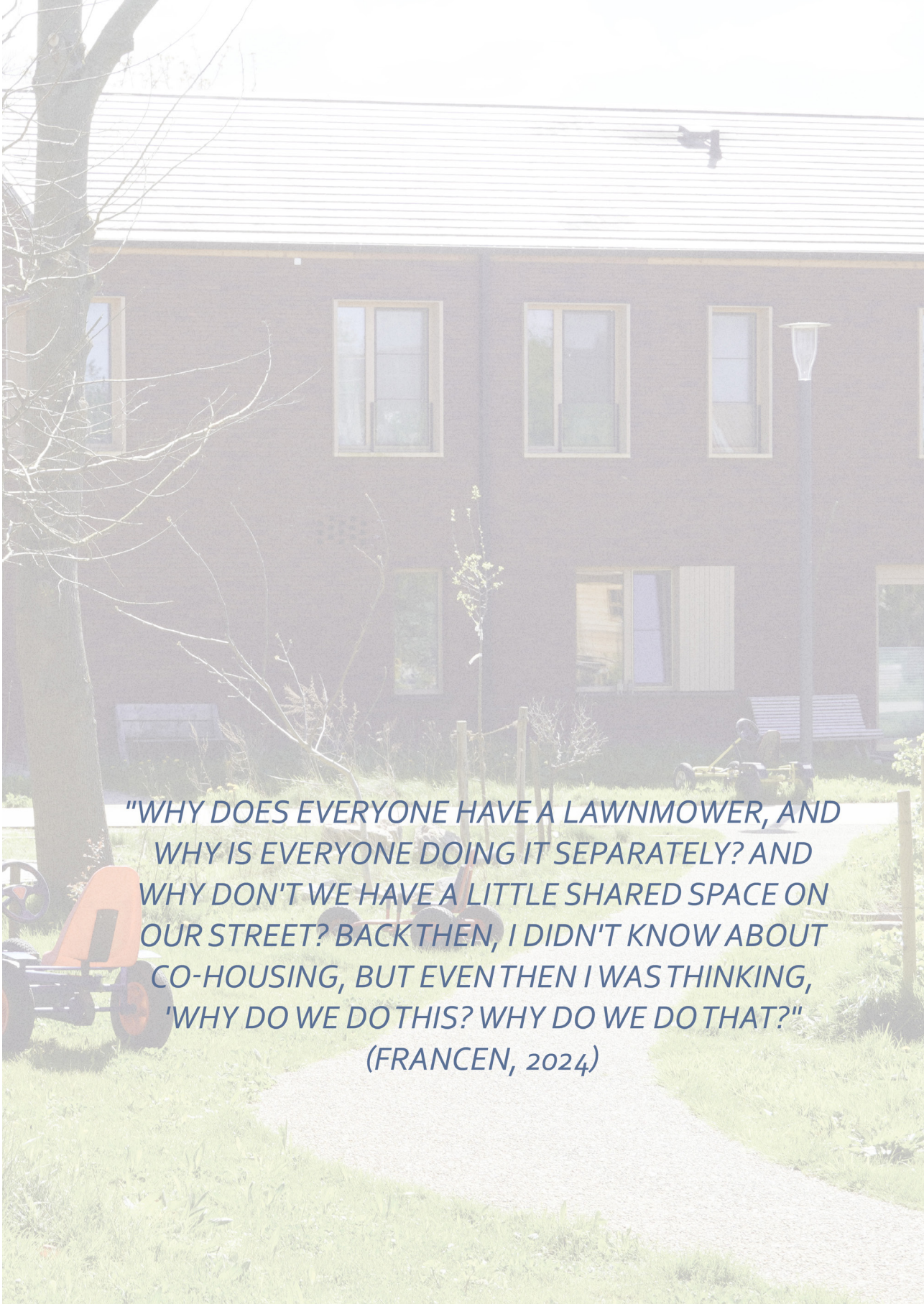
By considering the spatial characteristics of rural towns, with a particular focus on Kelmis, we aim to establish links between the challenges identified and the concept of co-housing.

Politicians are advocating greater diversity and more social mixity through new decrees and policies, requiring new concepts and approaches to meet these challenges. This is in line with the principles of the New Leipzig Charter, particularly the focus on the 'just city', which is central to this thesis. This sets the scene for the following section, which explores the concept of co-housing and the importance of architectural diversity in addressing these challenges.



#3

PART II : CO-HOUSING



"WHY DOES EVERYONE HAVE A LAWNMOWER, AND WHY IS EVERYONE DOING IT SEPARATELY? AND WHY DON'T WE HAVE A LITTLE SHARED SPACE ON OUR STREET? BACK THEN, I DIDN'T KNOW ABOUT CO-HOUSING, BUT EVEN THEN I WAS THINKING, 'WHY DO WE DO THIS? WHY DO WE DO THAT?'"

(FRANCEN, 2024)

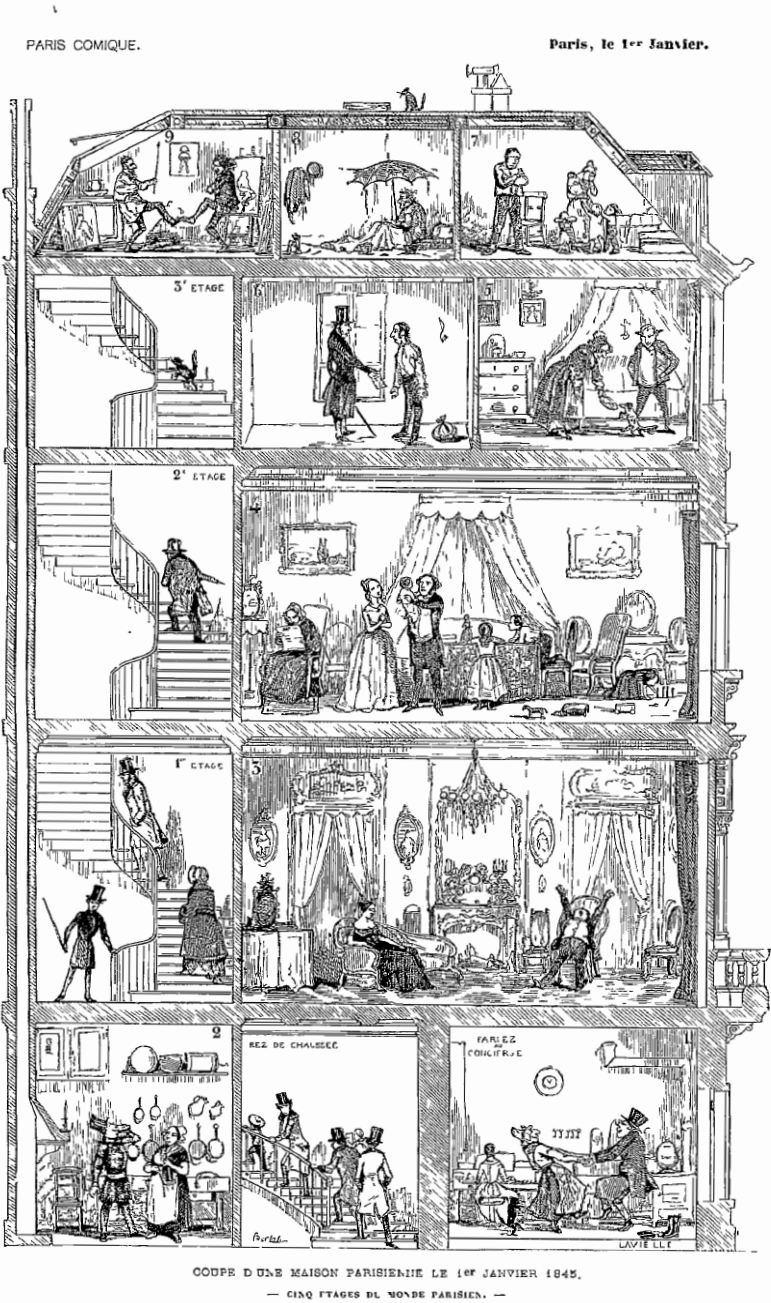


Figure 22:
Section of a Haussmannien House

3.1 Mixity in architecture

3.1.1 The influence of architecture on the social composition of urban environments

The concept of social mixity in architecture emerged in the mid-19th century, coinciding with the construction of worker neighbourhoods and the spatial concentration of classes and cultures due to significant migration. This concept was pioneered by Baron Haussmann in Paris and James Hobrecht in Berlin, who employed distinct methodologies. Haussmann addressed urban issues by demolishing the homes of the impoverished, whereas Hobrecht established a structural-legal framework aimed at urban reform (Schulte-Haller, 2011).

Baron Haussmann was tasked with the major renovation of Paris in 1853, during a time when the city's population had doubled, leading to overcrowded and unsanitary conditions. His mission was to transform Paris into a unified, beautiful, and breathable city. Over twenty years, he orchestrated the creation of parks, wider streets, new districts, and the displacement of 40,000 residences, culminating in a model of urban planning known as "Paris Haussmannien" (Richman-Abdou, 2023). The Haussmann Plan aimed to destroy small, narrow medieval streets and neighbourhoods to create large boulevards. These boulevards were accompanied by the construction of new apartment buildings, creating a new kind of living space. The buildings' façades followed detailed rules to create a unified Paris, using the same stone and maintaining a height of 12 to 20 metres, not exceeding a six-storey height. Each building was constructed proportionally to the size of the boulevard it faced. The façades were also uniform, following the same floor plans as shown in figure 22, consisting of a ground floor, first floor known as the "mezzanine", the second floor referred to as the "noble floor", and the third and fourth floors, which had smaller windows and balconies as these levels were not given a high value. As we can see from the section, and as explained before, the different floors were built for the needs of a particular social class, the bourgeoisie.

DEFINITIONS
INTRODUCTION
CONTEXT
CO-HOUSING
WORKSHOP
EPILOGUE

This group benefited from the expropriations and invested in the construction of these residences, which were designed to accommodate a bourgeois lifestyle. Social diversity was generally frowned upon. Although attic rooms for maids were included in these buildings for practical reasons, there was no intention of dedicating entire floors to workers. Instead, workers were encouraged to leave these newly established neighbourhoods and move to the eastern suburbs of the city (Shannon, 2023).

The Haussmann project faced many complaints due to the 17 years of construction and the destruction of many buildings, but it immediately improved the quality of life for existing Parisians by providing them with public parks, open air, and clean water to the citizens. The plan had a significant impact as it destroyed housing units and redistributed citizens. Haussmann's interventions have been widely debated among scholars, who often contextualise his efforts within the broader socio-economic conflicts of the nineteenth century. For instance, Paccoud (as cited in Freemark, Bliss & Vale, 2021) argues that Haussmann's early modernisation efforts were influenced by Saint-Simonian proto-socialist theories, prioritising the needs of productive citizens, including the working class, over the interests of the property-owning upper class. In contrast, other scholars like Loyer suggest that the projects aimed to control a restless citizenry and reconcile social reform with economic growth within the urban space. The physical restructuring of Paris led to the displacement of many low-income residents from central areas to the peripheries, reinforcing social stratification. According to Harvey (as cited in Freemark, Bliss & Vale, 2021), property ownership became increasingly consolidated among large-scale landlords due to speculation around public works, creating 'bourgeois quarters' while pushing middle- and low-income housing to the peripheries. This shift did not intermingle the classes but rather delineated sharper class boundaries between 1848 and 1870. The use of expropriation was a crucial tool in Haussmann's arsenal, allowing the city to expropriate land and displace existing residents.

Art historian Kirkland (as cited in Freemark, Bliss & Vale, 2021) emphasises that this practice spurred class-based segregation by transforming densely packed low-income neighbourhoods into attractive areas for the wealthy. As these projects often resulted in significant displacement without adequate public housing replacements, many working-class Parisians faced overcrowding phenomena and the creation of slums on the city's outskirts.

Despite the clear patterns of displacement and segregation, the impact of Haussmann's projects was not uniformly negative. In some areas, such as the Boulevard Arago, the demographic composition remained relatively stable post-redevelopment, with working-class residents continuing to live in the neighbourhood, albeit in new housing. This suggests that while displacement occurred, it was not as comprehensive or unidirectional as often portrayed. In contemporary times, the legacy of Haussmann's work continues to influence Parisian housing policies. Recent efforts by left-wing politicians and civil servants aim to counteract the historical segregation by funding social housing across various arrondissements, including wealthier areas. This approach seeks to promote social mixing and the integration of lower-income households into affluent neighbourhoods. However, the distribution of social housing units remains uneven, with a significant concentration in the city's periphery, echoing the segregation patterns established during Haussmann's era (Freemark, Bliss & Vale, 2021).

Similarly, the "Hobrecht-Plan" was implemented in Berlin, focusing on urban modification at a local scale. This plan continues to influence the city's typology and exemplifies the shift in design principles concerning street networks, public spaces, and block patterns, underscoring the role of small-scale urban development (Bentlin, 2023). Although neither example conclusively proved that social mixity resolves urban issues, they established foundational principles for future urban planning.

By the late 19th century, these principles were designed to counteract problems stemming from industrialisation and urbanisation, which included massive demographic shifts and urban sprawl. The primary goal of the garden city concept was to enhance living standards, particularly for the impoverished, by leveraging urban planning as a tool to distribute social benefits across communities (Hobson, 1999).

In the United Kingdom, the publication of "Garden Cities of Tomorrow" by Sir Ebenezer Howard in 1898 marked the beginning of garden cities, designed to foster communities where diverse social groups could coexist and thrive within green, amenity-rich environments (Garden City Movement by Sir Ebenezer Howard, 2020). This concept revolutionised urban planning by proposing a harmonious blend of urban and rural elements to create self-sufficient, aesthetically pleasing communities. Howard's vision included principles such as the "town-country magnet" for balanced living, limited city size to foster community and reduce congestion, green belts to prevent urban sprawl and preserve nature, and a radial design for efficient transport and equitable land distribution, as shown in figure 24. Despite criticisms regarding its feasibility and potential to create sterile environments, the Garden City Concept significantly influenced urban design, inspiring eco-friendly and sustainable developments. Today, Howard's principles are evident in the incorporation of green belts and mixed-use developments in modern cities, showcasing the enduring relevance of his ideas in addressing urbanisation challenges (Garden City Concept by Ebenezer Howard, n.d.).

[illegible]

Figure 24:
Ebenezer Howard's Garden Cities Concept in 1898

Post-World War II, Europe's reconstruction was influenced by Le Corbusier's 'Unité d'Habitation' in Marseille, completed in 1952. This project aimed to create a vertical, mixed-use residential area that embodied his five architectural principles¹⁵ from the 1920s, setting a precedent for public housing worldwide. The housing units in Marseille, and later in Nantes, epitomised Le Corbusier's modern living concepts, integrating rationality, functionality, and economy in architecture to organise urban space and enhance communal living. The Marseille project, a massive structure housing 1,600 people, features 337 interlocking duplex apartments accessible via internal "streets in the air" corridors (Unité d'Habitation of Marseille, n.d.). The building includes a commercial area with various services and uses the roof for communal facilities like a gymnasium, health centre, and social spaces. Elevated on pillars to free ground space for gardens, the design allows permeability and optimises circulation (Kroll, 2023; Le Corbusier's Unité d'Habitation de Marseille, 2023).

The building, originally intended for middle-class civil servants, has evolved to include academics and self-employed professionals, with some original residents and their descendants still present. Over time, the resident demographics have shifted from a politically active community to a more bourgeois and trendy profile, influenced by the building's listed status and Le Corbusier's international fame. Despite these changes, the 'Unité d'Habitation' fosters strong social ties and a high level of resident involvement in community events. This enduring affection is evidenced by the difficulty in acquiring available apartments (Sbriglio, 2004).

These projects, reflecting Le Corbusier's vision of architecture's role in social systems, became iconic, highlighting the essential relationship between construction and the urban environment. However, it also attracted criticism for inspiring repetitive architectural styles throughout the 20th century (Kroll, 2023; Le Corbusier's Unité d'Habitation de Marseille, 2023).

¹⁵ The five architectural principles of Le Corbusier are: pilotis, ribbon window, free plan, free façade, terrace garden (Archeetect, 2023).

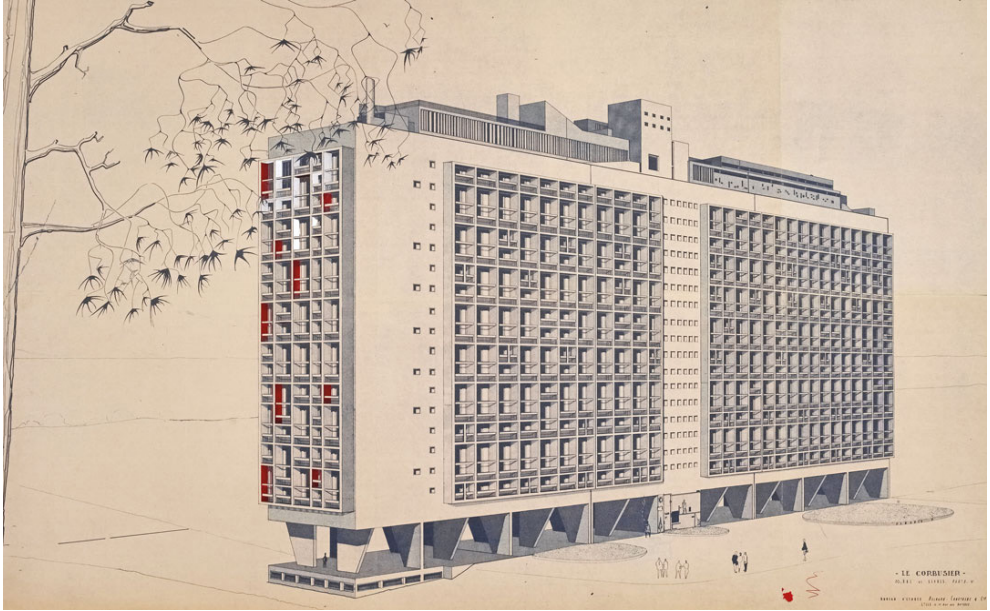


Figure 25:
Unité d'habitation by Le Corbusier

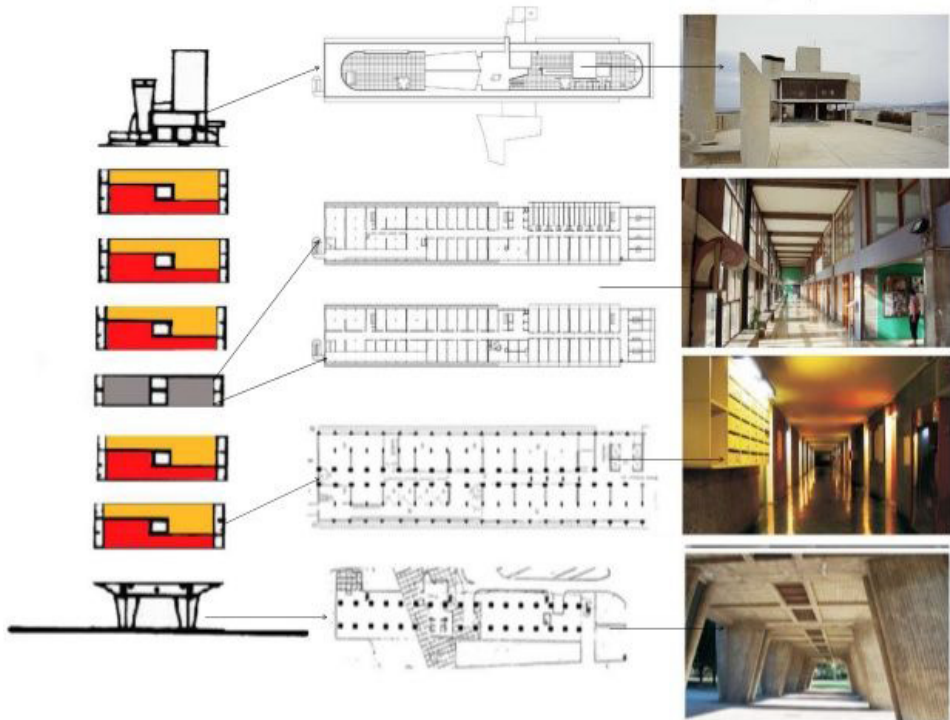


Figure 26:
Conception of the Unité d'habitation by Le Corbusier

The New Urbanism movement, initiated in the 1980s, sought to counter suburban sprawl by promoting denser, walkable cities based on historical neighbourhood planning principles. This concept includes a mix of multi-family housing, businesses, and commercial sites arranged in a grid system, exemplified by the 15-minute city model, which emphasises park access. In 2020, Carlos Moreno¹⁶ has advocated the concept of a 15-minute city for Paris. This concept is based "chrono-urbanism," which asserts that urban quality of life improves as transportation time decreases, particularly through reduced automobile use. In addition, we note that the C40 Cities Climate Leadership Group¹⁷ , which embraces this approach, emphasises the importance of ensuring that neighbourhoods within a 15 minute radius are home to a diverse population. The concept highlights the need to prioritise investment in low-income and underserved neighbourhoods, and to ensure that local people in these areas are not displaced by gentrification or made to feel excluded by changes in local identity. 15-minute cities must also seize opportunities to build affordable housing and diversify the mix of housing within neighbourhoods (C40 Knowledge, 2021).

Moreno envisions urban environments where all essential services living, working, commerce, healthcare, education, and entertainment are accessible within a 15-minute walk or bike ride. This model, rooted in his broader "living city" philosophy, aims to repair urban and social fragmentation caused by modernist planning. Key elements of this urban model include optimal density, proximity, diversity, and digitalisation, which collectively enhance service delivery, promote sustainable practices, and reduce commuting time and environmental impact. This approach not only improves urban life by fostering social cohesion and economic vibrancy, but also leverages digital tools to enhance accessibility and sustainability in urban settings (Moreno, Allam, Chabaud, Gall & Pratlong, 2021). Nevertheless, a study in Denver highlighted potential drawbacks, such as reduced bicycle use and public transportation availability in these areas (Overstreet, 2023).

In recent decades, social mixity has been contextualised within participatory architecture, aiming to foster collaborative urban planning processes involving professionals, academics, policymakers, and citizens. This approach is encapsulated by the New European Bauhaus initiative, launched by the European Union to integrate participatory design with sustainability, aesthetics, and inclusivity in urban development (Participatory City Making, 2016; European Union, n.d.).



Figure 27:
Concept of a 15-minute city

¹⁶ Carlos Moreno, a distinguished Franco-Colombian researcher and academic, is a professor at IAE - Paris1 Sorbonne University. As co-founder of the ETI Chair in "Entrepreneurship - Territory - Innovation", he has spearheaded significant research in the field of smart and sustainable cities. He is known for his pioneering work on the 15-minute city concept, "Ville du quart d'heure". He is also an advisor to Anne Hidalgo, the current mayor of Paris (Retrieved June 6, 2024 from [https://en.wikipedia.org/wiki/Carlos_Moreno_\(urbanist\)](https://en.wikipedia.org/wiki/Carlos_Moreno_(urbanist))).

¹⁷ The C40 Cities Climate Leadership Group is a group of 96 cities from around the world, representing one twelfth of the world's population and one quarter of the global economy. Founded in 2005 and led by cities, C40 is focused on tackling the climate crisis and advancing urban policies that reduce greenhouse gas emissions and climate risks while improving the health, well-being and economic opportunities of city residents. (Retrieved June 6, 2024 from https://en.wikipedia.org/wiki/C40_Cities_Climate_Leadership_Group).

3.1.2 A willingness to embrace diversity

To deepen our understanding of social mixity and its implications in urban design, a thorough review of research articles was conducted using the Science Direct database, focusing on the journal issue titled "Cities". This journal was chosen because it publishes articles on various aspects of urban planning and policy, and because it provides an international and interdisciplinary exchange of information between urban planners, policy makers, analysts and urbanists from different disciplines. Although this review is only focused on one academic research, it was initiated after engaging with the article "Social Mix Neighbourhood Policies and Social Interaction: The Experience of Newcomers in Three New Renewal Developments in France." (Bolt & Van Kempen, 2013). The selection process began with an assessment of articles, published in the last 15 years, based on their relevance to architectural impacts, resulting in an initial pool of 19 articles. These articles were further refined based on the geographic focus of their analyses, highlighting research from Western countries such as Europe, the USA, and Australia. A secondary criterion for inclusion was the alignment of article topics with economic impacts at the urban scale, which narrowed the selection to nine articles.

The discourse around social mixity is particularly vibrant in Western political contexts, where it is increasingly integrated into urban planning policies. This concept has been a focal point in the United States, addressing issues of spatial segregation and the effects on neighbourhoods, and has spread across Europe over the past two decades (Mugnano & Palvarini, 2013). The associated challenges often arose during periods marked by economic downturns, migration, and youth exodus from urban centres, underscoring the ongoing issues of socio-economic polarisation (Bolt & Van Kempen, 2013).

The term "social mixity" frequently appears in discussions on urban renewal, where it is linked to social cohesion. Although these terms are related, their interaction is crucial for achieving positive outcomes. Many European nations, including Denmark, Belgium, Luxembourg, Finland, France, the Netherlands, Ireland, and Sweden have adopted policies aimed at dismantling homogeneous social housing blocks to foster more socio-economically diverse communities. This strategy is intended to improve the areas' reputation and reduce stigma, thereby fostering a more integrated society (Bolt & Van Kempen, 2013). Expectations surrounding these policies are often elevated but tend to be based more on ideological beliefs than empirical evidence. Integrating diverse economic groups within the same district can inadvertently lead to community tensions. For instance, the strategy of demolishing concentrated social housing to make way for more expensive properties aimed at ensuring social mixity can lead to heightened divisions. This approach generates a mix of new and existing residents with varying income levels, but, rather than fostering integration, it may exacerbate feelings of separation and threat due to visible disparities in housing quality (Mugnano & Palvarini, 2013). Such dynamics are commonly observed in existing social housing projects, whereas in new developments, where all residents are newcomers, there may be a greater focus on building social cohesion. Further analysis in Italy has shown that in new districts where housing was sold at market rates alongside more affordable units, the intended social mixity often faltered. The middle class showed reluctance, influenced by persistent stigma and unaffordable pricing. Moreover, within these neighbourhoods, residents rarely attribute community formation to social mixity. Instead, community solidarity may emerge through shared initiatives and responsibilities, fostering social connections and ensuring equitable opportunities for all (Mugnano & Palvarini, 2013).

Research also highlights the potential risks associated with social housing policies that specify inclusion criteria based on age, nationality, or gender. Such criteria can segregate rather than unite, as residents may choose to socialize and shop in different areas that reflect their personal identities, thus diluting the intended effects of social mixity (Bolt & Van Kempen, 2013).

In conclusion, achieving social mixity and fostering social cohesion must proceed concurrently. The approach to integrating social mixity varies significantly between creating new districts specifically designed for this purpose and attempting to introduce it into existing communities. The success of these initiatives hinges on carefully crafted policies that promote genuine social integration rather than superficial demographic mixing.

3.2 Individual vs state initiatives

3.2.1 Context

After seeing the current challenges in part I, and after focusing on the importance of social mixity as a way to respond to existing issues by combining social mixity with social cohesion, the aim is to explore a housing concept that could respond to the challenges and be a part of the solution. In this context we will discuss, define and analyse the concept of co-housing.

At a first glance, we can recognize through the definition given by the Cambridge Dictionary, that the term is very vague, as it is defined as “a group of homes that include some shared facilities, like area, rooms, equipment or services for particular activities” (Co-housing, 2024). This shows us how broad the term can be, ranging from co-living¹⁸ to independent housing with only a shared outside spaces. These different concepts are made for different types of living and at different city scales. While the concept of co-living is getting relevant attention in major cities as it allows young workers to have an affordable rent and share a lot of facilities, it is also trending by the generation in their early 30's who are wealthy, single or in a couple without children, whose priority is not focused on the affordability, but rather the aspect of community. In this context, different companies are creating co-living concepts in various cities, some cases also even following the lifestyle of nomad workers as they can change location and live in another house, taking away the need to search for an Airbnb (Souza, 2021).

¹⁸ The practice of living with other people in group of homes that include some shared facilities (= areas, rooms, equipment, or services for particular activities) (Co-living, 2024).

As the aim of this research is to respond to the challenges of the municipality of Kelmis, the focus will be put on responding to this community's needs but also to follow the way of living of the local population and to enhance their acceptance of the concept. Based on the results of the survey and the typological analysis, we can recognize that relevance should be given to the importance of privacy and intimacy so that people can imagine to embrace this model. This allows us to better understand in which direction of co-housing we should look at. Prior to undertaking a detailed examination of the subject matter at the scale of Kelmis, it is necessary to conduct a historical and conceptual analysis of co-housing in Europe.

3.2.2 History¹⁹

Co-housing, or "bofællesskab" in Danish, traces its roots to Denmark in the late 1960s as a solution to the impersonal and isolating nature of modern urban housing. Influenced by architect Jan Gudmand-Høyer, the movement gained momentum and led to the establishment of the first co-housing community, Sættedammen, in 1972 near Hillerød, Denmark. This community, founded by 27 families, sought to create a child-friendly environment where daily tasks from laundry to childcare could be shared, emphasizing community interaction and mutual support through private homes clustered around shared facilities (McCamant, Durett & Hertzman, 1994; McCamant & Durrett, 2011). The concept of alternative housing in Denmark had been discussed since the early 20th century, reflecting a long-standing interest in revising conventional housing models. In 1987, the term "co-housing" was formally defined by Navne as communities made up of several essentially independent housing units. These units were occupied by families, individuals, or groups who collaborated on daily household activities. Characterized by their low-rise architecture to maintain a connection with nature and their density to foster social cohesion, these communities were often situated in suburban or semi-rural areas, earning the nickname of "architecture of the new left".

¹⁹ This section is based on the reference: Durett, Yang, Lin, Nash & Kongkhajornkidsuk, 2022.

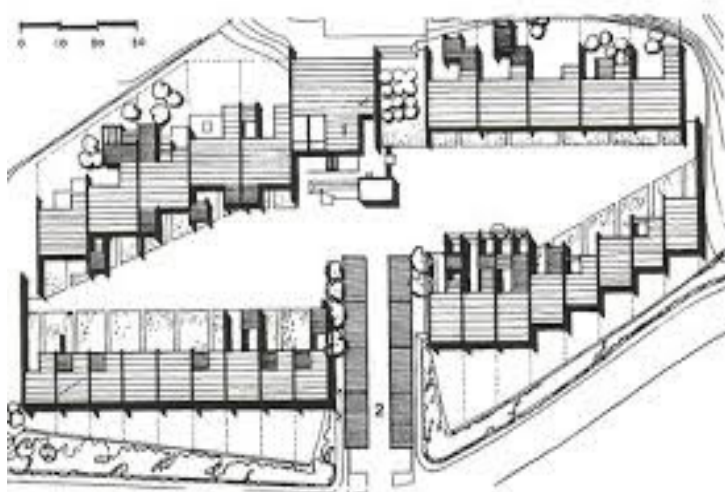


Figure 28:
Masterplan Sættemdammen



Figure 29:
Sættemdammen co-housing project.

Meanwhile, similar initiatives were developing in Sweden. During the 1970s, the concept of "kollektivhus" evolved, aimed to provide middle-class women opportunities to enter the workforce. These were primarily private initiatives, receiving minimal state or municipal support. By the 1980s, a new wave of co-housing focused on combating societal isolation emerged in Sweden, rooted in the values of gender equality and ecological awareness from the 1970s' alternative movements. The planning of these projects often clashed with public housing companies, revealing three constant themes: they were initiated by resourceful socially engaged groups; these groups generally received support from political and municipal bodies; and they faced planning conflicts that hindered progress.

In Germany, the evolution of co-housing began with demands for improved living conditions amidst late nineteenth-century capitalism. During the Weimar Republic, the movement flourished but faced suppression under National Socialism until the end of the Second World War. Post-war, the counter-culture of 1968 and the economic crises of the 1970s catalysed a socio-political shift that revived housing cooperatives and introduced the first co-housing projects as a response to the urban crisis and rising neoliberal urbanism. The era saw autonomous squatters and communes reclaiming abandoned buildings, establishing alternative living arrangements that challenged traditional family structures. These developments were part of a broader movement to create experimental living spaces that emphasized community, autonomy, affordability, and ecological consciousness—principles that have increasingly aligned with the broader concept of sustainability.

The international exposure of co-housing significantly expanded in the late 1980s when Kathryn McCamant and Charles Durrett published a comprehensive analysis of approximately 46 Danish co-housing communities. Their findings and advocacy introduced the concept to North America, culminating in the establishment of Muir Commons in Davis, California in 1991, the first co-housing community in the U.S. This marked a significant milestone in the global adaptation of the co-housing model.

Since the 1990s, co-housing has continued to spread across North America, and has been adapted in Australia, the UK, and other parts of Europe. In the U.S., these communities often incorporate sustainable living practices, as exemplified by the EcoVillage at Ithaca, New York. Today, modern co-housing communities are characterized by private homes with extensive shared facilities, resident-led management, non-hierarchical decision structures, and a focus on strong community bonds. As issues such as aging and urban isolation became more prevalent, co-housing has gained relevance, with senior co-housing providing a supportive alternative to traditional senior living arrangements. This evolution underscores a global trend towards sustainability and community-centric living, reinforcing the enduring appeal and adaptability of the co-housing model (Hagbert, Larsen, Thörn, & Wasshede, 2020). Co-housing communities emphasise the effective design of collective living arrangements and community-oriented multi-family housing. This includes for-sale condominiums, rental apartments, and subsidised affordable housing projects. Such developments are distinguished by strong communal ties and positive neighbourly interactions, proving that close proximity enhances rather than diminishes their value (Durett, Yang, Lin, Nash & Kongkhajornkidsuk, 2022).

3.2.3 Co-housing in the last few years in Europe

Amidst escalating real estate values and deregulation of housing markets, affordable housing has become increasingly inaccessible for the low-income populations. Concurrently, rising concerns over climate change and the ecological and social impacts associated with contemporary lifestyles have spurred interest in developing more sustainable living arrangements. Co-housing, as an alternative housing model, is frequently cited as having the potential to address these multifaceted challenges. The definition of co-housing varies depending on historical, political, and cultural contexts, reflecting its adaptive and locally-specific nature.

To provide a clearer understanding of co-housing’s role in addressing these challenges, it is useful to examine examples from various cities. Although a comprehensive inventory of co-housing types is beyond the scope of this research, an analysis of selected European examples will elucidate how these communities are responding to their specific challenges and the broader potential of the co-housing model. This analysis will focus on three particular projects: La Borda in Barcelona, Spain; Wohnprojekt Wien in Vienna, Austria; and Marmalade Lane in Cambridge, United Kingdom.

These projects were chosen for the impact they have had on their city and even further afield, and since they allowed for new ways of thinking, as all of them were initiated by residents who wanted to confront a problem choosing their new way of living. Each case study will explore the process, composition and post-occupancy²⁰ of the project. The intention is not just to present these projects as isolated cases but to contextualise them within the larger movements they are part of, illustrating how co-housing is not only a response to immediate local needs but also a strategic contribution to broader societal challenges. This approach allows for a nuanced understanding of the various ways co-housing can help foster more resilient and sustainable communities, in alignment with wider socio-economic and environmental goals.

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La Borda, Barcelona, Spain

In 2018, new residents began occupying La Borda, a housing cooperative in Barcelona, marking the culmination of a five-year process that established the building as a pioneering model for innovative housing in a predominantly ownership-based country. The movement towards cooperative housing began in 2012 when citizens from various districts of Barcelona mobilised to reform the existing housing system. This effort coalesced into a 15-member group exploring cooperative housing frameworks already present in Catalonia. By 2014, the local municipality embraced the concept, allowing the cooperative to expand its membership significantly and commence the project on publicly owned land. This initiative required that residents met specific income criteria, thus promoting the development of social housing driven by grassroots efforts. The project also spurred policy changes in Barcelona, enhancing the cooperative housing sector. By 2016, 26 alternative housing initiatives had emerged in Catalonia, with Barcelona becoming a hub for these innovative concepts. This shift was a reaction to the 2007 housing crisis and subsequent Spanish housing policies that promoted private homeownership and fuelled real estate speculation. The cooperative model at La Borda counters speculative practices by ensuring the property remains under cooperative control, integrating all residents into the decision-making process. This governance model prevents individuals from selling or renting out their homes independently. Such actions are decided collectively by the community (Kaltenbach, 2022).

²⁰ Post-occupancy is the process of obtaining feedback on a building's performance in use after it has been built and occupied (Post Occupancy Evaluation: An essential tool to improve the built environment, 2020).

La Borda's architectural design is a testament to participatory planning and sustainable construction. The building encompasses 2,950 square metres divided among 28 dwellings of varying sizes (S, M, L, XL) and 280 square metres of communal spaces. Its structure utilises fire-resistant wood and concrete for the ground floor, effectively blending private, communal, and public areas. The apartments and communal areas are organised around a central common hall, which serves as a thermal buffer zone, allowing the building to stay cool in summer and warm in winter (Kaltenbach, 2022). This design supports sustainability, community life, and architecture that prioritises people, featuring adaptable open building infrastructure and integrating a gender perspective (Luco, 2024). The central hall promotes circulation to different spaces, enhancing the sense of community and interaction among residents (Kaltenbach, 2022).

Post-occupancy, La Borda has been characterised by strong community bonds and participatory governance. Key communal facilities developed through participatory design, include a kitchen, dining area, multipurpose room, guest bedrooms, laundry, and rooftop, all intended for daily use and fostering a robust community bond. Additionally, a cooperative-managed local shop promotes neighbourhood integration, illustrating the project's comprehensive approach to community-oriented development.

This model has not only provided a sustainable and inclusive housing solution but also set a precedent for future housing cooperatives in Barcelona and beyond, showcasing the potential of cooperative living to create resilient and socially cohesive urban communities (Luco, 2024).

Wohnprojekt Wien, Vienna Austria²¹

In 2013, following four years of meticulous planning, approximately 100 individuals, comprising around 65 adults and 35 children, relocated to Wohnprojekt Wien. This endeavour was strategically crafted to redefine the co-housing paradigm within Vienna, serving as a flagship example of a novel residential model. The overarching goal was to create a diverse community that brings together multiple generations, cultures, and professional backgrounds under a single roof. Economically, Wohnprojekt Wien mitigates speculative risks through its model of collective ownership and management. The project is also notable for its sustainable construction features, including passive house standards with controlled ventilation and photovoltaic panels. Transport sustainability is emphasised through the integration of a car-sharing pool, cargo bikes, and an electric car, underscoring the project's commitment to environmentally responsible living.

The architectural design of Wohnprojekt Wien is intentionally communicative, crafted to foster vibrant living spaces that balance security and tranquillity with opportunities for diverse social interactions. This is achieved through well-considered amenities such as guest apartments, a library, a sauna, and a relaxation room located on the green terrace of the top floor. Communal areas on the ground floor include a kitchen and a children's play area adjacent to garden spaces. The basement is used for community and external events, strengthening the social fabric of the neighbourhood.

²¹This section is based on the reference: European Union, n.d.; Wohnprojekt Wien Verein für nachhaltiges Leben, n.d.



Figure 32:
Wohnprojekt Wien

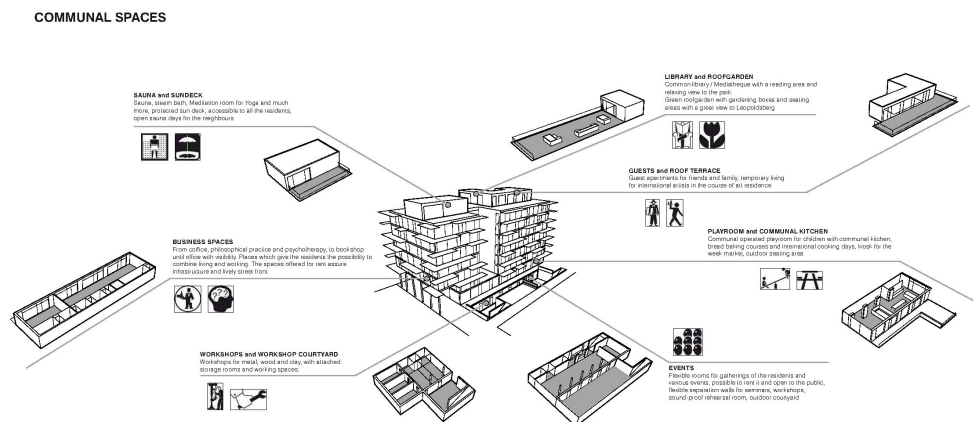


Figure 33:
Communal spaces of the Wohnprojekt Wien

Post-occupancy, Wohnprojekt Wien has been organised sociocratically, using a form of governance that originated in the Netherlands and was refined in the 1960s. Decisions within the community are made based on consensus rather than majority rule, ensuring solutions that all members can accept. Various activities, including property management, community events, and ecological projects, are autonomously planned and executed by smaller working groups trusted by the entire community. Inclusivity is a cornerstone of the project's ethos, supported by a solidarity fund contributed by nearly half of the residents, which provides housing solutions during personal crises and accommodates refugees. Additionally, the project offers spaces in the basement for social organisations at no cost, reinforcing its commitment to inclusive practices. The impact of Wohnprojekt Wien has been profound, establishing a sustainable lifestyle within a community that values participation and democratic decision-making. The central community hub, known as the "Salon", serves as a vital meeting point for the neighbourhood, offering both commercial and social engagements. The availability of multipurpose rooms in the basement for various events further amplifies community engagement and external visibility.

Wohnprojekt Wien has attracted over 10,000 visitors globally, showcasing its role as an educational model for sustainable urban living. Its communal ownership model, characterised by extensive community participation in planning and management, represents an innovative approach to communal living. This model serves as a potential blueprint for similar initiatives worldwide, highlighting its capacity to inspire future urban housing developments. Since its inception, Wohnprojekt Wien has exemplified the next generation of co-housing projects by integrating sustainability practices with community-oriented living (European Union, n.d.; Wohnprojekt Wien Verein für nachhaltiges Leben, n.d.).

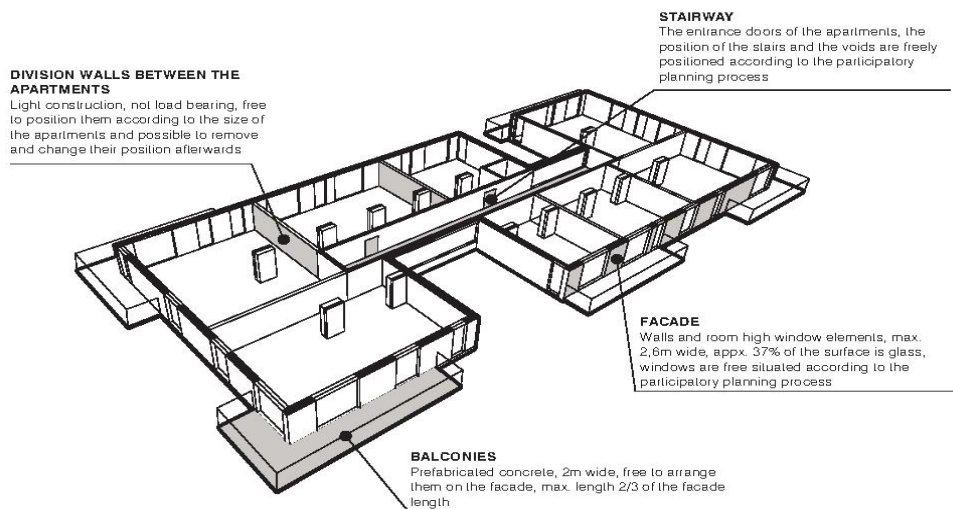


Figure 34:
Building characteristics of Wohnprojekt Wien



Figure 35:
View of the building and the common garden of Wohnprojekt Wien

Marmalade Lane, Cambridge, United Kingdom

In the United Kingdom, securing land for cohousing initiatives has consistently represented a substantial challenge. Orchard Park in Cambridge was designated for housing development in 2002. However, the onset of the 2008 financial crisis abruptly halted progress after development commenced in 2006, prompting the initial developer of the K1 project approved for 37 market-sale homes to withdraw. In response, Cambridge City Council commissioned Stephen Hill of C2O Future Planners in 2011 to conduct a feasibility study for self-build homes on the K1 site, drawing inspiration from the Vauban self-build community in Freiburg, Germany. This study aimed to elevate architectural quality and promote sustainable living, with co-housing being selected as the preferred development model due to its community benefits. By 2012, Adam Broadway of Instinctively Green took on the management of the K1 Cohousing feasibility study, which evolved into a full project management role as the initiative progressed. An advertising campaign in 2013 facilitated the formation of what would later become Cambridge Cohousing Limited, initially supported by council seed-funding and additional grants. That same year, with the technical assistance of Jim Ross from Cambridge Architectural Research, the cohousing group developed their client brief and applied for outline planning permission from South Cambridgeshire District Council. The City Council released the K1 site for tender in 2014, selecting TOWNHUS a collaboration between TOWN and TRIVSELHUS, a Swedish eco-house builder as the development partner. This partnership successfully secured full planning permission in 2016 after an extensive design process involving TOWN, Mole Architects, and the cohousing group. Construction commenced in 2017 under Coulson Group Limited as the contractor, culminating in residents moving into their new homes at Marmalade Lane in December 2018 (Lane, n.d.).

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The architectural composition of Marmalade Lane is distinguished by its terraced layout, which fosters pedestrian-friendly streets and serene gardens while confining car parking to the periphery to maximise communal space usage. The design contemporises traditional Cambridge townhouses and low-rise apartments by incorporating generous porches, balconies, and private gardens. Each household selected a 'shell' house or flat type, customised with chosen floor plans, kitchen and bathroom fittings, and one of four external brick options. This method balances individual customisation with a cohesive architectural style, circumventing the complexities of self-build. The homes are arranged in terraces that front existing streets and create a new thoroughfare, ensuring the development is both outward-facing and community-focused. These terraces encircle a large shared garden with an open southern aspect to maximise sunlight. The common house, constructed from cross-laminated timber and featuring a double-height hall, communal facilities, and three guest bedrooms, faces the garden and serves as a transitional gateway between public and co-housing spaces, acting as a central civic building for the community. The scheme also incorporates communal waste stores and a cycle parking. Strategically located adjacent to a Cambridgeshire Guided Busway stop and near essential cycleways, Marmalade Lane offers efficient access to key areas, thus enhancing connectivity for its residents (Lane, n.d.; Pintos, n.d.).

Post-occupancy, Marmalade Lane functions as a vibrant co-housing community where all residents are members of Cambridge Cohousing Limited and have a stake in the common areas, contributing to the management of the community. The communal facilities promote environmental stewardship through recycling, communal gardening, composting, and sustainable rainwater management. The housing units, which include twenty-one houses and twenty-one apartments across seven distinct types, are designed with high ceilings, large windows, and open-plan living areas, each featuring private outdoor spaces and access to secure parking, encapsulating a balance of privacy and community integration. The active involvement of residents from the project's inception has fostered a strong sense of ownership and community, making Marmalade Lane a pioneering model for sustainable and cooperative urban living in the UK (Lane, n.d.).



Figure 36:
Marmalade Lane housing typologies



Figure 37:
Pedestrian street in the Marmalade Lane Project



Figure 38:
The common house in the Marmalade Lane Project

3.3 Field work

Upon examining the general concept of co-housing through case studies in three distinct countries, a commonality emerges: the centrality of a participative process, wherein residents engage actively, leveraging their intimate understanding of their specific needs and challenges. This exploration enhances our comprehension of co-housing as previously discussed, where its definition was noted to be broad and adaptable. We now recognize that while co-housing aims to address local issues, the specific nature of these issues and the solutions co-housing provides vary significantly across different contexts due to variations in policy, economic conditions, cultural norms, and historical backgrounds.

For the fieldwork component of this study, the focus will shift to four co-housing projects in Belgium. This choice allows for a deeper exploration within a consistent national context, potentially analogous to the challenges faced in Kelmis. The selection of these projects has been based on several key criteria designed to enhance understanding and facilitate comparisons with the situation in Kelmis. This strategic focus is intended to yield insights into how co-housing can be tailored to meet local needs while contributing to broader community resilience and sustainability.

3.3.1 Main criteria

With these objectives in mind, the main criteria used to choose the projects, where their scale, the proximity to main urban agglomerations, the density of the city and the typology of the buildings. The scale of the project is important to take into account as scales allow to see if there is a change in the interaction between the members, when the groups are bigger for example.

The proximity to main urban agglomerations is important as it allows to understand why people are living there and the considerations made when choosing to live in this location.

The density of the city is another important criterion, as it allows to understand if the density of the city is similar to that of Kelmis. This facilitates making a better parallel as the challenges are more resembling and the mobility within the cities might be at the same scale as Kelmis.

The typology of the buildings is also among the main criteria to take into account. In fact, in the chapter on housing typologies, Kelmis was recognised as being characterised by building types that allow easy recognition of individual dwellings in each street, showing distinctive qualities in terms of building density and heights.

While analysing the different projects chosen, the aim was to better understand the relation between the inhabitants, the conditions during occupancy, the relations with the neighbours, the common activities, the usages of the common houses and how the concept was developed, with its main characteristics.

To answer these objectives, each of the chosen co-housing example was visited to allow consolidating a photography reportage and performing an interview with at least one inhabitant. A semi-structured interview methodology was used to elicit information to clarify the preliminary research (see previous section) and to facilitate the subsequent interpretation and justification of the findings. To this end, a set of open-ended questions was formulated in advance to serve as a basic structure for the interviews. However, each project retained the autonomy to define the specific parameters of the interview, including who would be interviewed, where and when.²²

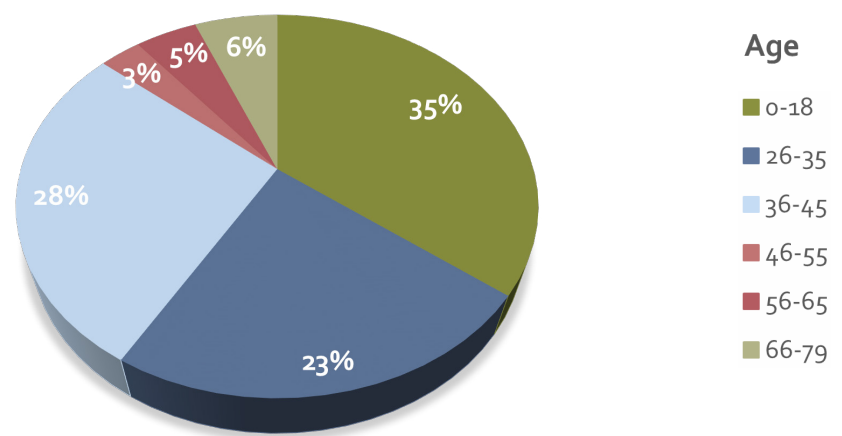
All these informations are completed, by plans and data about the projects, that were provided by the residents or were found in diverse articles and webpages.

²² The details of this framework will be set out in footnote when the general concept of each project is presented, as they will largely determine the content of the information gathered (Gaspard, 2019).

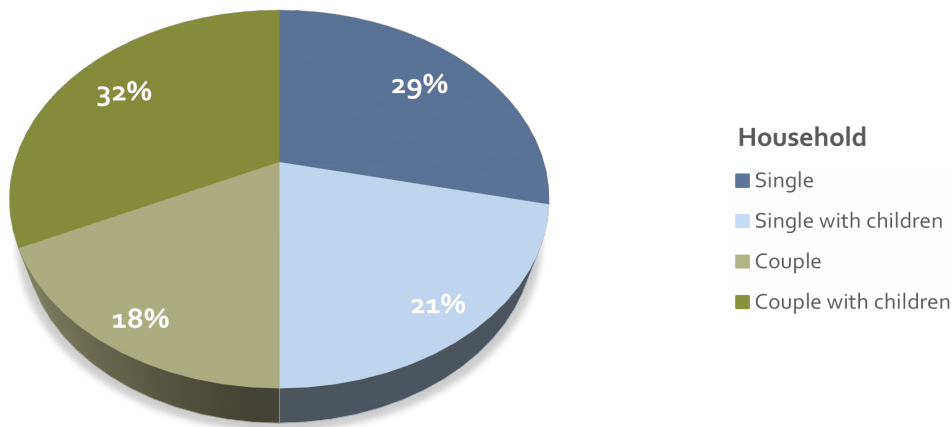
3.3.2 Co-housing analysis

GECCO

Location: Gentbrugge
Population of Gentbrugge: 15,957 inhabitants (2020)²³
Density of Gentbrugge: 2,000 inhabitants/ km² (2020)²⁴
Number of houses in the Gecco project: 17 units
Number of apartments in the Gecco project: 11 units
Number of adults in the Gecco project: 42
Number of children in the Gecco project: 25



Graph 22:
Age distribution of the inhabitants of the Gecco project in a 3D pie chart



Graph 23:
Household distribution of the inhabitants of the Gecco project in a 3D pie chart

²³ Retrieved June 2, 2024, from https://en.wikipedia.org/wiki/Gentbrugge#Demographic_facts
²⁴ *ibid.*



Map 10:
Gecco master plan schematic representation

General concept²⁵:

Gecco is a co-housing project situated in Gentbrugge, covering 1.2 hectares. A collaborative approach was crucial to ensure that all prospective residents were engaged in the decision-making process, allowing for the customisation of architectural features to distinguish individual units.

Ine, an inhabitant of the project who was interviewed, emphasized the social and environmental benefits of co-housing, particularly the value of increased green spaces and community interaction, which she found advantageous for children. She witnessed considerable personal development in her eleven-year-old daughter, who displayed newfound nurturing behaviours towards younger children, a behaviour that had previously gone unnoticed.

The Gecco project boasts a range of communal amenities, including a garden, playground, sauna, a spacious kitchen, laundry facilities, guest rooms, and a multipurpose room that can be used for work or recreation. Additionally, the community has a workshop and bicycle parking. Regularly scheduled events like communal meals and chore days promote cooperation and enrich the living experience, fostering a sense of community and allowing residents to contribute based on their capabilities.

Effective communication is crucial in this community, supporting a lifestyle that is both independent and interconnected. The residents use a communal WhatsApp group to facilitate everyday communication and provide mutual aid, highlighting the project’s focus on both individual autonomy and collective responsibility. This structure ensures that all decisions impacting the community are made collectively, reinforcing Gecco’s commitment to a shared community ethos (Pieters, 2024; Dhooge & Meganck, n.d.; Gecco, n.d.).

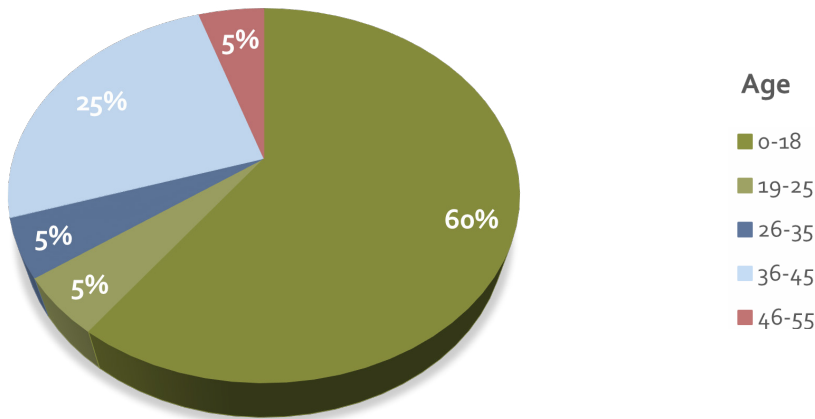
²⁵ Interview with Ine Pieters (47 years old, lives in Gecco since 2021), in the common garden at 4:30 pm 27.03.24, Gentbrugge

Personal notes:

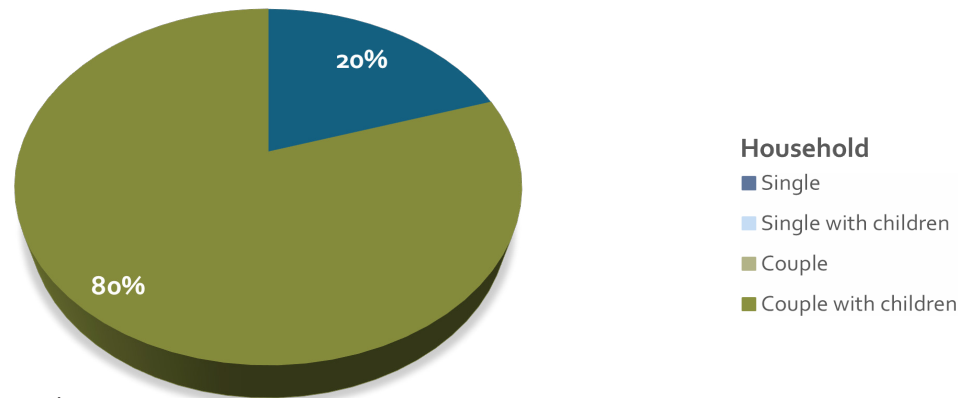
The impression gained from this visit was particularly influenced by Ine's comprehensive understanding of the project. She has been part of the project since its conception. This in-depth understanding of the conceptual decisions seems to be crucial, as it allows for the optimal use of all spaces according to current needs, and informs residents of the potential impact of various elements on the overall design for future developments. Furthermore, there is a recognition of the diverse time commitments among individuals, which fosters an environment of solidarity. This adaptability allows for the inclusion of various age groups and household types within the community, acknowledging that individuals such as working parents with young children may not have as much time to contribute as retired residents. Additionally, a strong sense of community was evident during the visit, as demonstrated by the interpersonal connections among the residents. For instance, when a child began to cry during the interview, Ine promptly responded by comforting the child and reuniting it with its parents. This act not only highlighted the communal support prevalent among the residents but also underscored the effective social integration within the community (Pieters, 2024).

SEUCHA

Location: Profondsart²⁶
Population of Limal: 9,440 inhabitants (2020)²⁷
Density of Limal: 836 inhabitants/km² (2020)²⁸
Number of houses in the Seucha project: 10 units
Number of apartments in the Seucha project: 0
Number of adults in the Seucha project: 18
Number of children in the Seucha project: 26

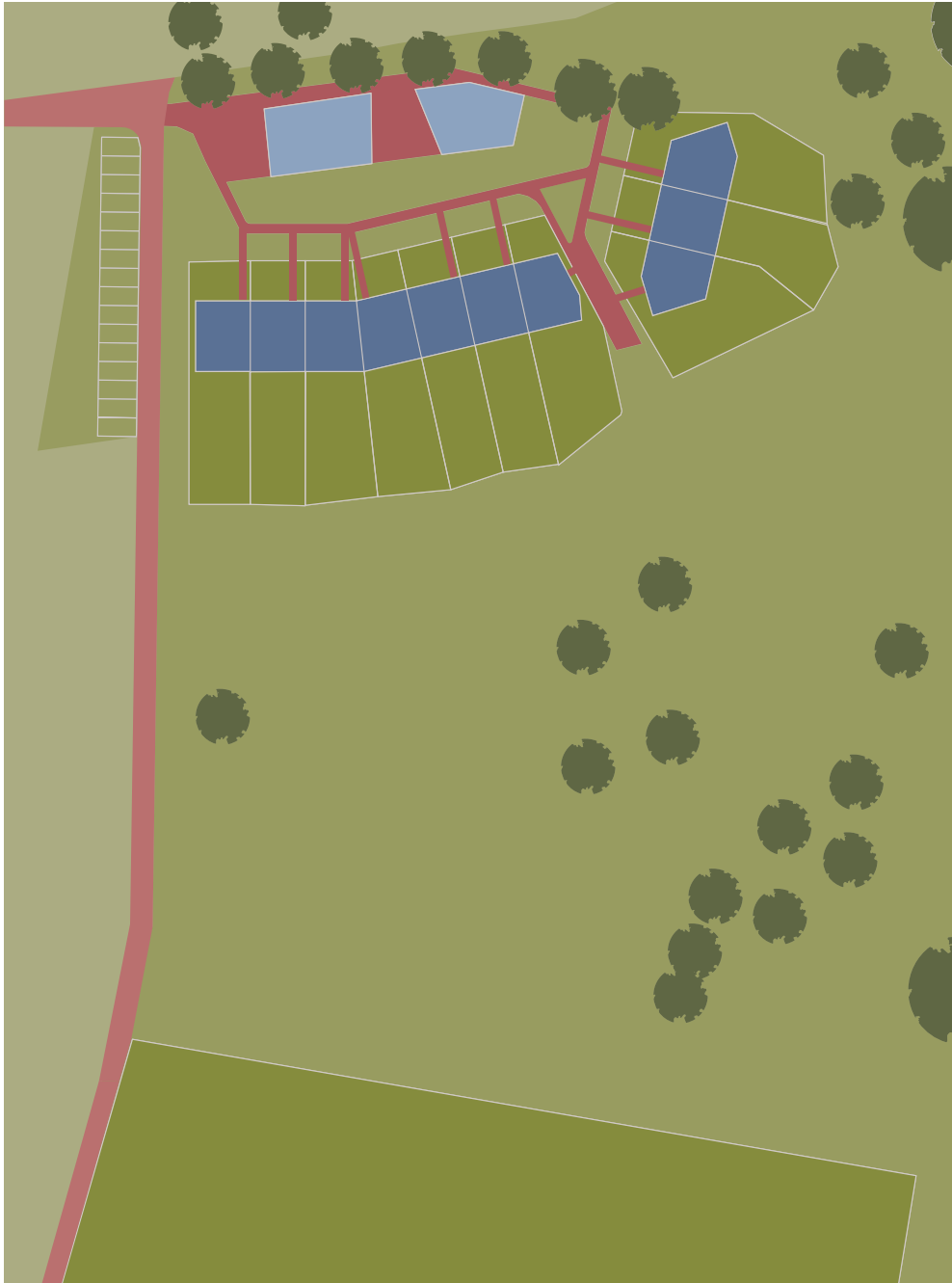


Graph 24:
Age distribution of the inhabitants of the Seucha project in a 3D pie chart



Graph 25:
Household distribution of the inhabitants of the Seucha project in a 3D pie chart

²⁶ As the data for Profondsart are not available, the population and density figures shown are for Limal, as Profondsart is a hamlet of it.
²⁷ Retrieved June 2, 2024, from <https://fr.wikipedia.org/wiki/Limal>
²⁸ *ibid.*



- | | |
|-------------------|--------------------|
| ■ Community path | ■ Private garden |
| ■ Public path | ■ Community garden |
| ■ Private house | ■ Public garden |
| ■ Community house | |

Map 11:
Seucha master plan schematic representation

General concept²⁹:

The project planning for Seucha commenced in 2013, with a completion in 2017. Emilie, an inhabitant of the project who was interviewed, remarked on the expedited nature of the timeline for such an initiative. Spanning 4 hectares, only 45 acres were designated as buildable land, prompting the initial ambition of five families living collectively. These families aimed to double their number, successfully recruiting additional households through an "auberge espagnole" style of collaborative filtering to maintain shared values among participants.

Administratively, the project was controversial as provincial mandates favoured lower densities and larger dwellings, despite the community's goal of minimising land sealing to counter urban sprawl. With the 2050 goals, after the 'Stop Béton' initiative, administrative acceptance was secured. The overarching masterplan and coordination were conducted by Karbon architectural office, yet the design of individual buildings was largely undertaken by the residents, many of whom are architects, allowing for distinct architectural variations.

Financially, purchasing the land posed a challenge, as each resident was considered as an individual buyer, making it difficult to secure bank loans. Nonetheless, group purchasing rendered the land more affordable. Infrastructure provisioning, such as water and gas, paralleled typical real estate developments, adding significant costs.

Within the community, while technical installations such as heating systems were shared among some houses, the overall structure promoted individual living spaces to maintain property value an economic consideration highlighted by the inhabitants from her own experience of shared living devaluing property.

²⁹ Interview with Emilie Gobbo (40 years old, lives in Seucha since 2018), in her house at 11:00 am 05.04.24, Profondsart

The communal facilities in Seucha include a common house equipped with a kitchen and meeting space, plus additional recreational areas for children. This venue hosts bi-monthly meetings and is available for events. Despite these provisions for community interaction, Emilie acknowledged inherent social challenges due to differing perspectives, although communal bonds have strengthened over time.

The community also incorporates a mixed-use area consisting of private gardens, shared forests, grasslands, and a co-owned marshland business, enhancing local access to fresh produce. The governance of property transactions within Seucha requires community notification and approval, reflecting a collective ethos despite the individualistic housing structure (Debrun, 2022; Debrun & De La Boulaye, 2022; Gobbo, 2024).

Personal notes:

During my visit to the Seucha project, I gained deeper insights into the nuances distinguishing it from typical co-housing initiatives. Notably, Seucha adopts a more individualistic architectural strategy, yet, as revealed through discussions with a resident, it retains a strong sense of mutual aid and community cohesion. This observation underscores the idea that extensive shared facilities are not a prerequisite for fostering a social environment.

From an architectural standpoint, the design and typology of the units significantly influence the demographics of the residents, illustrating the potential of architectural design to foster diverse community compositions. Moreover, the project's engagement with the surrounding community was evident. Activities such as yoga and choir, held in the communal spaces, and participation in local school events indicate a well-integrated relationship between the Seucha residents and the wider municipal community. These interactions not only enrich the community life within Seucha but also enhance its integration into the broader social fabric of the area (Gobbo, 2024).

WIJG & CO

Location: Wijkmaal

Population of Wijkmaal: 3,793 (2020)³⁰

Density of Wijkmaal: 827 inhabitants/km² (2020)³¹

Number of houses in the Wijk & Co project: 17

Number of apartments in the Wijk & Co project: 16

Number of adults in the Wijk & Co project: 60

Number of children in the Wijk & Co project: 30

Unfortunately, there are no data available on the age distribution and the composition of the households of the inhabitants of Wijk & Co.

³⁰ Retrieved June 2, 2024, from <https://fr.wikipedia.org/wiki/Wijkmaal>

³¹ *ibid.*



Map 12:
Wijk & Co master plan schematic representation

General concept³²:

The conceptualisation of the Wigg & Co co-housing project began in 2000, initiated by resident Leen, who from a young age questioned the conventional use of resources and community spaces. Her early inquiries into why neighbours did not share lawnmowers or have common areas laid the groundwork for the project. After delving into literature on co-housing, the primary motivation for establishing Wigg & Co emerged as a desire to maintain social connections rather than environmental concerns, particularly as Leen faced illness and ceased working.

The project was completed in 2021 and notably features four inclusive dwellings designed to accommodate individuals with disabilities. The community features a variety of living spaces, including houses and apartments tailored to the unique needs of the residents, which presented challenges in coordinating with contractors who anticipated uniformity in design. Each unit includes private outdoor spaces to ensure personal privacy.

Community dynamics at Wigg & Co have revealed complexities. Despite housing nearly 100 residents, the expected interconnectedness has not fully materialized, partly because residents do not have a say in the selection of new members, leading to a lack of commitment to the co-housing concept among some. However, a strong sense of community support was evident when neighbours spontaneously cared for Leen's children during a medical emergency, illustrating the potential for community solidarity.

Leen emphasized the importance of contractual agreements in co-housing to ensure compatibility among residents, as altering these agreements post hoc is challenging. This is particularly crucial in diverse households, such as her own a same-sex couple with two children with autism where the acceptance of their lifestyle by all community members is essential.

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The integration of Wigg & Co into the surrounding neighbourhood has been facilitated by making parts of the project's green spaces public and ensuring the main pathway is accessible to all. This openness aims to foster greater community interaction but also raises concerns about maintaining the distinction between private and public spaces to prevent vandalism and theft, highlighting the ongoing challenge of balancing openness with security in co-housing environments (Francen, 2024).

Personal notes:

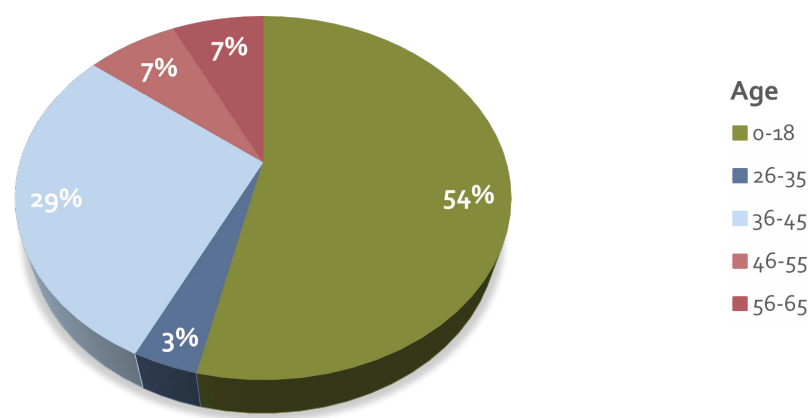
Observing this larger co-housing project provided a valuable perspective on how scale can influence community dynamics within such developments. However, my interactions were limited to a single resident, which restricted my ability to draw definitive conclusions about the community as a whole, given the subjective nature of individual experiences.

A significant observation from the discussion was the evident division within the community between actively engaged members and those that are less visible. This dichotomy highlights the varying levels of participation that can occur in larger co-housing settings. Moreover, an anecdotal yet poignant moment occurred when one of the resident's children returned from school and immediately joined elderly members tending the communal vegetable garden. This interaction not only reflects the intergenerational engagement within the community but also underscores the younger members' interest in learning from older generations, illustrating the potential for social learning and connection in co-housing environments (Francen, 2024).

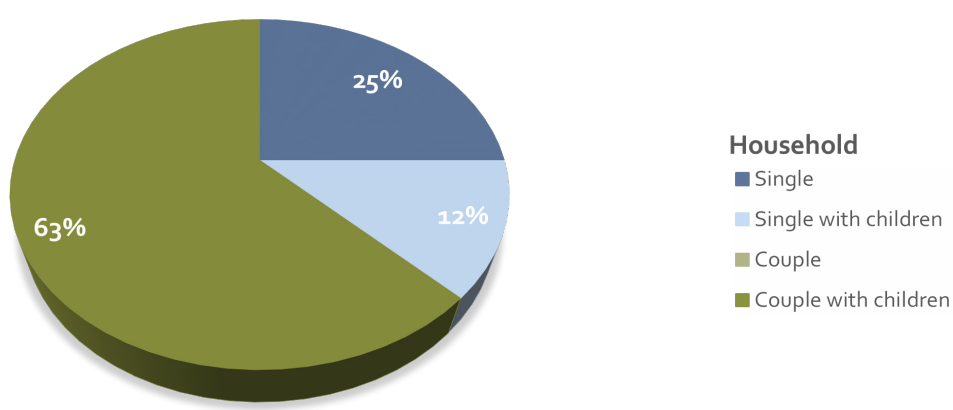
³² Interview with Leen Francen (40 years old, lives in Wigg & Co since 2021), in her house at 1:00 pm 10.04.24, Profondsart.

BOTERBERG

Location: Kalmthout
Population of Kalmthout: 19,179 (2022)³³
Density of Kalmthout: 323 inhabitants/km² (2022)³⁴
Number of houses in the Boterberg project: 7 units
Number of apartments in the Boterberg project: 0 unit
Number of adults in the Boterberg project: 14
Number of children in the Boterberg project: 15

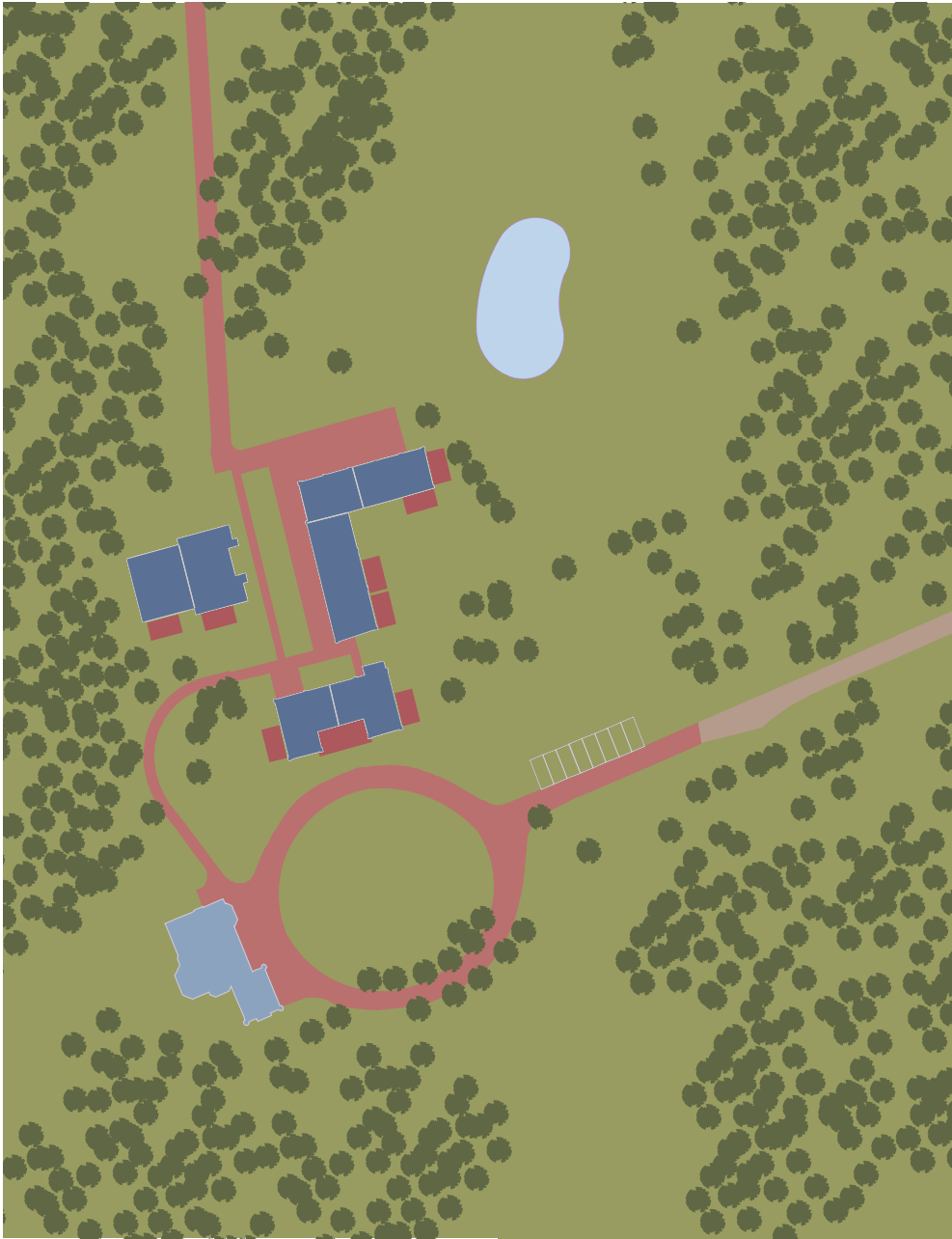


Graph 26:
Age distribution of the inhabitants of the Boterberg project in a 3D pie chart



Graph 27:
Household distribution of the inhabitants of the Boterberg project in a 3D pie chart

³³ Retrieved June 2, 2024, from <https://fr.wikipedia.org/wiki/Kalmthout>
³⁴ *ibid.*



- Community path
- Public path
- Private house
- Community house
- Private garden
- Community garden
- Public garden

Map 13:
Boterberg master plan schematic representation

General concept³⁵:

In the case of Boterberg, the co-housing project was spearheaded by Sophie, who also serves as the co-founder of Heem, a real estate development company specializing in co-housing that she co-founded with her husband. Their introduction to the co-housing model began when they, along with friends, decided to construct houses together and establish shared outdoor spaces. This experience sparked their interest in co-housing, leading to further projects like Boterberg. Boterberg is situated on a property that includes a castle, old stables, and other buildings, which were repurposed to facilitate the co-housing community. The cost and scale of the property would have been prohibitive for an individual or a single couple, but the collective approach made it feasible. The castle has been converted into communal spaces for the co-housing community and also houses the offices for their company and other startups, with two apartments located upstairs.

The old stables and additional structures have been transformed into spacious individual homes, allowing for independent living within a communal setting. The castle includes a shared kitchen and a large room suitable for gatherings, TV evenings, or casual meetups. The extensive green spaces surrounding the castle serve as communal areas. In recent years, a communal vegetable garden was established, promoting further community engagement.

A unique aspect of the residential layout is the arrangement of private gardens. These are initially separated by greenery but become less delineated further into the property, facilitating neighbourly interaction yet respecting on personal space. Sophie noted during our discussion that older residents initially had concerns about children encroaching on their spaces. However, through communication, the community addressed these concerns without the need for physical barriers, illustrating a commitment to respecting individual preferences within a shared living environment.

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Additionally, some residents have begun sharing vehicles, reducing the need for multiple cars per household. Older residents, who generally have more available time, often assist with childcare, further fostering a sense of community support.

Interaction with the broader neighbourhood is encouraged through community-organized events such as festivals held on the property. However, regulatory restrictions from environmental agencies pose challenges to the frequency and scale of such events in the future. The case study of Boterberg illustrates the complexities and adaptive strategies inherent in establishing and sustaining a co-housing community (Voorspoels, 2024; Boterberg, 2022).

Personal notes:

This discussion presents a unique perspective as the interviewee was not only a resident of a co-housing project but also played a pivotal role in developing co-housing concepts through her company, HEEM. Unlike other projects I visited, HEEM adopts a distinct approach by completing the entire development before recruiting residents. Once the project is constructed, a dedicated team assists the new community in developing and utilising the shared spaces.

This model is particularly intriguing as it does not involve future residents in deciding the types of communal spaces or in the design process. However, if an existing group of residents approached HEEM to initiate a new co-housing project, they would be willing to include them from the beginning, which would mark an openness from the standard approach of the company.

³⁵ Interview with Sophie Voorspoels (45 years old, lives in Boterberg since 2014), in the offices of Heem at 10:00 am 16.04.24, Kalmthout

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The interviewee highlighted the critical aspect of selling directly to future inhabitants rather than through real estate agencies. This strategy emphasises that purchasers are investing in a lifestyle and a community ethos, complete with predefined communal responsibilities and guidelines. This approach necessitates ongoing orientation meetings to prepare the new residents for their roles within the community.

The dual role of the interviewee as both developer and resident provided a deeper understanding of the developer's perspective, enriched by her personal experience living within a co-housing setup. This insider view is invaluable for appreciating the complexities of developing co-housing projects that balance commercial objectives with the creation of functional, integrated communities (Voorspoels, 2024).

3.4 Critical viewpoint

The study of social mixity and co-housing in urban planning traces its evolution from historical large-scale urban renewals to modern community-focused initiatives, emphasising a shift towards inclusive and collaborative approaches. Case studies such as La Borda, Wohnprojekt Wien, and Marmalade Lane highlight co-housing as adaptive solutions addressing housing affordability, community needs, and sustainability. These projects challenge traditional urban development and promote resilient, sustainable communities. Ongoing fieldwork in Belgium seeks to apply these principles locally, ensuring solutions are culturally sensitive and environmentally sound, reflecting broader socio-economic shifts towards sustainable urban living.

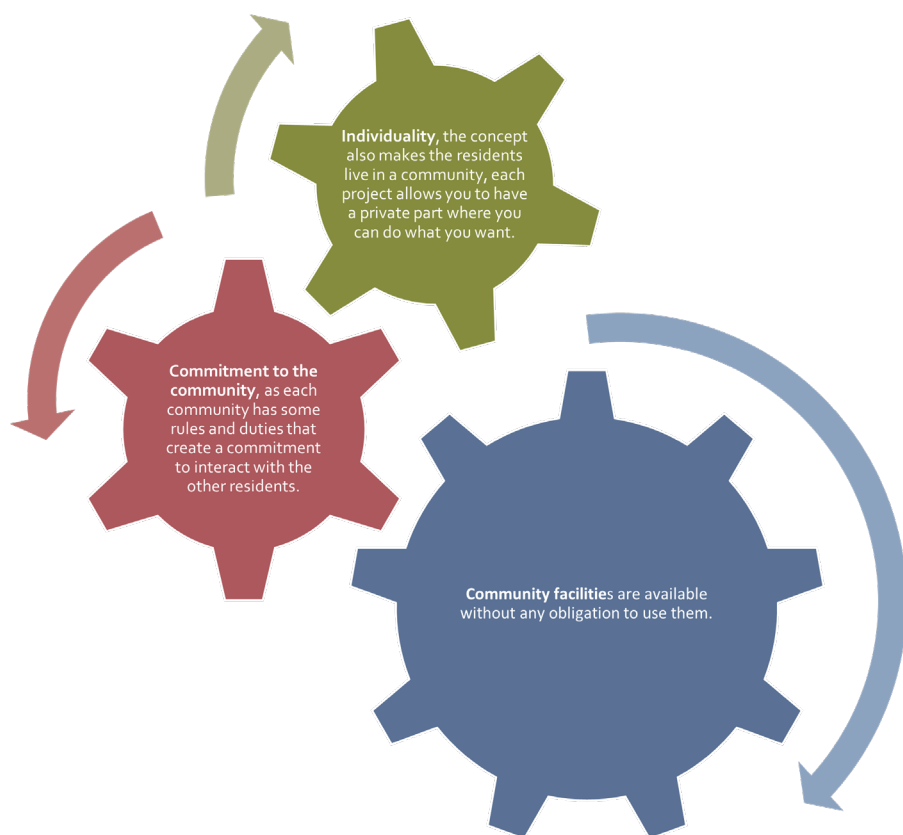
Architecture plays a primary role in the development of co-housing projects as it can be utilised as a tool to create social cohesion within the design of the district. For instance, the creation of pedestrian pathways in the centre of co-housing projects, with cars placed on the periphery, fosters connectivity. The porch, while a private space for each resident, through its continuity, establishes a common language that enhances connections. On the level of floor plans, it is evident that each visited project, including the three co-housing examples, features multiple unit types, accommodating different household structures and age groups by addressing their varied needs. A prime example is La Borda, where parts of the unit can be added or removed as family dynamics change. The context of the four projects visited in Belgium also deviates from traditional rural design philosophies by incorporating existing natural elements and building without necessitating the removal of existing trees.

The principal aim of visiting and analysing co-housing projects has been to explore the desire for increased social interaction. Interviews revealed that this is a predominant outcome, with residents discussing various communication methods for seeking help from neighbours, ensuring there is always someone available for assistance, whether it be borrowing an egg or childcare. The community living concept also entails communal chores and adherence to a group charter respecting all members of the community. Discussions indicated that, while engaging with these tasks only require one day per month, they offer unvaluable opportunities to connect, often culminating in shared meals.

The economic aspect, though less discussed, is still significant. All the visited projects are privately-owned rather than publicly-funded. Projects like La Borda and Wohnprojekt Wien demonstrate financial sustainability, allowing development without speculative risk through different economic structures. Discussions with residents also reveal that communal purchases, such as buying a trampoline, can be collectively financed, making accessible amenities that individual families might not afford.

Nature plays a fundamental role in Belgian co-housing projects. Many inhabitants are drawn to these communities for their social aspects and green spaces. With car parks situated outside the community, there is no need for individual car entries or private garages, reducing sealed surfaces. The main road is also designed so that emergency services (fire engine, ambulance) can access the various houses in the community. Energy concerns are addressed in projects like Seucha, where some residents have created a communal heating system, lowering costs and environmental impact. Shared amenities, such as communal washing machines, reduce the need for individual appliances. However, despite common amenities, some residents still retain private facilities. Most projects also feature communal vegetable gardens, fostering a connection with nature and an understanding of food origins, with varying levels of development.

In conclusion, this chapter has shown that various elements play a role in co-housing projects, balancing individual and communal aspects to create a unique system as shown in graph 28. Economic, ecological, and socio-cultural factors influence the design of such concepts, which might vary by situation. After examining the co-housing concept across Europe and in rural areas of Belgium, the next section will explore the feasibility of this model at the municipal level in the German speaking part of Belgium, particularly in the city of Kelmis, by applying to this context the learned aspects and appraising the local population's and stakeholders' responses to the concept of co-housing.



Graph 28:
Summary scheme of the concept of co-housing based on the findings of the research

#4

PART III: WORKSHOP





"ARCHITECTURE IS TOO IMPORTANT TO BE
LEFT TO ARCHITECTS ALONE. LIKE A CRIME,
IT IS A PROBLEM FOR SOCIETY AS A WHOLE."
(LUBETKIN, 1985, as cited in Wates and Knevitt)

4.1 Collaborative architecture

In the previous chapter, we observed that the concept of co-housing varies considerably based on cultural, political, and economic contexts, as well as on the will of the people. We will now explore how the population can be integrated into the design process. This method of designing in collaboration with future inhabitants and citizens has been termed “collaborative architecture”. Raúl Avilla Royo defines collaborative architecture as *“the practice of including different stakeholders, especially civic society, as a collective yet heterogeneous subject, at different stages of the architectural project.”*(Avilla-Royo, 2023).

This distinction is crucial as architectural projects can be broadly classified into three categories: public, private, and community-led. In public projects, residents are not involved in the design process. Conversely, in private projects, while residents are involved, the architects maintains their traditional role as experts, overseeing design aspects such as material usage, adherence to dimensions, and other technical specifications. However, in community-led projects, the architect's role extends beyond these traditional responsibilities. They must also support the group in reflective practices, critically evaluating materials with ecological considerations, optimising building layouts to enhance community living, and implementing the overarching concept or project with sociological aspects in mind. This active involvement from the beginning ensures that the project is aligned with the community's needs and objectives. As illustrated in the figure 39 (p.162), community-led projects engage numerous participants throughout various stages, unlike private and public projects where stakeholders have more defined roles at different stages.

Collaborative design is not a novel concept; many architects designing single-family homes incorporate future users. However, this approach might be less evident in larger-scale projects. Consequently, the architect's role is at times forced to transform from a designer and construction service provider to an enabler, facilitating stakeholder participation throughout the process. This shift transforms architecture from a product to a process.

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The degree of participation remains a key question, as different levels of actor involvement can enhance both the concept and the project, with viability being the primary criterion. Over the years, various architects have delineated different degrees of participation, as depicted in the figure 40 (p.162). Allowing the population to voice their concerns enables addressing spatial, social, and economic challenges. Moreover, when people embrace and identify with the project, collaborative architecture can become part of a broader pedagogical process. This approach has the potential to influence spatial, political, and social aspects of community life.

Politics plays a significant role in this process, especially at the municipal or district level, which naturally serve as a meeting place for diverse needs of citizen encompassing social and economic dimensions. Architectural practice in such context must address also the political dimension, positioning architecture as a mediator between different priorities and aspirations. Municipalities, with their diverse perspectives on today's challenges, are constantly evolving spaces where new ideas seek to address urban problems and improve living conditions, thereby tackling new challenges.

Consequently, this process should not be perceived merely as a problem-solving mechanism but rather as a novel method of creation, leading to opportunities and potentials otherwise unattainable. This approach does not necessarily result in superior design outcomes but rather in a more accurate identification and response to people's needs. This process also blurs the traditional boundaries of architecture, extending into social sciences. The aim is not to appropriate these disciplines, where architects might not be experts, but to collaborate with specialists to broaden perspectives.

Collaborative architecture, primarily employed in community-led projects, presents potential for implementation in private and public projects. The challenge lies in incorporating diverse voices and making citizens' engagement an integral part of urban development without institutionalising the process or adhering strictly to "bottom-up" or "top-down" approaches. To explore this, this research proposed and organised a workshop which was designed to introduce diverse perspectives in a rural area, and appraise the openness and acceptance of participants to the concept of co-housing.

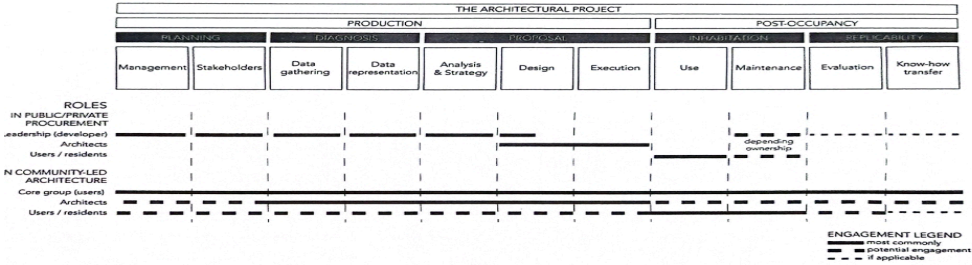


Figure 39: Comparing the difference in stakeholder involvement between collaborative and "typical" architecture at different stages of a project

	ARNSTEIN (1969)	HART (1993)	PRETTY (1995)	TRILLA and NOVELLA (2001)	REBOLLO (2002)	PATEMAN (1970)	SUSSKIND and ELLIOT (1983)	GYFORD (1991)	FOLGUEIRAS (2005)
Citizen control		Initiated by kids and consensual	Autonomous mobilization	Meta-participation	Decide	Full participation	Co-productive	Theright to be part of	BE PART (DO) Behavioral action
Delegated power		Initiated and directed by kids	Interactive						
Partnership		Initiated and directed by adults and consensual	Functional	Projective participation	Debate				
Placation		Consulted and informed	In material benefits	Consultative participation	Consult	Partial participation	Conflictive	Theright to be consulted	TAKE PART (FEEL) Affective Motivation
Consultation		Assigned but informed	To consult						
Informing		Symbolic participation	To give information	Simple participation	Inform	Pseudo-participation	Paternalistic	The rightto be informed	GIVE REPORT (KNOW) Cognitive Information
Therapy		Decoration							
Manipulation		Manipulation	Passive	NO PARTICIPATION					

Figure 40: Comparing the different proposals for defining participation

4.2 Toolkit and workshop preparation

Before organising the workshop, several fundamental questions had to be addressed: what is the specific purpose of the workshop? How should it be organised (e.g., parties involved, tools to be used) to achieve its purpose?

The initial question, "Why are we doing the workshop?" was crucial to ensure that the content and focus aligned with the objectives of this research. Clear objectives regarding what participants should achieve or learn during the workshop are essential for its success. The workshop must be tailored to the participants, enabling full engagement and meeting their expectations.

With a general idea of the workshop's aim, the focus should shift to creating a structured approach, following a clear vision, and possibly preparing a storyboard. This helps in understanding how to facilitate engagement, ensuring a flow and progression in activities that lead to the expected results. The entire process should be tested beforehand to gather feedback on the effectiveness and clarity of the activities. This feedback is then used to refine various aspects of the workshop and improve the different stages of the activities (Darin & Eich, 2023). The workshop aimed to determine if people are receptive to innovative projects and willing to invest time in developing them. Additionally, it sought to assess the feasibility of co-housing in Kelmis and identify the most suitable type. Defining the participants to be targeted, and selecting appropriate tools for the workshop, was critical to achieving these objectives. The participants were defined in the following way, one-third of the participants should be experts and actors in the domain, while the remainder should be citizens. This composition allowed for diverse perspectives and interaction between different potential stakeholders.

To identify the experts and actors, discussions were held with various professionals. The number of participants was also limited to 15, including the experts, as the materials had to be duplicated for each group of five.

The final selection of experts included:

- a local practitioner architect
- a municipality representative
- a representative for public housing
- a representative for urban development

After scheduling the workshop to accommodate all experts, the challenge was to find ten citizens willing to participate. To gather participants publicity was distributed via social media posts on Facebook, shared by the municipality and local radio, and through personal networks. Citizens could enrol via email or through an online form.

Once the date and time were set, the focus shifted to refining the activities. The workshop structure consisted of five main parts: an introduction, an initial activity, a short break, the main activity, and concluding questions. To gauge the openness of actors and citizens to this approach, the workshop featured different groups for various activities. The different groups are supported by a moderator. The space included a common discussion area and three tables for group activities, facilitating diverse outcomes, as can be seen on the following figure 41.

The introduction served as an icebreaker, including a round of introductions where everyone introduced themselves. An overview of the master's thesis and the concept of co-housing was then presented. This ensured everyone understood the concept and workshop objectives. This session was conducted with the whole group, supported by a PowerPoint presentation (see appendix) and posters (see appendix) of different visited co-housing projects.

The first activity, titled "Discuss the picture," aimed to gauge participants' openness to co-housing and alternative living arrangements, identifying hurdles and opportunities. This 30-minute activity involved three groups: one comprising all experts and actors, and the other two consisting of citizens, ensuring that citizens were not influenced by experts. Each group was provided with 12 pictures representing various activities and functions of the co-housing projects visited and presented in the previous chapter, with titles and descriptions at the back (see appendix). The pictures were distributed in a way for each group to have six unique pictures and six that overlapped with another group, allowing for comparative analysis.



Figure 41:
Arrangement of the room for the workshop on the following day

The second activity, which formed the core of the workshop, aimed to ascertain how participants would design their own district, particularly considering the concept of co-housing and its different potential forms. To facilitate this, a board game was created where mixed groups of experts and citizens, organised into three tables, would collaboratively create their district. The designated area for this exercise was the "am Dörnchen" development site, which is approximately 20 hectares including privately owned land intended for concurrent development with public land. This development site is a relevant context for discussing co-housing. In 2018, the municipality published an analysis of a project to develop the site, but it showed, as the minister explained, that the project risked population concentration and the possible formation of a ghetto, which contradicted the policy goals of achieving diversity. The project therefore stalled. The minister expressed interest in developing the site, but emphasised the need for innovative projects (Antoniadis, 2024). Given the interest expressed by citizens in surveys conducted at the Christmas market, this site was considered as ideal for exploring co-housing concepts.

The workshop, focused on a 1-hectare plot near the school and the city. This area is expected to accommodate around 37 units per hectare (Dessin et construction sprl, 2018), which is feasible for a co-housing project, as seen in the Wijk & Co case study, which had 34 units. This activity also aimed to re-evaluate the proposed development plan, which concentrates public housing (marked in dark red in figure 42) and seals many areas, counteracting ecological challenges (Dessin et construction sprl, 2018). The proposed alternative involves denser development in the blue areas and a co-housing project in the brown area, seen in figure 42.

Each group was provided with materials to design their district, including two types of housing models, common houses and private houses. Moreover, they were given materials to designate private, community, and public green spaces. Grey paper represented sealed areas like parking. Each group also received 15 wooden pins to signify various activities and strings to represent pedestrian pathways.

At the end of the activity, participants had to decide which 50% of the units should be publicly owned, assessing their openness to integrating publicly and privately owned units. This decision was deferred to avoid influencing the initial placement of housing units on the model. Each group finally presented their model to the others, and participants from the other groups had to indicate at least two memorable aspects of the presented projects.

To conclude the workshop, participants completed a questionnaire indicating their level of agreement or disagreement (on a scale of 1 to 5, with 1 being the most disagreeable) with various statements. The final questions were aimed to assess whether participants were familiar with the co-housing concept before the workshop and their openness to living in such a district. After the participants had left, a debriefing was held with the external moderators to take stock of their impressions and the dynamics of their group.



Figure 42:

Presented map for the development of the "Am Dörnchen" district in 2018, with the proposed new areas to be developed in colour, with the brown area being the co-housing area proposed in the workshop.

4.3 Field work

Before the workshop, securing the participation of ten citizens proved more challenging than anticipated. The workshop was scheduled for a Saturday morning (May 18th), requiring a three-hour commitment, and coincided with a holiday long weekend, causing some potential participants to be unavailable due to travel plans. After the initial collection of participation to achieve the target number of participants, a relaunch of the event was initiated by recontacting various cooperating services and asking them to disseminate the information further. Additionally, my personal network was leveraged to spread the word. By the day before the workshop, nine citizens were enrolled; however, 2 withdrew, leaving 7 participants. On the workshop day, 11 citizens showed up as some had failed to enrol, hence exceeding the initial goal. The preparation of the activities required considerable effort, as materials needed to be created for each table, necessitating three sets of every tool. Also, all forms had to be translated in German. Additionally, the overall organisation had to be meticulously planned. To ensure a smooth running of the workshop external moderators were enrolled. Their presence at each table allowed participants to ask questions and seek guidance. To prepare them adequately and provide participants with an overview of the workshop rules, a booklet was created (see appendix) that outlined the workshop sequence, explained each activity, and provided examples and summaries of the co-housing concepts presented. A preliminary meeting was organised to test the activities, ensuring clarity for the moderators and identifying potential necessary improvements. Additionally, films and photographs were taken at the event (upon consent from all the participants), allowing for a comprehensive understanding and representation of the workshop process. Meetings were held to discuss filming requirements, constraints (e.g., people’s faces non to be recognisable) and desired outcomes. Concurrently, coordination with the municipality secured a suitable room for the workshop, which was prepared the day before to ensure readiness for the guests.

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Another important organisational aspect was providing refreshments. Ensuring access to drinks and snacks such as coffee, tea, water, muffins and biscuits helped create a welcoming atmosphere, showing appreciation for the participants' time, as participants, helpers, local actors, and stakeholders committed their time without any compensation.

In the introductory session³⁶ the participants were encouraged to ask questions, and they quickly engaged, inquiring about the concept and the specifics of the different visited projects to gain a better understanding. There were also comments about their personal experiences and brief exchanges with some experts. However, this discussion was kept brief to maintain focus on the workshop's primary objectives.

4.3.1 Discuss the picture

The activity titled "Discuss the picture" was conducted within the allocated 30-minute timeframe. The various pictures used in this activity can be categorised into different sections, as illustrated in the following figures. Some pictures primarily addressed individual aspects, while others focused on community life. During this activity, participants were asked to write their thoughts on the back of the pictures. The subsequent figures present a qualitative analysis of the comments made by the participants, divided by the viewpoints given by experts and citizens. This summary enables us to identify the differing points of attention between experts and citizens, highlighting where their views converge or diverge³⁷.

³⁶ See page 164

³⁷ See pp. 170-175



Figure 43



Figure 44



Figure 45



Figure 46

1. Community centre

Citizens:

- Respect for the village community
- Importance of the neighbourhood
- Co-housing as part of the village => includes village centre

Experts: Emphasis on practical and organisational aspects

2. Co-working space

Citizens: Very positive, emphasising the practical and social aspects

3. Community garden

Citizens: Emphasis on social benefits, but also challenging

Experts: Emphasis on social mix and need for rules

4. Shared washing machines

Citizens: -Highlighting the environmental and social benefits

- Logistical challenge

Experts: - Emphasise the environmental aspects

- Organisation and distance are a challenge, different understanding of order

5. Terraced house

Citizens:

- No comments from the groups
- Importance of modular elements so that the living space can be converted when the children move out (for subsidised reasons).



Figure 47

6. Workshop

Citizens: Positive comments

Experts: Positive with reference to the need for maintenance rules



Figure 48

7. Participatory architecture

Citizens:

- Increases individual motivation
- Allows the project to be tailored to needs.
- Fear of not being heard.
- Use and transformation of existing buildings.

Experts:

- Bottom-up principle is positive
- Increases individual motivation
- Allows people to get to know each other in advance
- Difficult to reach consensus: requires good mediation



Figure 49



Figure 50



Figure 51



Figure 52



Figure 53

8. Community kitchen

Citizens: - Highlighting the social benefits with many details and open organisational questions

Experts: - Conserves resources; saves space; promotes community, but potential for conflict over cleanliness

9. Shared playground

Citizens:

- Positive response with the comment that creativity and movement are important as well as the safety of the children.
- Attention to the noise level

10. Community fruit and vegetable garden

Same answers as 3. from citizens and experts. The latter also emphasise the self-sufficiency aspect with the financial gain.

11. Community activities

Citizens: No comment

Experts: Many positive comments and advice to link this to the services offered by the municipality

12. Community car park

Citizens: Sceptical

Experts:

- Details on greening and design
- Distance to home is questioned



Figure 54

13. Pedestrian zone in the area

Citizens:

- Unrealistic for multi-generational use
- What about large-scale transport ?



Figure 55

14. Shared meals

Citizens: Many positive comments and questions about the implementation



Figure 56



Figure 57

15. Shared bicycle garage

Citizens: No comment

Experts: Positive comments on infrastructure, with questioning of distance



Figure 58

16. Pedestrian zone in the area

Experts:

- Positive for children's safety and tranquillity, and for compliance with urban planning rules on car-free and quiet zones
- Negative for deliveries

17. Day of housework

Citizens:

- Solidarity emphasised several times
- Realism questioned because of the diversity of the residents

Experts:

- Emphasis on learning and mutual support
- Difficult to implement due to diversity of residents



Figure 59

18. Inclusive living

Citizens:

- Is viewed positively
- Flexibility for different life situations should be reflected in architecture and interior design



Figure 60

4.3.2 Build your district

The second activity, titled "Build your district", consisted of two phases: the first lasting 45 minutes and the second adding 15 minutes for deciding which units would be publicly-owned and preparing the presentation.

Participants were reorganised into three different groups, with an effort made to ensure that each table included one to two experts. Given that three experts had backgrounds in architecture, each was assigned to a different table. Citizens selected their groups independently, aiming to maintain a similar number of participants at each table. Each group then commenced the activity. Feedback from the moderators indicated that all participants actively engaged in the process, although there were slight variations in participation levels at each table.

In group A, each participant contributed equally, engaging in the various steps and utilising the different tools provided for the activity. Upon examining the model created by group A, it is evident that the houses were strategically placed along the boundaries of the designated area, with apartment buildings grouped separately from townhouses. The private gardens were positioned in the interior of the district, creating a transition between public and community green spaces. Public green spaces were situated between the private and community green areas, with each community green space connected to a community house. Two communal car parks were located on the existing streets. The community green spaces featured various activities, including a playground, a barbecue area, and a community garden. One of the community houses was designated to have a guest room on the upper level, and a co-working space, relaxation, and leisure area on the ground floor. The second community house was intended to accommodate a nursery, a large room for parties and common dinners and a communal kitchen.

Additionally, it was proposed to include a local shop in the apartment building connected to the street. Adjacent to the community house with the nursery, a bike parking area was planned. Regarding pathways, group A designed a pedestrian pathway in the centre of the district, surrounded by a street, thus creating a car-free district. Furthermore, a pathway was included to connect the neighbourhood houses to the opposite street, making the district publicly accessible. The group also increased the housing density by proposing 49 units, despite only 40 having been requested. In the final phase of the activity, where participants were asked to decide which 50% of the buildings would be publicly owned, it was observed that they selected groups of connected buildings to be publicly owned, with these groupings dispersed throughout the district.

Comments from participants in other groups highlighted several positive aspects of group A's model, such as the proposed activities, the accessibility of the community houses, and the central community area. However, criticisms included the need for greater density and additional parking spaces.

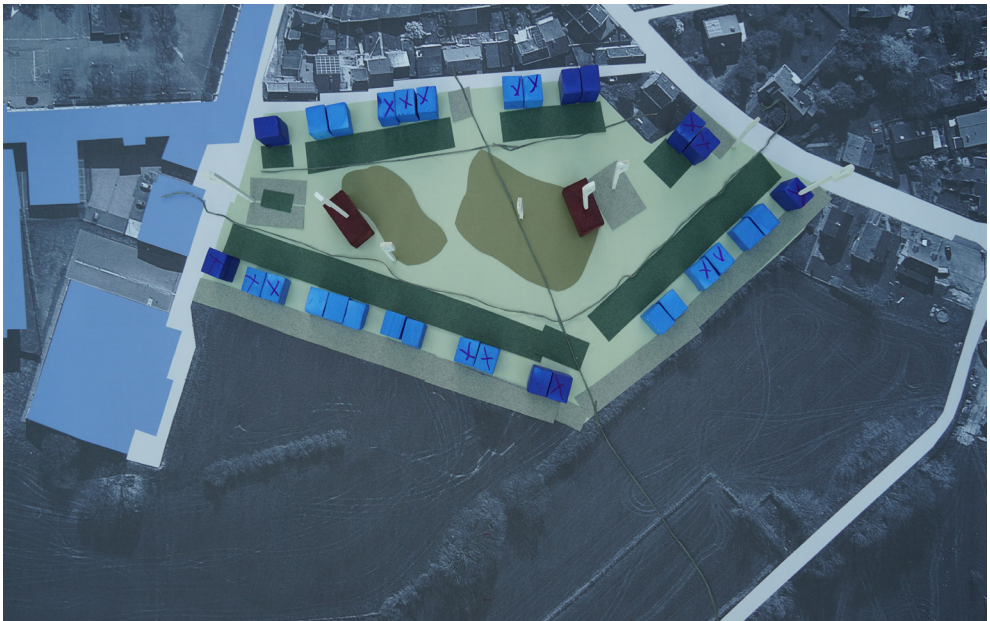


Figure 61:
Group A's workshop model

Group B exhibited different dynamics compared to group A, with two participants, including the expert, being more dominant during the initial phases. The expert led by explaining foundational concepts, such as the movement of the sun, while another dominant participant, who resides in the area, provided detailed insights about the site. Over time, another participant became more active, primarily encouraging the group to progress, though less involved in content discussion. The remaining two participants listened and occasionally contributed but were less active in decision-making. The group dedicated significant time to positioning the houses, which consumed most of the available time. They also spent considerable time discussing general concepts such as isolation, views, and diversity, which impeded their progress in the activity.

Upon examining the model created by group B, it is evident that, similar to group A, the buildings were positioned to form the district's boundary, with common spaces inside. The group's intention was to facilitate interaction by ensuring that private gardens allowed neighbours to see and converse with each other. Unlike group A, however, the buildings had larger open spaces in front of them. Additionally, group B decided that all green-marked areas should be community green spaces, leaving no public green spaces. This group, like group C, used fewer apartment buildings (only six), with the remainder being townhouses. They created different rows of houses, varying from two to five units, by densifying the area facing the street and opening the district to the meadows. The community houses were also placed centrally, with an emphasis on ensuring that one was accessible by car for people with disabilities. The parking area was located near the neighbourhood's exit. The accessible community house was designated for a common laundry room, an atelier, and guest rooms with office tables that could also serve as office spaces.

The other community house included a laundry room, a common meeting room, co-working spaces, and an indoor sports area. Outdoor spaces were designated for sports activities. Additionally, the group proposed a common heating concept for the entire district. In the second phase, where public-owned housing was discussed, group B decided to integrate public housing throughout the district, ensuring diversity within each row of houses, rather than segregating private and public ownership.

Positive feedback from the other groups included appreciation for the abundance of green spaces, the mix of private and public housing, the green buffer between the existing street and the new district, and the consideration of a common heating system. However, criticisms included the absence of bike parking and driveways, and the lack of car access (appendix).

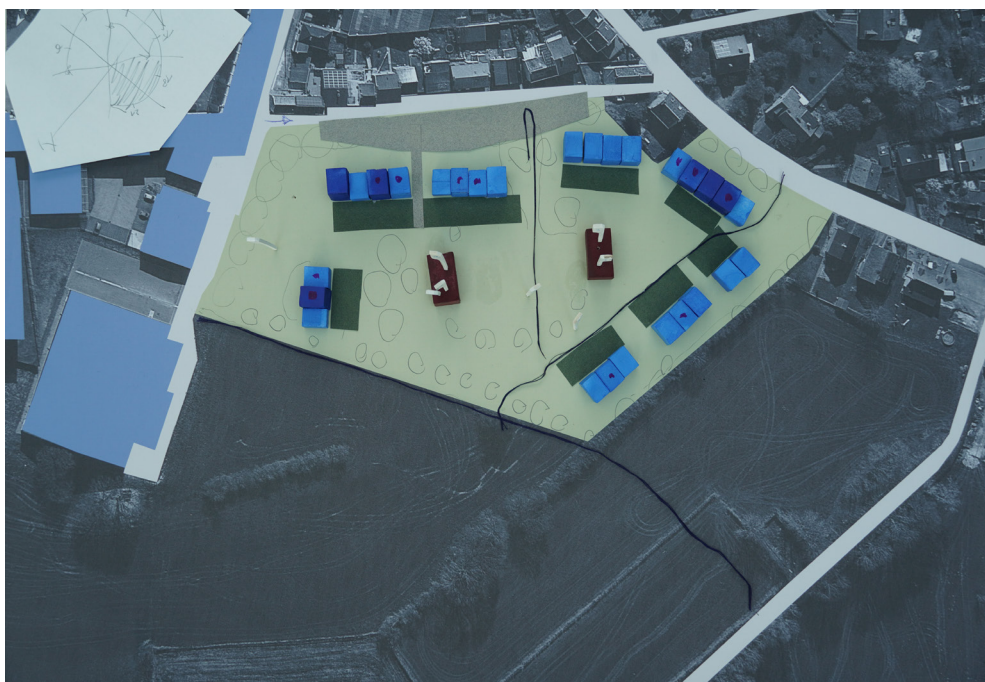


Figure 62:
Group B's workshop model

Group C exhibited dynamics more similar to group A, with each member encouraging others to share their ideas and thoughtfully considering them. However, like group B, they spent more time on house positioning, while they quickly reached a consensus on activities and common spaces. Upon examining group C's model, it is evident that the district is open to the existing city, particularly at the corner near the school and existing buildings where the community garden was placed. In terms of housing typology, they created rows of townhouses, with an apartment building added to each row except one, thereby mixing the typologies. They also planned a street on the outskirts of the area, providing most houses with direct car access. As with the other groups, the common houses were centrally located. Each house featured a small private garden, with the main area dedicated to common green spaces and only the spaces around the houses designated as public green spaces. Cars were not allowed in the central part of the district. The activities proposed for the common houses included a co-working space with guest rooms in one house, and a meeting room with a common kitchen and an atelier in the other. The community garden was designed to include an orchard with space for animals such as sheep and chickens, as well as a playground. In the second phase, concerning the allocation of publicly-owned housing, group C dispersed the public units to maximize diversity. During the workshop, there was a discussion about making all housing publicly owned, but the group ultimately decided against this to create a more mixed neighbourhood.

Feedback from the other participants was positive regarding the green spaces near existing houses, which helped create a buffer, and the proposed activities like the orchard and animal area, as well as the car access and abundance of green spaces. However, concerns were raised about the safety of children, as the common garden was adjacent to the street, and the lack of diversity in housing typologies (appendix).

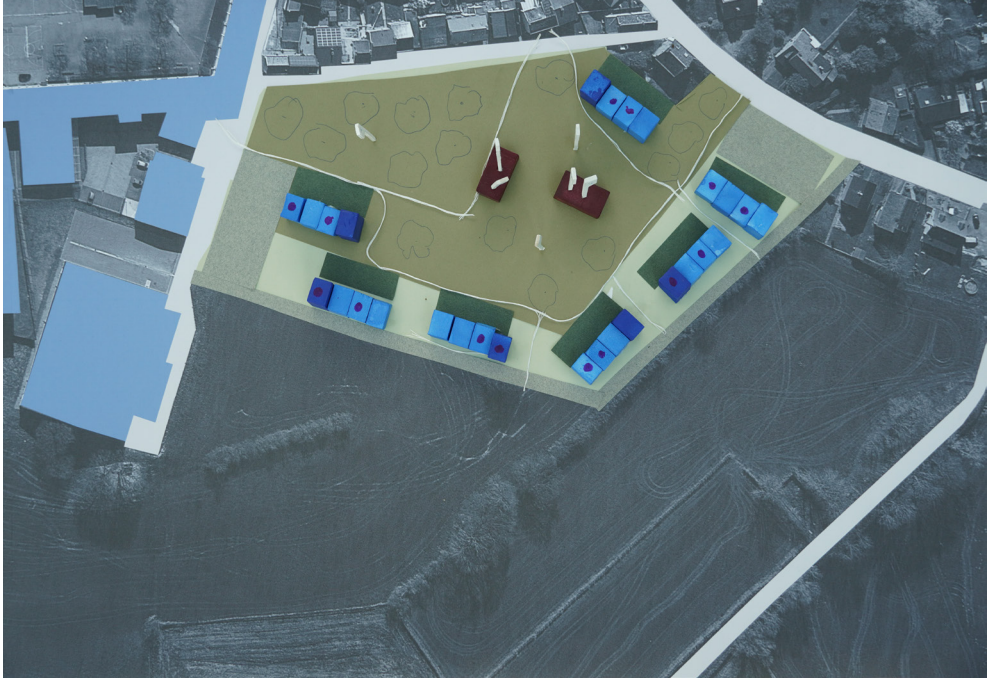


Figure 63:
Group C's workshop model



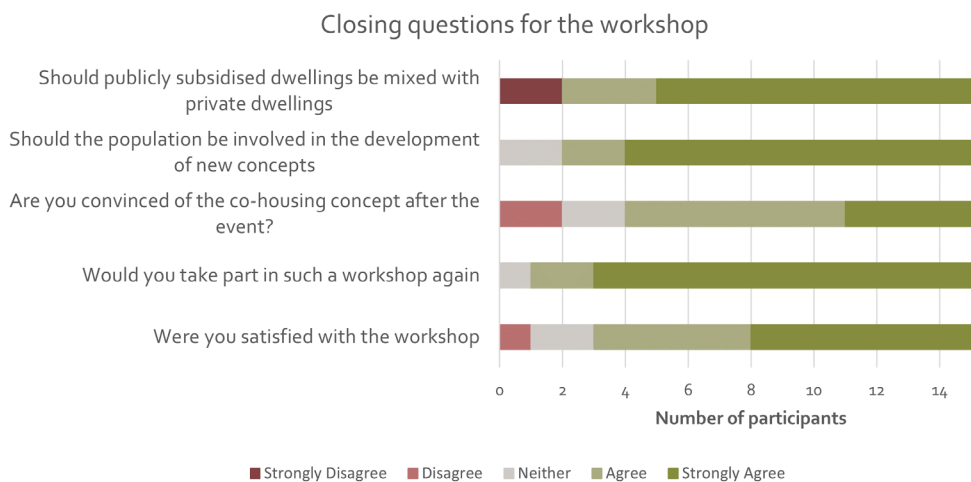
Figure 64:
Group A's workshop model presentation

4.3.3 Final questions

To conclude the workshop, participants were asked to respond to several final questions to assess their overall impressions and willingness to engage in similar future activities. The distribution of participants’ responses is provided in graph 29. A synthesis of the outcomes reveals the following key insights:

- High overall satisfaction: A majority of participants rated their satisfaction with the workshop positively, suggesting that the event was well-organised and met their expectations.
- Willingness to participate again: An overwhelming 14 of 15 participants indicated a strong willingness to engage in similar workshops in the future, reflecting on the perceived value and effectiveness of the workshop.
- Support for public involvement: A notable 14 of 15 respondents agreed that citizens should be involved in the development of new concepts, highlighting the importance of public participation in urban planning and development processes.
- Mixed views on housing integration: While 13 of 15 participants supported the integration of public and private housing units, 2 were against this idea, indicating some reservations that need to be addressed.

In summary, the workshop received strong approval from the participants, with a consensus on the importance of involving citizens in the development of new housing concepts. Additionally, there was general support for the integration of public and private housing units, though through some opposition exists, suggesting the need for further discussion and consideration of existing concerns. These results underscore the value of participatory planning processes and the positive reception of the co-housing concept presented during the workshop.



Graph 29:

Overview of the answers given by the workshop participants to the closing questions

4.4 Critical viewpoint

This chapter focused on analysing the challenges and concepts of co-housing and explored how architectural planning and design processes can help to develop new concepts. The discussion emphasised how architecture can serve as a tool for developing new ideas, advocating for the involvement of society in the process, an approach known as collaborative architecture. Through the workshop that combined experts, actors, and citizens, various levels of spatial, social, economic, and ecological concerns emerged.

From an architectural perspective, one key observation was the difficulty that inhabitants of rural areas had in conceiving a pedestrian zone and shared parking³⁸. Many participants are used to having a garage or parking space at home, which influenced their models, often including driveways from the street to the houses. This indicates a positive reception of bounding the area to a street. Additionally, the models highlighted the importance of combining different housing typologies and addressing how to assemble residential units. Participants debated the density of housing and considered placing taller buildings near existing constructions to blend with the neighbouring built environment. Accessibility was also a significant factor, as cars remain central to daily life in rural areas. While participants were open to reducing car dependency, their concepts still retained car references, reflecting a balance between innovation and traditional needs.

The social aspect of co-housing emerged as a crucial factor during the workshop. Participants did not use images depicting individual spaces but rather those showing shared spaces and activities, indicating a collective inclination towards shared living and community engagement. Despite 4 of 15 participants being unfamiliar with co-housing before the workshop (appendix), the presentation encouraged to promote, values of solidarity, learning, and sharing. Intergenerational living was discussed mainly concerning the needs and benefits of older generations, with less focus on young families, possibly due to the participants' average age.

³⁸ As seen in the activity "Discuss the picture", p.169

Public comments consistently showed sensitivity to integrating the co-housing project with the wider community, with proposals to repurpose existing buildings for co-housing and linking communal activities to broader community activities.

Although the economic perspective was not a formal part of the workshop, it surfaced in discussions. Participants inquired whether co-housing is indeed cheaper and avoided proposing luxury amenities like pools. Instead, they focused on activities fostering social cohesion and practical benefits. This suggests an awareness of cost considerations and a preference for affordable, community-oriented solutions.

The ecological aspect was also considered by participants. Suggestions included implementing a common heating system, creating carports with green roofs or photovoltaic installations, and minimising sealed areas in common parking. These proposals reflect a growing awareness of environmental sustainability and a willingness to incorporate eco-friendly practices into the co-housing project.

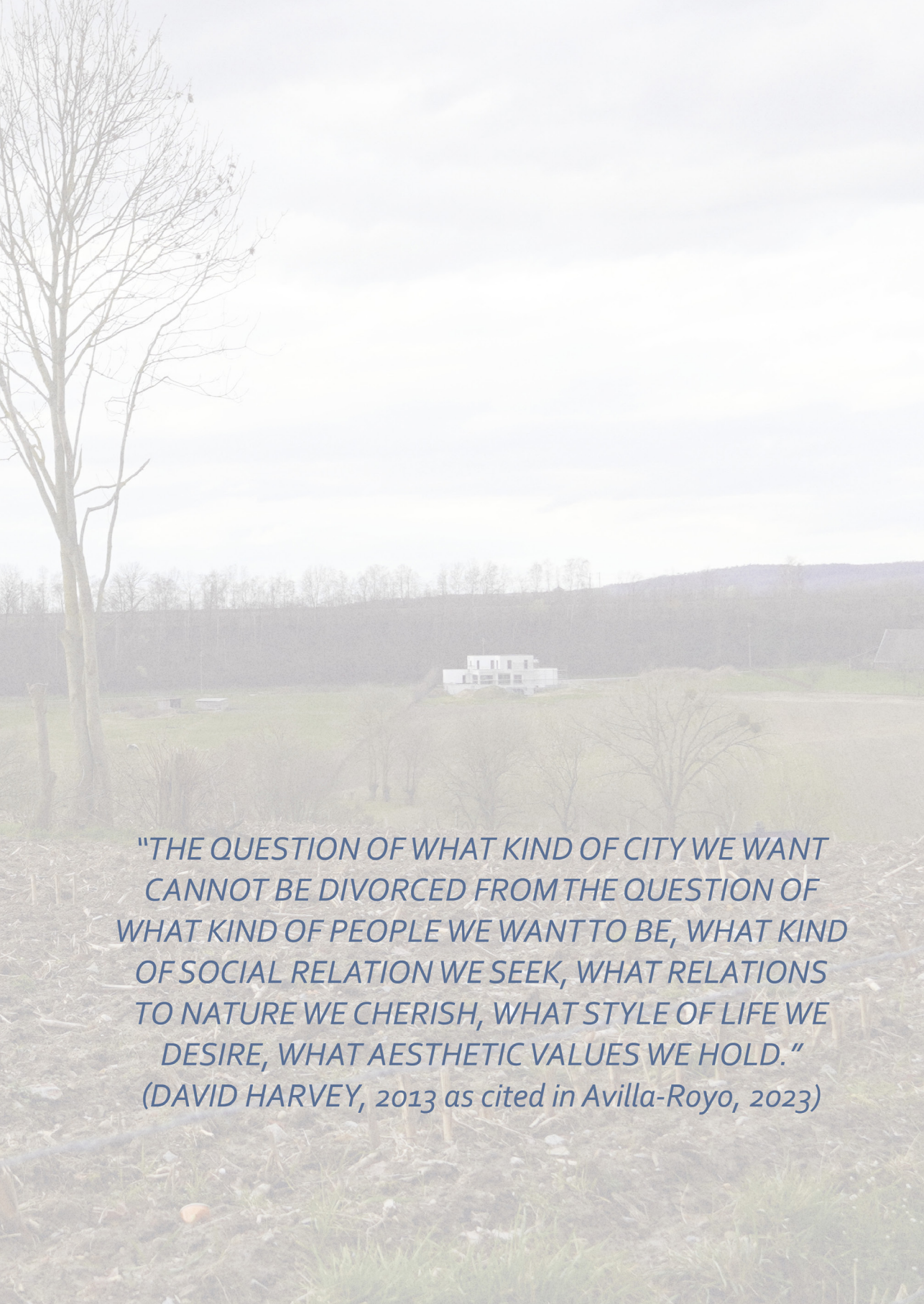
The workshop's aim was to gauge interest in the co-housing process, and the responses indicated a general interest. Although the workshop was composed of 11 citizens and 5 experts, their willingness to spend three hours on a weekend discussing an imaginary project demonstrates a significant level of interest. These reflections underscore the importance of considering the values and norms of the population in co-housing projects, highlighting the multifaceted benefits of involving the community in the planning and development process.



#5

EPILOGUE





*"THE QUESTION OF WHAT KIND OF CITY WE WANT
CANNOT BE DIVORCED FROM THE QUESTION OF
WHAT KIND OF PEOPLE WE WANT TO BE, WHAT KIND
OF SOCIAL RELATION WE SEEK, WHAT RELATIONS
TO NATURE WE CHERISH, WHAT STYLE OF LIFE WE
DESIRE, WHAT AESTHETIC VALUES WE HOLD."
(DAVID HARVEY, 2013 as cited in Avilla-Royo, 2023)*

5.1 Conclusion

"A new way of doing [architecture] necessarily implies new procedures."
(Paisaje Transversal, 2018 as cited in Avilla-Royo, 2023)

This quote served as the fundamental hypothesis of this Master's thesis. As an architecture-civil engineering student, the primary aim of this master's thesis was to explore how architecture can respond to current sustainability challenges.

Through detailed analysis, it became clear that spatiality plays a crucial role in the acceptance and development of new housing concepts. The size of housing and lifestyle differences between semi-rural and urban areas highlight the importance of understanding issues of scale and the influence of different elements in house design, such as the need for driveways and garages in rural versus urban contexts. In semi-rural areas, individual entrances and private gardens are more common and the design approach needs to be shaped accordingly. The study of existing co-housing schemes has shown that spatial design can significantly enhance community cohesion by creating attractive communal spaces while providing areas for privacy and individuality.

Social isolation affects several generations, and with the silver society³⁹ and the integration of immigrants posing challenges, the promotion of community life is essential. In addition, the will to create mixed neighbourhoods to counteract the creation of ghettos is becoming a major political will, and we have seen that this is only possible with social cohesion. By 2040, East Belgium wants to offer all people the opportunity to develop their talents and social interactions. They want to achieve this by being in constant dialogue with the citizens of East Belgium. All people, especially young people, are specifically involved in decision-making processes, while the older generation is supported in their self-determined lives (Ministerium der DG, 2024). The examples analysed show that neighbourhood support is a major benefit and that the development of children in these environments differs positively from that in typical housing units due to increased intergenerational contact and shared responsibilities.

³⁹ These trends represent the older generation, who are generally still fit and have a high life expectancy (Ministerium der DG, 2024).

However, living together can be time-consuming and requires consensus-based decision-making and participation in community activities, as evidenced in the Gecco and Seucha communities, where participation varies according to individual availability and community norms. The workshop results suggest that the principles of co-housing might be well received in rural and semi-rural communities where community and familiarity are paramount. Smaller villages often have a 'village house', a central community building, which can be instrumental in facilitating and promoting the understanding of co-housing concepts. The needs of younger generations, often overlooked, were less represented in the workshop, possibly due to time constraints or differing interests.

With rising house prices and a growing demand for affordable housing, the public housing market needs to adapt, requiring changes in policy instruments to facilitate this transition. Co-housing aims at creating communities rather than prioritising financial returns, although financial benefits (such as collective purchasing) can be achieved in line with the community's environmental objectives. Examples from Vienna and Barcelona show the potential for co-housing to merge with co-operative housing, thereby mitigating speculative housing market pressures⁴⁰.

The environmental foundations of sustainability are important in the current context, particularly in preventing urban sprawl and reducing sealed areas. The assumption is that undeveloped land should only be developed if it serves multiple purposes, not solely for a single function such as housing, but to create a vibrant hub that offers broader benefits to society as a whole. Co-housing can contribute positively by fostering social cohesion and creating active communal spaces. Nonetheless, further development is necessary to integrate diverse amenities and functions, making such communities hotspots for the entire municipality.

⁴⁰ See subsection 5.2.1

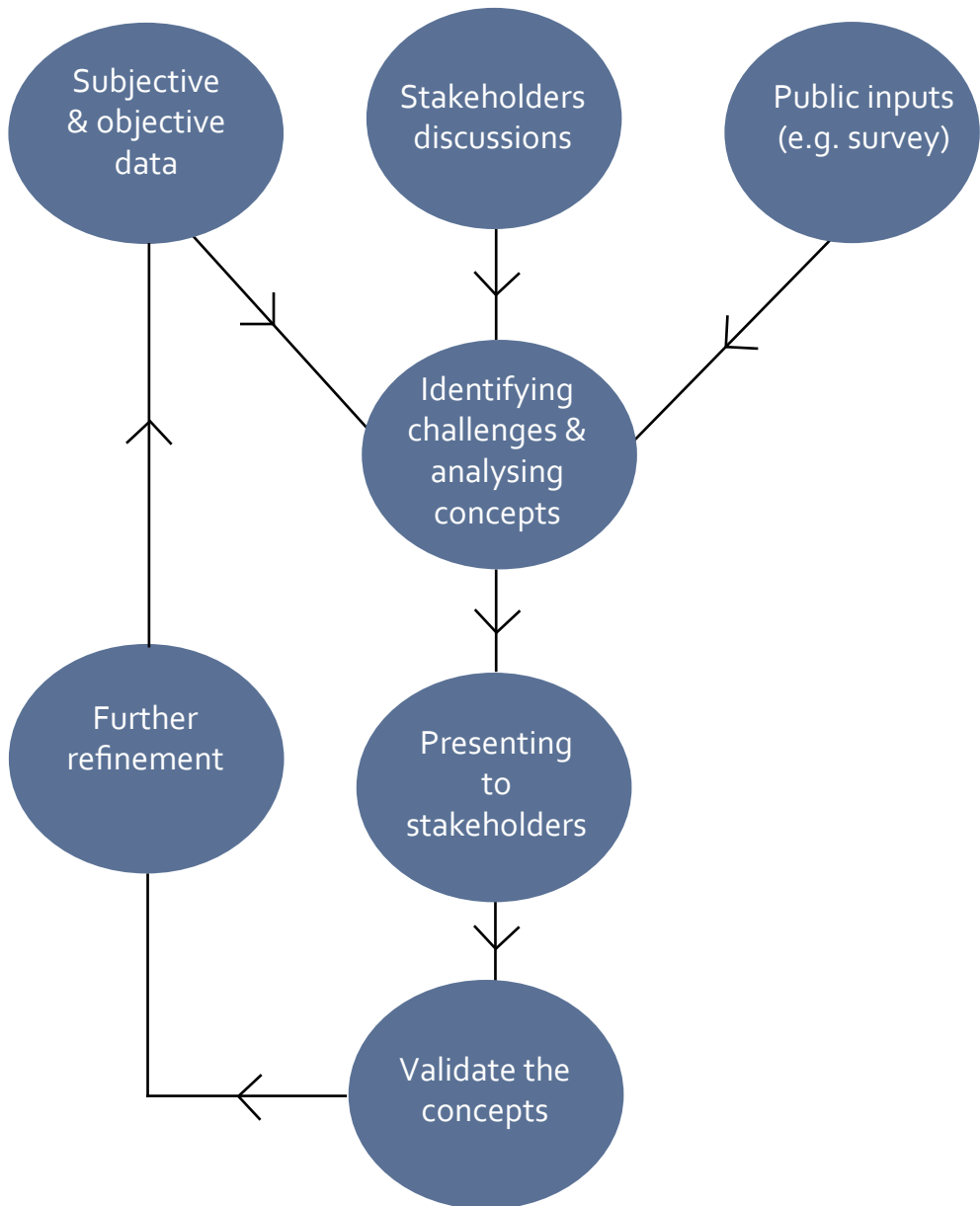
Addressing sustainability challenges in rural and semi-rural areas through co-housing is complex and multifaceted. This thesis has illustrated that while co-housing can address certain sustainability pillars, a comprehensive analysis is required to overcome some of the above-mentioned challenges.

The methodology employed, focusing on process rather than concept, enables ongoing adaptation and development of new concepts in rural areas.

This thesis has been structured to test different methodologies and assess whether the proposed framework can effectively guide the development of new approaches in rural designated areas. Each section includes fieldwork to test the proposed methodologies within the context of timeframes and limited resources, with the aim of estimating public response and potential outcomes. The proposed framework begins with stakeholder⁴¹ discussions to identify needs, supplemented by surveys to gather public inputs and views. This combination of subjective and objective data, drawing on evidence from a range of scientific disciplines without pretending to be expert in every field, can help to build a comprehensive understanding of community needs.

The next steps are to identify and analyse concepts that address the defined challenges, taking into account post-implementation evaluations to ensure practical applicability. Presenting these concepts to stakeholders can serve to validate their relevance and gather feedback for further refinement as shown in graph 30. While initial trials might show stakeholder interest and logical responses, ongoing analysis and adjustments are required to improve the process and the reliability of the results.

⁴¹ Under stakeholders we understand every person, which is impacted by the project, this means actors, experts but also the population.



Graph 30:
Framework structure

This approach has illustrated a shift in architecture from a design tool to a framework creation tool. The applicability of the framework to other urban areas depends on the municipal scale, which might (or might not) facilitate stakeholder engagement. Scaling this approach to larger cities presents challenges in maintaining representative participation. Ensuring inclusivity across social groups remains a challenge, as initial trials have primarily engaged interested and available participants. In addition, this approach is also being proposed within the Vision 2040 for the German speaking part of Belgium, where the idea of the co-principle⁴² is put forward as a proposed new way of operating, with co-housing being one of the concepts responding to this overarching approach.

In conclusion, this thesis has highlighted the potential for further research to refine architectural methodologies in addressing rural sustainability challenges. By integrating different scientific disciplines, architecture can play a key role in improving the future of rural areas, offering new perspectives on its application and impact.

⁴² Matthias Horx defines the co-principle as follows: *"In a complex world, it is about finding new, sustainable forms of cooperation between people in which freedom and complexity are on the one hand, and commitment and empathy on the other can be integrated."* (Ministerium der DG, 2024).

5.2 Further research

5.2.1 Cooperative housing

During the whole process of the thesis, the question about the economical aspect of co-housing has repeatedly come up. Even though the main aim of co-housing is the social cohesion, with the analysis it became clear that there might be some economic benefits, as some amenities can be communalised, but the price difference is not the greatest impacts that co-housing may have. In this context, a different approach can be taken into account making co-housing more affordable. In this direction, a concept that requires further investigation is known as cooperative housing.

5.2.2 Framework for the German speaking part of Belgium

The concept of introducing co-housing in the German speaking part of Belgium is not novel, with various projects having already been proposed. One such initiative was envisioned by Christa Fort⁴³, who aimed to transform her individual residence into an intergenerational co-housing project. Her meetings, which attracted numerous attendees, indicated a widespread interest in the idea. Initially, the plan was to establish several tiny houses on the property to create a community. However, this approach encountered obstacles from the urban planning department of the ministry and significantly increased costs, as it would have required substantial investments to provide each unit with access to water, electricity, and other amenities.

⁴² Interview with Christa Fort (78 years old, lives in Eupen), in her house at 6:00 pm
19.04.24, Eupen

Despite her persistent efforts, the challenges in implementing such a project became more apparent. Our discussions revealed that a supporting structure for this initiative is lacking in the German speaking Community. This absence of a supportive framework was also highlighted by participants during the workshop. The remaining questions pertain to the nature of this required structure and its management. In the Flemish Region, private companies assist in the development of co-housing projects, either by supporting existing projects or by undertaking complete development, exemplified by companies like HEEM. Conversely, in Wallonia, there is an organisation that offers general workshops and presentations on the co-housing concept.

It is crucial to transcend national boundaries and draw inspiration from neighbouring countries such as the Netherlands, Austria, and Sweden. By examining how these countries manage their co-housing structures, in conjunction with their public housing stock, we can develop a framework that effectively addresses the needs of the German speaking Community.

5.3 Personal note

As this thesis reaches its conclusion, it has become clear that throughout its development period, I have significantly enhanced my skills through various methodologies, discussions, and feedback from numerous stakeholders involved in the process. The fieldwork initiatives marked the first use of this particular set of tools. In addition to advancing the research, this experience has allowed me to refine my organisational skills, collaborate with various institutions, and develop future competencies.

The constructive feedback from field experts, alongside academic critiques, has not only facilitated the progression of this thesis but also enriched my understanding of synthesising diverse perspectives towards common objectives. This process has clarified my vision, which initially aimed to foster dialogue. As the work progressed, this vision was sharpened, inspired by the continuous constructive feedback.

As I conclude this endeavour, I am confident that my personal goal of initiating a discussion, paving the way for ongoing dialogue and new development opportunities, has been achieved. This sentiment is reinforced by the positive feedback from various services that followed the work, maintaining their interest and not dismissing it as unfeasible. Furthermore, being contacted by a citizen seeking more information about the thesis, with plans to develop the concept of co-housing in the German speaking part of Belgium, further affirms the impact of this research.

The workshop also demonstrated broad interest, with two participants unfamiliar with the concept becoming convinced of its merits and envisioning living in such a community. This outcome fills me with gratitude, highlighting the potential for this initial research to evolve into tangible projects that various stakeholders can envisage and develop.

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- 35: View of the building and the common garden of Wohnprojekt Wien (p. 131). Retrieved June 1, from <https://www.einszueins.at/project/wohnprojekt-wien/>
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- 39: Comparing the difference in stakeholder involvement between collaborative and "typical" architecture at different stages of a project (p. 162) in Avilla-Royo, R. (2023). Collaborative Tools for Community Architecture, p.7. AC Arquine.
- 40: Comparing the different proposals for defining participation (p. 162) in Avilla-Royo, R. (2023). Collaborative Tools for Community Architecture, p. 11. AC Arquine.
- 41: Arrangement of the room for the workshop on the following day (p.165). Source: author (Mai 17, 2024).
- 42: Presented map for the development of the Dörnschen district in 2018, with the proposed new areas to be developed in colour, with the brown area being the co-housing area proposed in the workshop (p.167). Source: author (April 24, 2024)
- 43: The Gecco project community centre (p. 170). Source: author (March 27, 2024).
- 44: The Wijn & Co project co-working space (p. 170). Source: author (April 10, 2024).
- 45: The Wijn & Co project community garden (p. 170). Source: author (April 10, 2024).
- 46: The Gecco project shared washing machines (p. 170). Source: author (March 27, 2024).

47: The Wigg & Co project terraced house (p. 171).

Source: author (April 10, 2024).

48: The Gecco project workshop (p. 171).

Source: author (March 27, 2024).

49: The Gecco project participatory architecture (p. 171).

Source: author (March 27, 2024).

50: The Gecco project community kitchen (p. 172).

Source: author (March 27, 2024).

51: The Seucha project shared playground (p. 172).

Source: author (April 5, 2024).

52: The Seucha project community fruit and vegetable garden (p. 172).

Source: author (April 5, 2024).

53: The Seucha project community activities (p. 172).

Source: author (April 5, 2024).

54: The Gecco project community car park (p. 173).

Source: author (March 27, 2024).

55: The Seucha project pedestrian zone (p. 173).

Source: author (April 5, 2024).

56: The Seucha project shared meals (p. 173).

Source: author (April 5, 2024).

57: The Gecco project shared bicycle garage (p. 174).

Source: author (March 27, 2024).

58: The Gecco project pedestrian zone (p. 174).

Source: author (March 27, 2024).

59: The Seucha project day of housework (p. 175).

Source: author (April 5, 2024).

60: The Wigg & Co project inclusive living (p. 175).

Source: author (April 10, 2024).

61: Group A's workshop model (p. 179). Source: author (May 18, 2024).

62: Group B's workshop model (p. 179). Source: author (May 18, 2024).

63: Group C's workshop model (p. 181). Source: author (May 18, 2024).

64: Group A's workshop model presentation (p. 181).

Source: author (May 18, 2024).

#7

APPENDIX



7.1 Survey

- Survey template in German
- Survey template in French



URL: <https://qrco.de/bf7cv9>

7.2 Visited co-housing data

- Poster about the co-housing project Gecco
- Poster about the co-housing project Seucha
- Poster about the co-housing project Wijn & Co
- Poster about the co-housing project Boterberg



URL: <https://qrco.de/bf7cx5>

7.3 Workshop

- Booklet
- Power point presentation
- Toolkit for the activity: Discuss the picture



URL: <https://qrco.de/bf7co7>

- Video Workshop



URL: <https://qrco.de/bf8R2g>

This Master's thesis examines the potential of architecture to address and mitigate current sustainability challenges, with a particular focus on rural and semi-rural areas. It proposes that new architectural approaches necessitate innovative practices and highlights the pivotal role of spatiality in the acceptance and development of sustainable concepts. The research considers co-housing schemes, demonstrating how spatial design can enhance community cohesion by balancing communal spaces with the need for privacy. The objective of this analysis is to ascertain the potential of this concept to address intergenerational social isolation, immigrant integration, and the political drive for mixed neighbourhoods to avoid ghettos, in line with East Belgium's Vision 2040. The thesis illustrates that co-housing can promote social cohesion, prevent urban sprawl, and create active community spaces. However, it also highlights the complexity of achieving sustainability in rural areas.

Methodologically, the thesis employs a process-oriented approach, integrating stakeholder discussions, surveys and fieldwork to develop and test new concepts. This adaptive framework is validated through stakeholder feedback and iterative refinement. The research highlights the need for ongoing analysis and adaptation to ensure practical applicability and inclusivity across social groups. The findings suggest that while co-housing can contribute to sustainability, a comprehensive, interdisciplinary analysis is required to address the multiple challenges. The thesis concludes by advocating for further research to refine architectural methodologies, emphasising the key role of architecture in enhancing sustainability and community life in rural areas.

