

Abstract

This research comprises a literature study and a multiple case study, through which aspects of self-organisation critical to achieving affordability can be identified. The incentive for this research are the problems of starters who are unable to find adequate housing in distressed urban housing markets.

Typically, the majority of self-organised housing initiatives are driven by upper middle class citizens with own capital and financial security. Among participating households, families with children and middle-aged empty nesters are overrepresented. However, projects with strong do-it-yourself mentalities for starters are appearing. In the light of starters as an emerging target group for self-organised housing, it is valuable to assess the aspects related to affordability and accessibility of collective self-organised (CSO) projects for starter households.

The aim of the research is to inform architects, but also other initiators or contributors, about positive and negative approaches to these aspects. Subsequently, it recommends certain approaches, related to the organisational, financial and design structure of the project.

Table of contents

1. Introduction	
Background	6
Scope and aim of research	9
Research method	9
Relevance of the research	9
2. Literature study	
Research aspects	10
3. Multi case study	
3.1 Amsterdam	
Context	16
Case study: Vrijburcht	17
3.2 Brussels	
Context	21
Case study: Brutopia	22
3.3 Zürich	
Context	27
Case study: Kalkbreite	28
Synthesis	33
4. Conclusions	36
5. Recommendations & design principles	38
Bibliography	40

1. Introduction

Background

Each year about 33.000 starters enter the housing market of Amsterdam. Previously, these starters could appeal to distinct market segments for their first home in the city; depending on their income, they would either apply for social housing, search within the private rental segment or apply for a mortgage to buy a house. Due to privatisation in the 1990s, the economic crisis of 2008, and the receding power of the government in general, it now has become increasingly difficult for them within all of these segments to access housing that fits their needs and desires.

This effect is however not limited to the city of Amsterdam; throughout cities in Western Europe starters have problems acquiring their first home. Housing prices in capital cities are spiking as a result of the limited new-build housing stock due to limited construction during the economic crisis. (Boterman, Hochstenbach, Ronald, & Sleurink, 2013) Londoners between 18-24 years old spend approximately 80% of their income on rent. As this age group struggles to save any of their income for later, homeownership becomes further out of reach. As a result, home ownership declined from 60% to 50% in the past 10 years. (The Guardian, 2015); The decreased accessibility of the housing market is dealt with in different ways in different countries. In Sweden and the UK, there has been an increase in young adults living with their parents longer, and in many Western European countries intergenerational transfers of capital, often by family members, have become essential means of financing. (Kurz & Blossfeld, 2004) Negative socio-economic implications of the decreased accessibility for starters, especially on the buyers' market, are postponed family formation and decreased fertility. In addition, the saving and consumption behaviour of these starters are affected on the long term because they are paying off their mortgage at an older age. (Doling, 2012)

Architects, among others such as urban planners, politicians, have understood the urgency to find a solution to this problem. Their proposals range from modular housing to floating houses, parasitic architecture and student-style accommodation and micro-apartments. (Dezeen, 2015)

Although conducted as part of an architectural degree, this research aims to understand the problematics around this theme in a broader financial and institutional context. Therefore, the developments which have caused the inaccessibility of the Amsterdam housing market for starters are framed in the next paragraph.

The Amsterdam housing market

Up until the 1990s, the distinct market segments in housing were responsive of the starters' demands. The wave of privatisation of the social housing market in the 1990s limited accessibility for starters, which had to resort to the private rental sector. The housing stock of this segment was also decreasing, due to the

increase in home ownership from the 1980s onwards. The mismatch between demand and supply on the private rental market led to high rents, which could not be controlled either as they are responsive to the market and not controlled by the government. On top of these developments, the recent economic crisis has further reduced new built construction, and put more pressure on the existing housing stock. (Boterman W. , Hochstenbach, Ronald, & Sleurink, 2013) These developments have affected the current situation of the Amsterdam housing market, which will be further elaborated in the next paragraph.

Current developments

When renting, starters can either engage in the social housing market or the private rental market. The social housing market has become inaccessible for this group, because of the extensive waiting list, scaling up to 15 years. Furthermore, the private rental market is shrinking and is highly regulated; the less regulated segment of

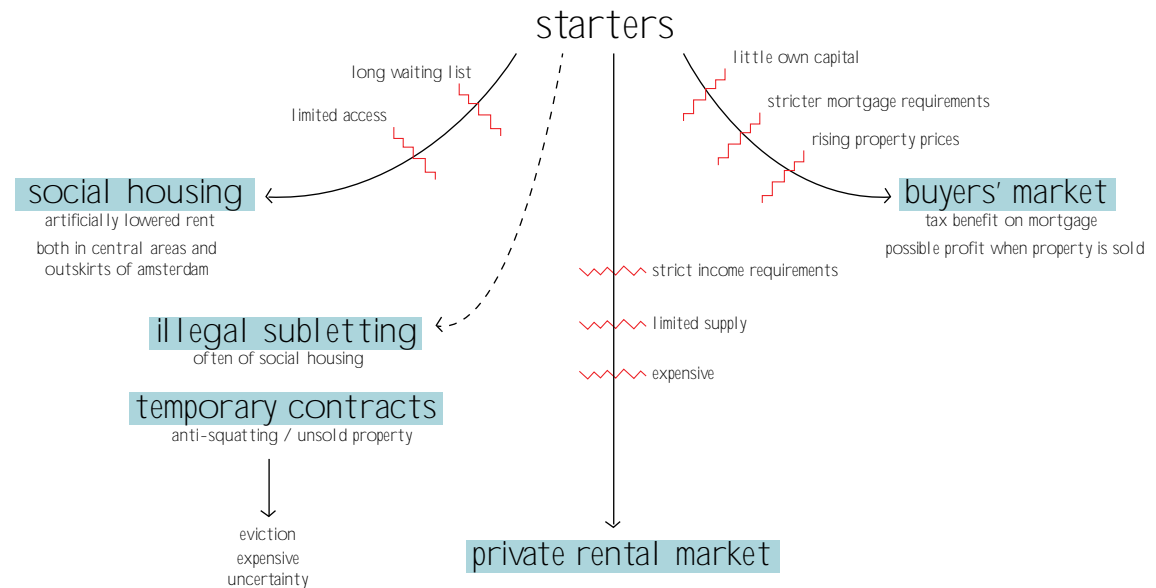


Figure 1: housing markets available to starters (based on Hochstenbach & Boterman, 2014)

this market is too expensive for starters. (Boelhauer, 2012) Combined, these effects have caused what is called the gap between social housing and the private market in which, among other groups, low to middle income starters are stuck.

When buying, the recent increase of stock and decreasing housing prices in the buyers' market might appear to be great opportunities for starters to gain access. To the contrary, the economic crisis has caused the banks to install strict requirements for mortgage applications, which are hard to fulfil for starters, as they often work on a freelance or temporary contract basis. (Doling & Ronald, 2010)

In addition, the affordable segment of the buyers' market has shrunk, which strengthened the competition of more financially stable households who often surpasses the starter household in allocation. (Boelhauer, 2012)

The inaccessibility of the sectors mentioned above, has led to an increase in illegal activity in informal housing markets and the acceptance of temporary contracts among starters. Many of the illegally sublet dwellings are enlisted as social housing, and therefore contribute to the emerging issue of waiting lists for social housing. Temporary contracts are often provided by owners that have trouble selling their house, or to prevent squatting in vacant residential or office buildings.

Box 1: Who are starters?

Starters are typically first time individual renters or buyers; they comprise many income, social and ethnic groups. For this research, a research report by Inbo, 'Starters aan Zet' (Inbo, 2007), is followed to characterise 7 types of starters based on lifestyle analysis. This analysis takes into account information about age, educational level, income, but also identifies their demands in terms of location, proximity to certain services, housing type and core values.

The 7 types of starters identified, are: young mobile, young traditional, climber, flying starter, late bloomer, re-starter and assisted re-starter. (Inbo, 2007) The latter three are not further elaborated, as they are not entering the housing markets for the first time, and therefore are outside of the scope of this research. The overview of the characteristics of the 4 remaining types of starters are expressed in Figure 1.

The focus of this research is on the 'climber'. The climber is increasingly struggling to find housing that fits his demands; there is a strong preference for a location in or on the edge of the city centre, while the typical climber can afford property up to 200.000 euro. The location is of greater importance than the quality of the dwelling itself; they will accept an apartment in a good location over a single family house in a less central location. Sustainability and awareness of the need for

less consumption of resources and products are key components of their lifestyle. (Inbo, 2007)

Compared to the other types of starters, it becomes clear that the climber, in the context of Amsterdam, is in the worst position. Apartments within the ring area below 200.000 euro are scarce, while demand is high. The private rental market in this price range is equally distressed and therefore apartments will often be allocated on the basis of financial security; in this case the starter will be surpassed by older and more stable households. (Boterman W. R., Hochstenbach, Ronald, & Sleurink, 2013)

The flying starter has roughly the same demands, but a significantly larger budget. The young traditional has a similar budget, but prefers a suburban area, in which, especially in Amsterdam, the land prices are inherently lower. Nonetheless, it is not precluded that these starters will be equally compromised when current trends in the Amsterdam housing market evolve. The flying starter for instance, already has limited choice within the ring area of Amsterdam with a budget up to 300.000 euros. Similarly, single family houses with a garden, outside of the ring area, can easily rise above the 200.000 euro limit of the young traditional. (Boterman W. R., Hochstenbach, Ronald, & Sleurink, 2013)

	age	education	income	price limit	location	preferences
young mobile	<25 y.o.	low-middle	low			
young traditional	<30 y.o.	low-middle	middle	200.000	suburban	freedom, quite, space, comfort, traditional
climber	<30 y.o.	middle-high	middle-high	200.000	(edge of) city centre	sustainability, freedom, fun, comfort, global
flying starter	<30 y.o.	high	high	250-300.000	central urban	dynamic environment, historical neighbourhood, freedom, peacefulness, comfort

Figure 2: types of starters as described in the research report by Inbo, Hegeman Bouwontwikkeling, Kristal (2007). The dark blue type is identified as the starter who has high potential but is currently excluded from the housing market of Amsterdam. The light blue types have limited opportunities, but their situation is less critical than that of the climber.

As the illegally sublet sector tends to be expensive, and the living situation of residents in both sectors is uncertain, as eviction can quickly be effectuated by the owner, these emerging markets are undesirable alternatives for starters (see figure 1). (Hochstenbach & Boterman, 2014)

Box 2: What is collective self-organised (CSO) housing?

CSO housing is an overarching term covering various models of collaborative housing, and also contains more community oriented housing models, such as co-housing, intentional communities etc. The TNO research group, which has published a number of research papers on the topic, identifies CSO housing as “a group of individuals that acts in association to organise and commission the processes of formation, requirement definition, planning, design, implementation and/or maintaining their own housing project.” (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014)

TNO further characterises the distinctive features of CSO projects to be “building together, and living together.” (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014, p. 3) The emphasis on living together is further demonstrated in their selection of cohousing, collective housing and led housing as CSO housing models.

In this research, CSO housing is associated with community led housing and self-build /organised housing only, as these are driven by affordability goals and cost-effectiveness. (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014)

Figure 3: collaborative housing models, positioned on process participation and community intention. Conventional serial housing is included to highlight the contrast with collaborative housing. CSO housing according to TNO is highlighted in light blue, CSO housing in this research is marked in dark blue. (altered scheme from Brouwer & Bektas, 2014)

Much research has been done on how these issues can be solved on an institutional level, by changing policy, strategic urban planning or investments. This research however takes the institutional and economic situation as a given, and aims to find ways in which citizens can organise themselves to ‘create’ affordable housing amidst the overstrained housing market.

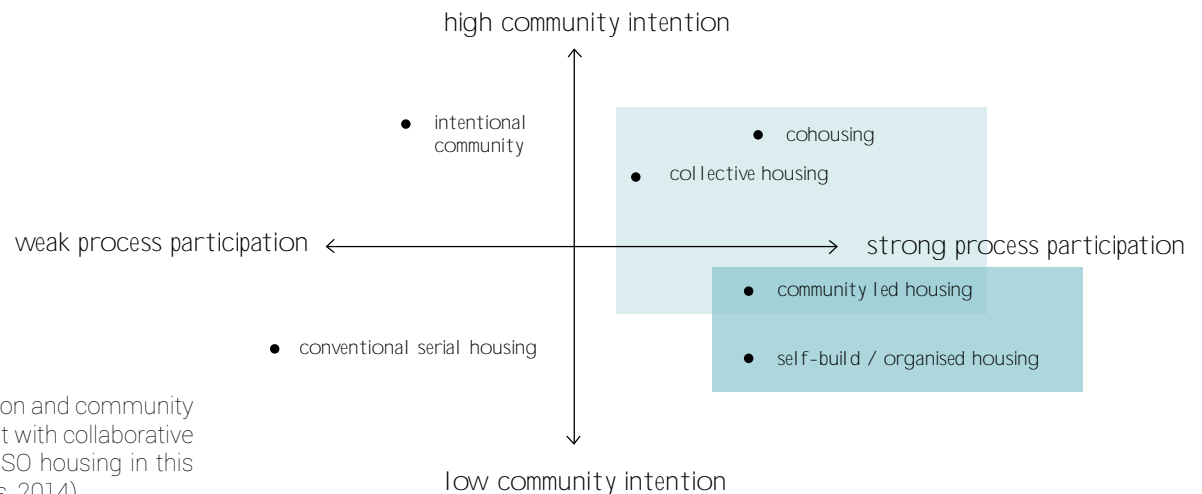
The emergence of (collective) self-organisation (CSO) in housing

Decentralisation, increased self-reliability and demand for participation and custom-made solutions, are themes that have been of concern in building culture in the past decades. (Tummers, 2015) The network society and its associated individualisation and social fragmentation causes an increasing need for a renewed collective self-esteem, and a greater need of people to link with their surroundings (Dowding et al., 2000). Aspirations to have a sense of commitment to the living environment and a desire of for collectiveness, can be met with collective private commissioning. (Gameren, 2013)

How can CSO housing help starters?

Collective self-organised projects are not exclusively utopian or community housing experiments, but also pragmatic answers to societal need such as everyday service, energy- or cost-savings and accessibility. Although research has not exclusively confirmed that collective self-organised housing is in fact more affordable than regular consumer-based housing, there are illustrative case studies in which lower income groups have been successfully included in CSO projects. (Tummers, 2015)

While much research focuses on costs compared to regular construction (SEV, 2010), affordability is linked to the financial limits of a certain group. Therefore, a CSO project can objectively be more expensive than a top-down constructed project, whereas solidarity funding or manipulation of property prices within the group can make these projects more accessible to lower income groups than regular consumer-based housing. (Tummers, 2015)



Scope and aim of research

Typically, the majority of self-organised housing initiatives are driven by upper middle class citizens with own capital and financial security. Among participating households, families with children and middle-aged empty nesters are overrepresented. However, projects with strong do-it-yourself mentalities for starters are appearing. (Boelens & Visser, 2011) The ambition of the research is to establish collective self-organized housing as a feasible alternative to a more passive consumer-driven housing culture for this group too.

Therefore, the core of this research is the evaluation of aspects related to affordability, as determined in literature, specifically directed towards accessibility for starter households.

The results of the research can be used to inform architects, but also other initiators or contributors, about the aspects of collective self-organised housing projects affecting housing affordability for starters.

Research method

The research consists of both literature and a multiple case study. In chapter 2, a literature study is conducted to define key themes and aspects related to affordability in collective self-organised housing projects. These form the basis of chapter 3: a multiple case study of three European cases. The focus of this multiple case study is an evaluation on how the CSO groups have dealt with the aspects related to affordability, as identified in literature. Subsequently, the information found on each aspect will be compared between the three cases in the synthesis. Chapter 4 elaborates on the conclusions that can be drawn between the 3 cases in general in relation to affordability. Chapter 5 includes recommendations for the Amsterdam case, which has been the starting point of this research. These recommendations comprise implications of the general conclusions relevant to architects involved in future CSO projects in Amsterdam.

The data for the multiple case study is collected through websites, publications, and interviews with residents and involved architect(s).

Relevance of the research

This research follows emerging issues in the societal, scientific and design field.

Societal

The exclusion of low to middle income starters might threaten Amsterdam as a 'creative metropolis'. Companies are establishing themselves in Amsterdam because of the 'human capital'. As globalisation has enlarged the area of employment for graduates, starters will compare various cities according to income, monthly expenses such as rent, tax etc. (Hassink, Dröes, Manshanden, & Steegmans, 2012) The general trend for starters to pay an increasing large part of their income on housing might stimulate migration to more financially attractive cities. (Clapham, Mackie, Orford, Buckley, & Thomas, 2012) Therefore, it is necessary to counter further privatisation of the housing market, in order to maintain affordability, social equity and socio-economic stability for young households.

Scientific

Tummers (2015) detects a lack of knowledge on how *mixed* income households can be accommodated for in collaborative housing (see introduction of Chapter 2). Although this paper only comprises a brief literature study and 3 case studies, it can contribute to a larger evaluation of affordability in CSO projects in the future.

Design

Previous attempts at designing affordable housing for starters in cities have largely been made within the scope of the architects' influence. This research however links different aspects within the larger theme of CSO housing to affordability, including many which cannot be influenced by the architect. Only after linkages have been made between these aspects and affordability, recommendations and design principles are made to inform the architect. Therefore, it has the capability of striving beyond the existing proposals and strategies for solving this problem.

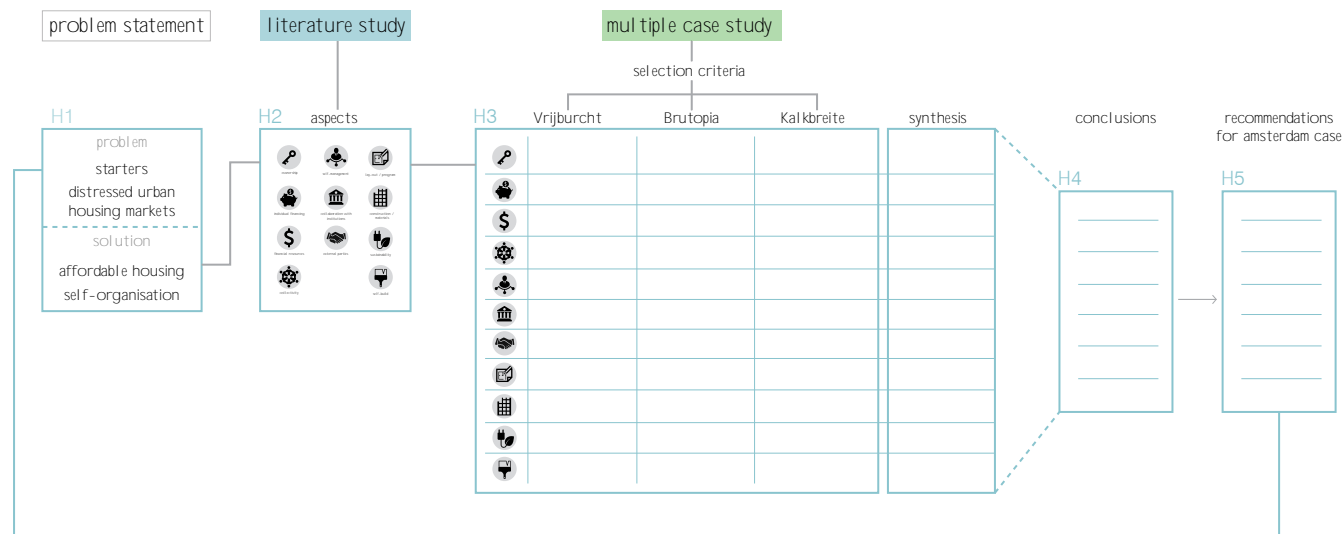


Figure 4: Research methodology and structure of the report (own illustration)

2. Literature study

The overall profile of contemporary European urban cohousing initiatives corresponds to predominantly middle-income households embedding itself in clustered housing in inner-city locations. Tummers argues that for collaborative housing to accommodate *mixed* income households, a new framework is to be formed, 'which can absorb both universal characteristics as well as locally specific environmental and institutional factors' critical to affordability. (Tummers, 2015, p. 15)

The literature study aims to identify these universal and locally specific factors, or aspects, related to establishing CSO housing as an affordable housing option for mixed income households.

In chapter 3, the found aspects will be the focus of the multiple case study. This study does not verify *if* the aspects put forward by literature, are in fact the most important aspects. Rather, they serve as a guideline to find out how groups have dealt with issues related to the given aspects. Thereby, new approaches and strategies can be found to inform the starting point of this research, namely the proposition to use self-organised housing to create affordable housing for starters in Amsterdam.

The three themes which form the guiding structure for the aspects of investigation, are informed by Tummers' critical review of collaborative housing research (2015) and by more pragmatic sources such as the 'Samenhuizen in België' guide (Jonckheere, Kums, Maelstaf, & Maes, 2010) and 'Making room for people (Boelens & Visser, 2011).

Finances

As a theme, *finances* are inherently related to affordability, and financial models in CSO housing projects differ from established financial models in their collective nature. (Tummers, 2015)

Self-organised groups take on the role of the commercial developer, although they often do not have the financial security and capital, and therefore

struggle to find sufficient funding through bank loans. However, collective self-organised housing also offers opportunities to tap into other means of financing than regular development, and can make use of informal financial support between participants. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

Organisation

Self-organisation can eliminate or control actors from the design and building process that aim for profitability, although possible savings resulting from a more direct relationship between the consumer and the builders are often negated by the need to hire process supervisors or consultants. (Boelens & Visser, 2011) Collaboration between institutions and CSO groups similarly poses opportunities and possible setbacks; procedures and communicational structures are often not geared towards dealing with CSO projects, which makes the design and building process prone to delays, but municipalities are often more willing to offer CSO groups financial benefits for incorporating facilities open to the neighbourhood. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

Design

As in regular new-build development, the choice of materials and building method, density and sustainability measures can be chosen in order to achieve affordability. However, in self-organised housing, the users have more say in these choices compared to consumer-driven housing, and will often make different design decisions than the commercial developer, who is looking for a short-term profit. (Boelens & Visser, 2011)

Research aspects

Finances

Ownership, individual financing, financial resources and solidarity are key aspects related to affordability of CSO housing projects.

Ownership responds to various atypical forms of ownership found in CSO housing, such as cooperative ownership, shared ownership and mixed tenure. (Tummers, 2015)

Although the organisational structure of CSO housing allows for these innovative models to be applied, financial providers are not always capable of working with them. However, CSO housing is not restricted to banks for financing; they can actively approach housing corporations, municipalities and (small) private investors for financial support. (Jonckheere, Kums, Maelstaf, & Maes, 2010) Therefore, *individual financing* and *financial resources* are determined to be of importance in relation to affordability.

Lastly, CSO housing can incorporate *solidary*, through loans between residents and solidarity funding. These ways of creating affordability within resident groups are unique to collaborative housing projects. (Tummers, 2015)



Ownership

The form of ownership that participants are awarded, has important consequences for their personal risk, the eligibility for external funding through mortgage, and their position on the housing

market after completion of the project. These issues are strongly related with individual financing, the next aspect.

Individual ownership is not beneficial for long-term accessibility for starters. The positive valuation of realised collective self-organised projects on the housing market, often causes a strong increase of property value. In that case, the benefit of self-organisation only affects

the first group of participants. Unless the group creates a system in which speculation on the own dwellings restricted, for instance by capping the price or letting profit flow back to the community. However, this is often not possible from a legal point of view. (Field, 2005)

Cooperative ownership, an accepted legal form in Switzerland and Austria, does offer the opportunity to create long-term accessibility for middle low income households. Residents often own a share in the cooperative which is returned with an interest rate when moving out, and are usually secured of an apartment within the cooperative when they want or have to switch to another dwelling. (Hugentobler, 2015)



Individual financing

Financing the pre-development stage can be a possible threat to the design and building process, as bank loans are not yet available in this phase of the project. Participants will have to draw on their savings

and loans from family members or friends to continue the design process. (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014)

Underestimating the property prices in an early phase, and rising property prices during the process, can force committed participants to drop out of the project. In terms of financing, this puts the entire project under severe risk of not being completed, as the majority of financing often relies on individual mortgages. (Jonckheere, Kums, Maelstaf, & Maes, 2010) Housing corporations or other external parties could provide financial support in that case, although it is uncommon for them to do so in the current housing market. (W. van Gils, personal communication, November 17, 2015)

Gaining trust of banks is a major problem for many

groups. A new formula is often viewed with suspicion, banks usually find CSO housing too risky. Even with highly creditworthy participants and a very traditional legal structure, financed through individual mortgages, banks are not always willing to provide loans, and additional deposits might be necessary to secure bank



Financial resources

The municipality can financially support CSO housing by offering land for a reduced price or leasing it to them. Furthermore, they can offer financial support for facilities open to the neighbourhood. Reserving land

for self-organised groups also helps them financially, as they do not have to compete with commercial developers. Some municipalities also set up a fund to give out loans to self-organised groups.

Subsidies can provide further funding. Subsidies are given to CSO groups for social inclusion, sustainability goals etc. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

The inclusion of social housing can further strengthen the financial security of the plan. Collaboration with a social housing provider can either comprise a subsidy given to the group or (pre-)financing of some of the dwellings, which will remain in the ownership of the social housing provider. (Jonckheere, Kums, Maelstaf, &



Solidarity

Solidarity between participants can be achieved in multiple ways. Loans can be arranged between participants, and by private investors, although it is recommended to hire an advisor to write the contract.

(Jonckheere, Kums, Maelstaf, & Maes, 2010) Also, groups can set up a solidarity fund in case participants cannot provide the financial input requested from them (Tummers, 2015), or manipulate the property prices

within the project. This however makes the project more prone to speculation. (W. van Gils, personal communication, November 17, 2015)

Organisation

The organisational structure within an initiative and resident group has a great impact on affordability. The organisational model of most CSO projects can be broken down into the initiative group (and participants), institutions and external parties.

The initiative group is responsible for obtaining land, forming a group, planning and financing; therefore, establishing a clear organisation model is important for the success of the project. (Tummers, 2015) Hence, the aspect *self-management* is included. Self-management implies the collaboration with institutions and external parties is also to some degree managed by the group. Support from the municipality is often necessary in dealing with financial, procedural and legal barriers. (Tummers, 2015) These issues are explored under the heading *collaboration with institutions*. External parties, hired by the group, further contribute to or harm the project, depending on their experience working with groups instead of professionals, planning and their position within the process. (Jonckheere, Kums, Maelstaf, & Maes, 2010)



Self-management

CSO projects generally take somewhat longer because the process of forming groups and aligning people's wishes, needs and ambitions, is difficult and time-consuming. Delays occur therefore

during the preparatory phase and when the details of the plan are being worked out, or when the plots are being allocated, as well as at the end, when alternatives are considered because of the budget. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

It is important to establish clear principles and visions for the self-management of the group, in order to smoothen the decision-making processes. These 'rules' can be either enforced by peer pressure, or by legal structures, depending on the size and nature of the group. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

It is important to hire the necessary professionals, but it is also vital to acquire the skill of communication with professionals, or hire someone who can do that for the group. In return, the professionals also have to be able to communicate with a group, rather than a professional developer. Particular large projects require management skills, and insight into the various domains of project management, legal structures, architecture, promotion etc. (Jonckheere, Kums, Maelstaf, & Maes, 2010)
An architectural study, together with a feasibility check, should be conducted at an early stage. This is necessary because possible sites can be restricted by the municipality in terms of program, building restrictions etc. (Jonckheere, Kums, Maelstaf, & Maes, 2010)



Collaboration with institutions

Procedural barriers between CSO groups and municipalities, often related to spatial planning, are common, as legislation is not geared to deal with CSO groups instead of private persons or professional developers. For instance, many institutional and financial procedures are not suited for CSO housing in Dutch planning culture. Strong regulatory planning frameworks and planning regulations, plus lack of instruments for the distribution of financial and institutional risks, lead to high risks and extensive planning processes for self-organised housing groups. (SEV, 2010)
Groups often find themselves having to defend their designs, and being asked to alter them to less dwellings, less communal facilities and less sustainability measures. (Brouwer, Esra Bektas, Pasqualis, Quentin,

& Savanovic, 2014) The effort required to inform authorities and administrations at various levels and to convince them does not only cost time and effort, but also expenses on additional studies or documentation, and delays. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

In some countries, local authorities play an important role in acquiring a site for the project. CSO groups can simply not compete with commercial developers, because they cannot attract financing as fast and decision-making takes longer. To accommodate CSO groups, municipalities could appoint certain plots for self-organised housing only. (Vera, 2009)

The inclusion of social housing, as discussed earlier, is administratively challenging. Working together with a social housing provider adds complexity to the organisational structure and is therefore hard to achieve. Many groups drop their ideals to include social housing during the process, because they find it hard to meet the criteria set by the social housing providers. (Jonckheere, Kums, Maelstaf, & Maes, 2010)



External parties

Possible savings resulting from a more direct relationship between the consumer and the builders are often negated by the need to hire process supervisors or consultants. (Boelens & Visser, 2011)
Sometimes, CSO groups find themselves paying for the extra hours professionals have to put into learning to deal with groups instead of professionals. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

Design

In CSO housing, participants have greater influence on the design than in regular projects. Therefore, they can make design decisions that are normally done by the architect, contractor or project manager. *Lay-out and*

program are interesting aspects to evaluate in relation to affordability, because alternative approaches, such as inclusion of social housing (Jonckheere, Kums, Maelstaf, & Maes, 2010), exploitation of commercial spaces (van Gameren, 2013) and optimisation of used floor space through shared program (Tummers, 2015), are examples of how CSO housing can be more affordable than standardised housing.

In terms of *construction and materials*, CSO projects differ from commercially developed projects, because of their concern for the long-term quality of the building. In addition, they often show a strong interest in environmental *sustainability*. Both these concerns affect the affordability through choice of incorporated systems and materials. (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014)

Another aspect commonly incorporated in the design of CSO projects, is a degree of *self-build*. It is of importance to evaluate this approach, because of contradictory research on the effects of self-build on the overall affordability. (Boelens & Visser, 2011)



Lay-out / program

CSO projects require allowances for adjustments and flexibility in proposals to accommodate CSO process driven changes. For instance, it could be beneficial for the group to have the possibility to split up or combine dwellings before and during the process of allocation. (Brouwer, Esra Bektas, Pasqualis, Quentin, & Savanovic, 2014)

The costs of the individual dwellings can be lowered by making them smaller, especially when the communal space can compensate for the loss of individual space. This can also be done to a segment of the various dwellings within the project, to stimulate a diverse group. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

Incorporating additional program, which can also be used by the neighbourhood, should be carefully considered, as it is an extra expense and should be of high quality. (Jonckheere, Kums, Maelstaf, & Maes, 2010)



Construction / materials

Affordable, sustainable and high-quality housing could be achieved through the use of prefab building components and industrial building in factory circumstances. (Damen & Botman, 2014)

The desire to promote alternative building methods, such as wood-frame construction, can increase expenses on building. (Boelens & Visser, 2011)

Dividing the cost of units into 'core' and 'extras' can be a good method for securing the quality of the communal spaces and the façade, circulation and structure, and allowing for varying financial circumstances of households and different standards for the finishing, such as lighting, doors, built-in cupboards, for the own dwelling. (Field, 2005)



Sustainability

Many CSO initiatives have an ecological motivation or background. (Hasselaar, 2014) The ambition of many private end-users reach beyond the requirements from building codes and regulations. (Hasselaar, 2014)

The costs of the entire project can rise due to extra expenses on energy efficient system and materials. Therefore, the price of energy and therefore economic gain, and the availability of public subsidies affect the degree of sustainability goals and measures

incorporated in affordable CSO projects. (Geröházi, Hegedüs, & Szemző, 2014) It is anticipated however, that sustainable and energy-efficient homes will become more popular in the future as a result of the increasing burden on the environment and the average rise in energy prices, and property prices will rise accordingly. (Boelens & Visser, 2011)



Self-build

Having participants do a part of the construction, such as demolition, preparing the site, building a shed, the interior finish or the landscaping of the outdoor space,

could open up the project for lower income groups. For instance, a system can be established, in which more active participants are rewarded for their hours put in. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

In order to assure the building activities of the contractor are not delayed by the self-build activities, it is important to place these activities either at the beginning or the end of the building process. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

The degree of self-build in CSO projects is strongly connected to the form of ownership. In an owner occupied situation, residents are more eager to contribute to their own dwelling. In this case, the financial benefit only applies to the first residents. (Jonckheere, Kums, Maelstaf, & Maes, 2010)

A large degree of self-build in rented situations is less desirable, as building quality is hard to control when every resident is doing the interior partitioning and fittings themselves. (P. Müller, personal communication, February 15, 2016)

Summary chapter 2

From the literature study, 3 main themes are determined to be of importance in relation to affordability and CSO housing projects, namely *finances*, *organisation* and *design*. Within those 3 themes, 11 aspects are marked to be evaluated in the multiple case study (see figure below).

The aim of the multiple case study is not verify if the aspects put forward by literature, are in fact the most important aspects. Rather, the aspects serve as a guideline to find out how the groups of the cases have dealt with issues related to the aspects.



Figure 5: Aspects from literature related to affordability (own illustration)

3. Multiple case study

The aim of the multiple case study is to evaluate which approaches and strategies related to the previously determined aspects have been successful in creating housing affordability.

To support the evaluation of the cases, the context of each case has been framed. The housing market, the position of starters and the possibilities for self-organisation of each of the cities of the cases is briefly described. In addition, a timeline is illustrated, to point out the main events in the process from initiative to completion. Afterwards, important findings related to the 11 aspects will be discussed.

Concluding the chapter, the three cases will be synthesised into general conclusions that can be drawn for each aspect.

Method

The data for the multiple case study is collected through websites, publications, and interviews with residents and involved architect(s). The interviews with the residents are done on site.

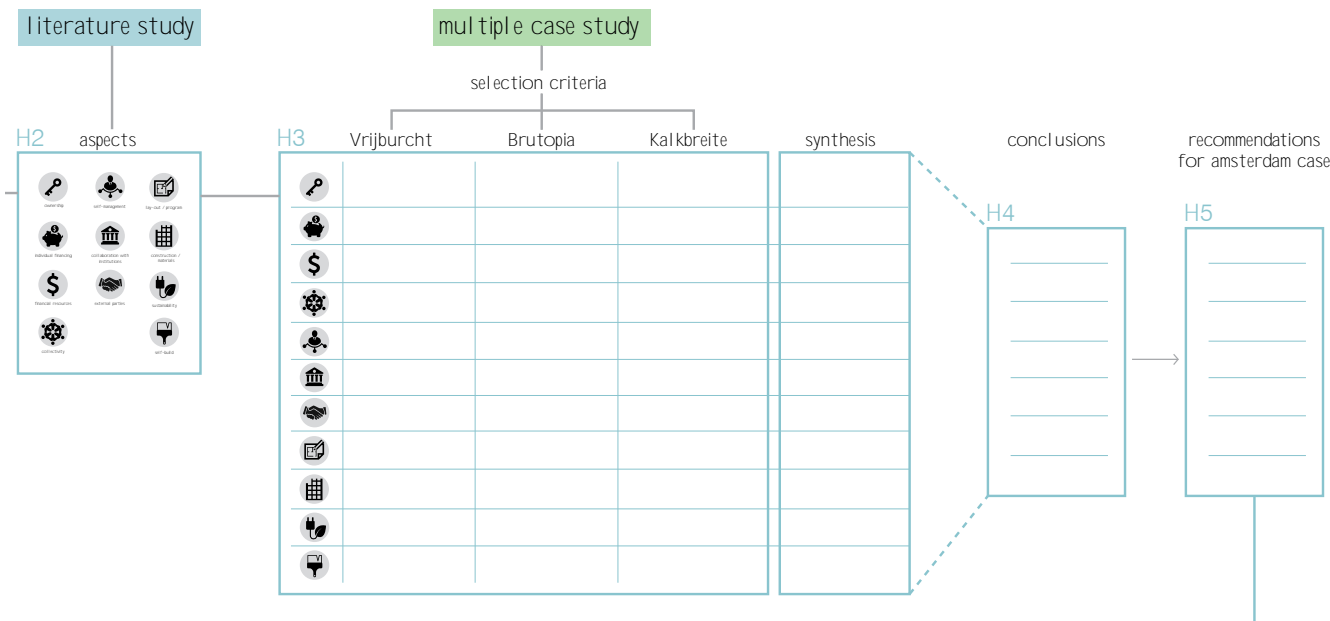


Figure 6: Part of research methodology (own illustration)

Case selection

Cases have selected based on the following criteria:

Initiated by future residents

As the goal of the research is to stimulate active citizen participation or rather initiative, and for institutions to accommodate for citizen initiative, project initiated by municipalities, social housing corporations and commercial developers are excluded.

Directed towards housing (low) middle income starter households

Many CSO projects have been realised because the capital or income of the initiators was sufficient to overcome barriers in for instance bank financing, hiring external professionals etc. The evaluation of those cases would therefore would be of less interest for this research. This however does not imply that the participants should all be starters; it selects cases that had the intention to make the project accessible to (low) middle income starters.

Improves the financial position of starters

This criterion selects project that actively engage in strengthening the position of the starter in long term, rather than providing a temporary housing solution.

Located in dense urban area

The cases should be related to the situation of Amsterdam, and should therefore be located in a city with similar conditions, such as rising housing prices, mismatch between supply and demand, agglomeration, scarcity of vacant plots, and potential urban sprawl.

Has affordability as a goal

Affordability, as mentioned before, relates to the target group of starters, but also implies the ambition to create housing that is more affordable than housing acquired through the regular housing market.

Large scale project (over 30 dwellings)

By narrowing the cases down to large scale projects, the possibility to experiment with collective consumption and intricate organisational structures is included. This criterion also relates to the ambition to establish CSO housing as a feasible alternative to top-down organised housing on all scales.

The selected cases

With the criteria, 3 cases have been identified to be informative for the research.

Amsterdam - Vrijburcht (2008)

Within the city of Amsterdam, (collective) self-organised projects are stimulated, although highly institutionalised. The municipality marks specific sites for (C)SO housing, for which groups and individuals can apply. Certain external and internal conditions, some of which changed after the economic crisis, made it possible to accommodate first time buyers. Therefore, it remains one of the few examples of CSO housing in Amsterdam, which is not dominated by middle class citizens.

Brussels – Brutopia (2013)

The housing market in Brussels faces many problems similar to that of Amsterdam. However, some customs in housing culture are different; for instance, land is often owned by individual owners, rather than institutions or municipality. Therefore, initiators can take a very active part in land acquisition.

This case is particularly interesting as it set out to create housing 20-30% below market price. In addition, the design features many sustainability measures, including building according to the passiv-haus principle.

Zürich - Kalkbreite (2014)

The city of Zürich has actively stimulated the construction of affordable housing among the increasingly expensive housing market for the past decades. The housing culture is very receptive to cooperative ownership, which is very different from Brussels and Amsterdam. The financial structure applied in this case is of interest, as it is easily accessible to starters, but also allows for individual profit when leaving the project. The aim to include disadvantaged groups has led to a very reliable financial support system.

Amsterdam

Context

As mentioned in the introduction, the position of low income starters in Amsterdam is increasingly weakening, because of their limited access to the affordable housing stock. Collective self-organisation offers opportunities to strengthen their position, although it is not yet an established and supported form of housing development in the Netherlands.

Housing market

The housing market of Amsterdam is showing inequality in the allocation of its housing stock. The social housing market has become badly accessible; in addition, the private rental market is shrinking and no price regulation exists. This sector is technically accessible to all types of households, although vacant units are primarily distributed on the basis of economic capital. Rents in this sector are generally high, especially in the city's central neighbourhoods, due to the limited stock and large demand for private-rental apartments. (Doling, 2012)

The increase of stock and decreasing housing prices in the buyers' market appear to be great opportunities for starters to gain access, but since the economic crisis, it has been incredibly hard for starters to be granted bank mortgages due to stricter regulations. Furthermore, the affordable housing market has shrunk, which strengthened the competition of more financially stable households who often surpasses the starter household in allocation. (Boelhouwer, 2012)

Both the buyers' and the renters' market show a lack of diversity on the supply side; dwellings in the city centre are often too big, while social housing on the outskirts of the city are too small. New-build apartments within the ring area between 40 and 60 m² would strengthen the rented segment of 664-1100 euro per month (just above the social housing limit). (Hassink, Dröes, Manshanden, & Steegmans, 2012) Expanding the

housing stock towards affordable housing is a way to attract young talent. Combinations of working and living could be realized in hybrid new-build structures. (Daman, Uittenbogaard, & Blom, 2009)

Starters in Amsterdam

Migration into Amsterdam is strongest among the age groups 15-19 years old, 20-24 years old and 25-29 years old. This can be traced back to Amsterdam as a university city and the job market. (Hassink, Dröes, Manshanden, & Steegmans, 2012, p. 15) There is a strong preference among Dutch natives and expats to live inside the 'ring', whereas non-western immigrants often prefer a suburban setting in which they can start a family, together with the ideal of a traditional dwelling with a garden, which is only available outside the 'ring'. (Hassink, Dröes, Manshanden, & Steegmans, 2012) As Dutch natives and expats make up over 85% of the people searching for housing in Amsterdam (Hassink, Dröes, Manshanden, & Steegmans, 2012), it would be preferable to realise at least part of the affordable housing stock within the ring.

In addition, much concern goes out to families that are increasingly moving out of the city to suburban areas in the greater region of Amsterdam. Two main groups can be identified: the 'urban' families, which prefer spacious dwellings of reasonable quality and do not need a garden per se, and the middle class families, that prefer to live outside the ring in a terraced or detached house. To maintain a mixed demographic in Amsterdam, it would be valuable to strategically take into account that starters are these families in the future. (Daman, Uittenbogaard, & Blom, 2009)

Possibilities for self-organisation

Stimulating private commissioning fits the long lasting political developments in the Netherlands of retraction of the government from society. Civilians are asked to take more responsibility and simultaneously they are awarded more freedom. However, housing in the

Netherlands has long been geared towards repetition, standardization, and the resulting cost-savings. Especially in urban settings private commissioning has little opportunities, as most attempts at facilitating individual commissioning comprise detached housing. (Gameren, 2013)

The collective initiative in the Netherlands, unlike that in other countries, is often a reaction to negative effects of standardization and scale in the housing sector. They tend to be driven by the desire for custom-made solutions, individual expression and profit. Participatory design within a scheme organised by a professional developer often results choosing between mostly cosmetic options for making a standard dwelling 'individual and unique'. (Gameren, 2013)

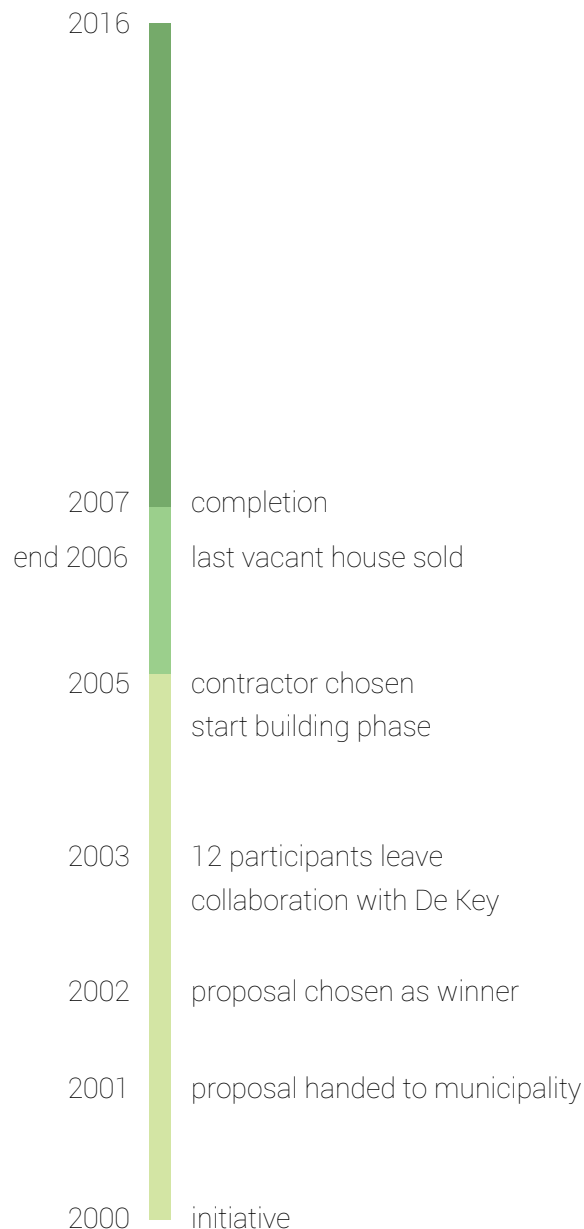
However, there are positive developments in building culture, which strengthen the position of CSO housing as an alternative to consumer-driven housing.

Firstly, housing corporations are interested in cooperating with initiative groups, as they have observed the positive social effects of housing lower income groups in cooperatives in the recent past. While housing cooperation often have to invest time and money to create well-functioning unsegregated neighbourhoods, the 'social control' and sense of community of cooperative housing do not require many interventions by the housing corporations and rely heavily on resident initiative.

Recently, housing corporations have been restricted solely to their 'social' branch. In addition, their capital suffered immensely from the economic crisis. As a result, most corporations are only willing to experiment with existing housing stock to reduce the risk of a failed project. (W. van Gils, personal communication, November 17, 2015)

Amsterdam

Case study: Vrijburcht



Housing units: 52

Floor area apartments: ~100 m²

Type of dwellings: regular housing, care homes

Shared spaces: guest rooms, communal garden, green house, commercial spaces, café, theatre, kindergarten

Form of ownership: owner-occupied

In 2000, a group of befriended creatives living in the city centre of Amsterdam organized themselves to create a typical housing situation in which the residents would run a small theatre together. In 2001 a proposal for a plot on Steigereiland is made by one of the participants, architect Hein de Haan. From all entries, the proposal is chosen in 2002 and a more detailed design is made. A financial plan is made and as prices for the individual houses are revealed, the majority of participants drop out.

With 12 participants left in 2003, the group decided to approach De Principaal, part of housing corporation De Key, to provide funding for the vacant homes until they were sold. De Key also agrees to take ownership over the kindergarten, the café and the care homes.

In 2005, after the design is finished, the contractor is chosen and all paperwork is done, construction starts. At the end of 2006, just before the completion of construction, the last vacant house is sold. Mid 2007, the entire complex is finished. Since then, new additions and alterations have been made continuously. (VlugP, 2015)

Finances

Ownership

The dwellings are owner-occupied. Residents sell their apartments on the market. It is also possible to rent out your house, as long as the other residents are informed about it. However, there is a general observation by residents that unknown people appear from time to time. (M. Vergunst, personal communication, November 17, 2015)

The shared spaces (greenhouse, guest bedroom) are financed as if they are part of the dwellings; every residents 'owns' 1/52 of those spaces. (M. Vergunst, personal communication, November 17, 2015)

The ownership of the land remains in the hands of the municipality; the land lease has been paid of for the next 50 years. The land around Vrijburcht is public, including the swimming areas and the docks, which are leased from the government. (Cohousing Cultures, 2015)

The theatre is its own legal entity, and is not funded by residents. It breaks even by collecting rent from people using the theatre hall for shows, parties, meetings and movie nights. (M. Vergunst, personal communication, November 17, 2015)

Individual financing

In the beginning of the project, the costs for the design were managed by having all participants contribute a small amount of money at every next step in the process. (M. Vergunst, personal communication, November 17, 2015)

Because the dwellings are owner-occupied, the individual households had to provide financing through mortgages. The lower income households could appeal to a special mortgage system, called the AMH (Amsterdam Middle-segment Mortgage). At that time these mortgages were a good way for starters to enter the buyers' market. (W. van Gils, personal communication, November 17, 2015)

Financial resources

After the prices for the houses were revealed and subsequently the economic crisis hit, many of the 90 initial participants left. Being left with 12 households, many of the planned houses remained available and could not be financed by individual mortgages.

The group approached housing corporation De Key to take ownership of the big communal facilities (kindergarten, café and care homes). De Key was interested in cooperating with the initiators of Vrijburcht because of its socially inclusive character and the facilities open to the neighbourhood. (M. Vergunst, personal communication, November 17, 2015)

A key figure within the organisation, Peter Kunsli, proposed to also provide funding for the vacant homes; when they would not be sold at the time of realisation, De Key would rent them out and eventually sell them. In the end all houses were sold, but without this offer of De Key to take care of the finances at that moment, the project would have either had a severe delay or not be realised at all.

As De Key would be the owner of the dwellings that were not taken yet, they demanded to have check points in the design process in order to make sure the apartments would appeal to a wide range of potential occupants. (M. Vergunst, personal communication, November 17, 2015)

Solidarity

One of the criteria for the AMH mortgage was that the dwellings should be sold for 135.000 to 185.000 euro, and if they sell the dwelling within 10 years after the mortgage is given, a percentage of the profit had to be returned to the municipality. (M. Vergunst, personal communication, November 17, 2015)

Although some of the AMH dwellings were smaller than the regular dwellings in Vrijburcht, they were all worth more than 185.000 euro. The group decided to artificially set the price to 185.000 euro; the other participants

financed the difference between the actual price and the set price. Shortly after the AMH mortgages were given, the entire arrangement of AMH's was abolished. This meant that the residents in the AMH dwellings did not have to return the profit made when they would sell their house. Both these facts strengthened the opportunity for speculation; however, it did not trigger many participants to leave the project short after realisation as only 2 of the AMH dwellings are sold up until now. (M. Vergunst, personal communication, November 17, 2015)

Manipulating the price of the AMH-apartments, results in a dramatic increase in value. By now, they have become too expensive for starters to get a sufficient mortgage. This means that the project is now inaccessible for lower income groups. (M. Vergunst, personal communication, November 17, 2015)

Organisation

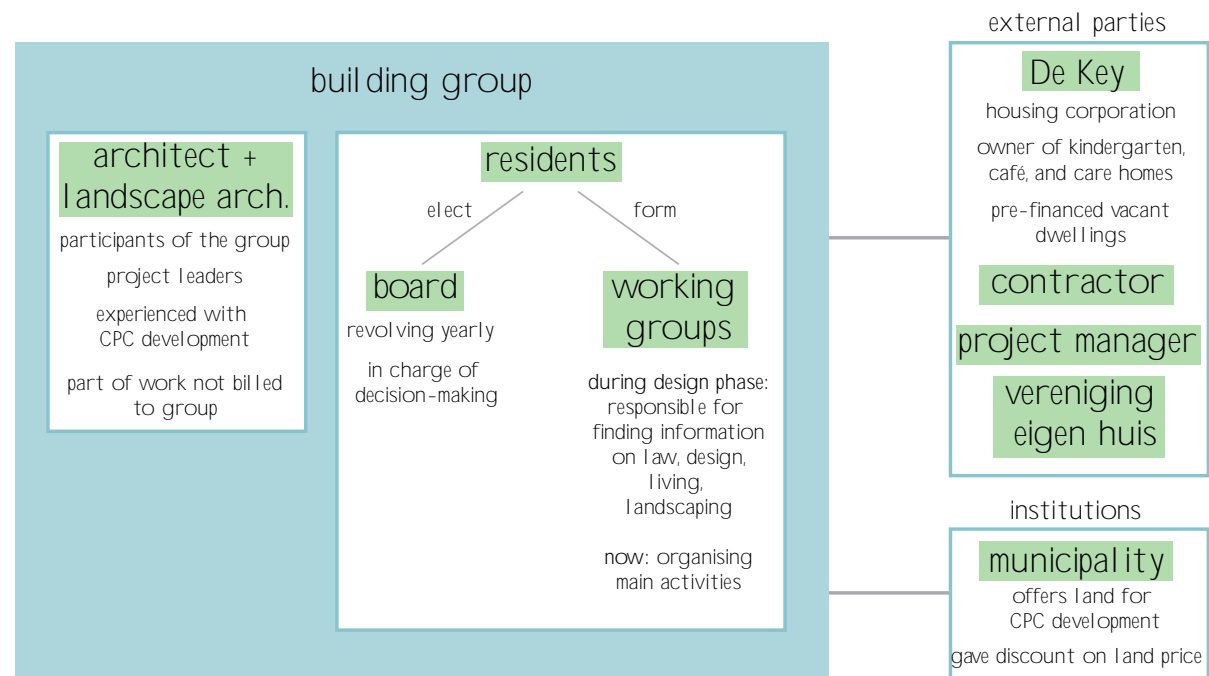


Figure 7: Organisational model of Vrijburcht (own illustration)

Self-management

In the beginning of the project, the residents wanted to organize the kindergarten collectively themselves. This was prevented by strict regulations. In addition, as many of the residents are families of which both parents work, there was insufficient capacity within the group to fill up the hours.

De Key became the owner of the kindergarten, and together with the residents, a small commercial business was chosen to fit the scale of Vrijburcht. Children living in Vrijburcht get priority in staying in the kindergarten. (M. Vergunst, personal communication, November 17, 2015)

The residents are in charge of communication between all actors involved in the project now. Although De Key is the owner of the kindergarten, the café and the care-homes, much communication is done between the

'regular' residents and the operators and residents of those facilities. De Key mostly gets informed through attending meetings with the board of residents. (M. Vergunst, personal communication, November 17, 2015)

As Vrijburcht contains many communal spaces and shared outdoor facilities, the residents have decided that weekly and monthly tasks are outsourced because most residents are either too busy with work or spend a lot of time on the other facilities like the theatre and the harbour, although they do take initiative for special activities. (M. Vergunst, personal communication, November 17, 2015)

The owners association comes together twice a year to appoint a board, which in turn assigns members to the different committees, such as the 'technical' committee, the 'cleaning' committee, the 'garden' committee etc. (VlugP, 2015)

Collaboration with institutions

The land was acquired through participation in an appeal of Amsterdam for the collective commissioning of an empty plot in the newly developed neighbourhood of IJburg. Vrijburcht is chosen because of diversity in its program by incorporating indoor and outdoor space for activities and a café, that are both open to the neighbourhood. In addition, the jury had great trust in the proposal, and the experience of the team of architects with 'collective private commissioning' (CPO). (Johann & Janssen, 2015)

In cooperation with the municipality, it paid to be on top of things; when Menno Vergunst checked the calculation of the land price of Vrijburcht made by the municipality, he found some irregularities, which saved the group 450.000 euro. He also negotiated a lot with the municipality about the facilities that would benefit the entire neighbourhood; this led to a land price of 0 for the theatre and the parking space. (M. Vergunst, personal communication, November 17, 2015)

The municipality of Amsterdam has also been greatly involved and very cooperative towards the group. They saw the recreational and cultural functions provided by Vrijburcht as a new way to upgrade the neighbourhood. (M. Vergunst, personal communication, November 17, 2015) Their willingness showed mostly in their negotiation with the group about the land price, which they calculated by using a for-profit developer price, and discounting 20%. (Johann & Janssen, 2015)

External parties

Up until the preliminary design, design of the construction was managed by the architect and costs calculation was done by the future residents in cooperation with MBM-group, an external cost calculator. (M. Vergunst, personal communication, November 17, 2015)

For managing the building process, an external project leader was appointed. This made it possible to tender the project without all detailed technical specifications, which are almost always used before building complex and even small structures, and thereby saving significantly on expensive hours of professionals. (Vlug, Hartog, & Vergunst, 2007)

Appointing an external project leader also changed the relationship between the residents and the contractor; the contractor might be stimulated to construct a good building when he has the opportunity to build a lasting relationship with another professional in his field, rather than a one-time client, like the residents. (M. Vergunst, personal communication, November 17, 2015)

For external support at the completion of the building phase, they made use of the independent building engineers through the 'Vereniging Eigen Huis'. This non-profit association works on a monthly membership fee basis combined with affordable rates for assessments. The advantage of this is that the technical drawings were checked before construction, which lowers the risk of unexpected expenses. (Bouwtechnische Keuring: Vereniging Eigen Huis, 2015) The costs saved on the detailed technical drawings were used to cover the

costs of defects that happened in the building process. (Vlug, Hartog, & Vergunst, 2007)

Because the main architect and some other professionals were participants in the project, many of their hours were not billed to the participants. Another financial benefit was the strong competition among contractors during the crisis, when few projects were constructed, which resulted in a cheap tender.

All this made it possible to build under market price. (M. Vergunst, personal communication, November 17, 2015)

Design

Lay-out / Program

In 2006 Vrijburcht's yearly leasehold rates were determined as follows: housing units €285/m², commercial space €145/m² and cafe/restaurant space €654/m². (Johann & Janssen, 2015). The lay-out of the building block is heavily influenced by reduced lease rates and taxes for work space. Therefore, 'work space' has been provided throughout the block on the ground floor towards the streets, with a separate entrance. Although many residents chose to have this workspace, some have converted it into bedrooms. Officially, the financial benefit would expire; for now it has never been checked. (M. Vergunst, personal communication, November 17, 2015)

To achieve a higher density – in order to have sufficient participants to fund the theatre - the architects only used two housing typologies: maisonettes and patio houses. (W. van Gils, personal communication, November 17, 2015)

A consequence of the rigid lay-outs of the dwellings, the size of the apartments is set, unless a part of the concrete party wall would be taken away (which has happened in two apartments). The interior division can be changed as interior walls are made out of metal stud and gypsum with no electric cables inside.

Although not common, residents have relocated within Vrijburcht. Due to changes in family composition, a young couple moved from one of the AMH apartments to a family house when it became available, while at the same time a couple with children separated, after which the man of that family moved into the AMH apartment. (M. Vergunst, personal communication, November 17, 2015)

Structure / materials

The structure is made out of in-situ concrete, even though this was not the cheapest construction method. The choice for an in-situ concrete structure was determined by the contractor, as he had a deal with a supplier of concrete and experience with this building method. In construction, the materials and systems used are often determined by the contractor's preferences, unless they are clearly and legally defined by the building group at the selection of the contractor. (W. van Gils, personal communication, November 17, 2015)

One of the major defects was the material for the decking of the galleries; hard wood did not fulfil the requirements for fire proofing and was replaced by Deckwood. An advantage to this material was that it was significantly cheaper than hardwood. (M. Vergunst, personal communication, November 17, 2015)

Another condition that contributed to the feasibility of the project, was the fact that the architect was self-proclaimed 'not interested in aesthetics', and would sometimes simply choose the cheapest material. (M. Vergunst, personal communication, November 17, 2015)

Sustainability

At the time of the design and realisation of Vrijburcht, the understanding of the importance of sustainability was less than nowadays. The group also did not aspire any sustainable goals with the project; they were mainly driven by creating social sustainability. (M. Vergunst, personal communication, November 17, 2015)

Self-build

Although some residents chose to do the finishing of the dwellings themselves, they did not get a great discount on the price paid to the contractor compared to other residents. (M. Vergunst, personal communication, November 17, 2015)

Case conclusions



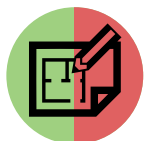
financial resources



solidarity



collaboration with institutions



lay-out / program

Financial resources + solidarity

The AMH mortgage system, which no longer exists, was a successful means to create affordability for first time buyers. Partly because of the price limit of 185.000 euro to apply for the mortgage, the price of the starter dwellings were artificially lowered. The difference in price was compensated for by the residents of the other dwellings, which paid slightly more than the 'real price'.

Collaboration with institutions

When the realisation of the project was in danger, because many participants dropped out when the prices of the dwellings were revealed and a downpayment had to be made, housing corporation De Key pre-financed the vacant dwellings and took ownership of the café, the kindergarten and the care-homes. Without their support, it was likely that the project would not be realised at all.

Lay-out / Program

Maximizing the density created enough extra capacity to fund the construction of the theatre. Furthermore, the architect made use of the reduced land price for work space and the group negotiated a zero land price for the theatre with the municipality. However, the density required the dwelling to be deep and have a rigid lay-out, which prevents flexibility. In addition, some of the work space was transformed into bedrooms while the land is still (illegally) leased for the discounted price; therefore, this strategy should not be taken into account.

Brussels

Context

The housing market of Brussels and the position of starters on the market show many similarities with those of Amsterdam. The Belgians however have a longer tradition of self-build housing, although in many cases this corresponds to constructing individual homes.

Housing market

Home ownership has traditionally had major benefits over tenancy in Belgium; as a result, over 70% of the population lives in owner-occupied housing. The high share of owners reflects that home ownership is traditionally viewed as the ideal housing tenure as it is perceived to provide the highest degree of housing security, privacy and self-determination and to reduce housing costs after retirement. Tax deductions provide further financial incentives. (Zwart, 2015)

In the period between 1980 and 2013 property prices in Belgium have started increasing. However, in the last few years, as building opportunities in good locations have become scarce, land prices have risen even faster. Affordability problems are most severe in Brussels, where the share of households with housing cost overburden is above 21%. The rise of housing prices has been relatively strongest in the cheapest housing stock, as demands have shifted towards this segment. (Zwart, 2015)

As a result, inequality between home owners and renters has increased. Despite the steep increases in property prices, average affordability of housing only decreased slightly, as rising house prices did not affect existing owners while for first-time buyers the impact was cushioned by falling interest rates and longer repayment periods.

Renting however became more expensive, with more renters spending a larger part of their income on housing costs. Income differences became more pronounced as those who could afford a house saw their real earnings

rise while tenants experienced a decline between 1992 and 2005. (Zwart, 2015)

In terms of housing stock, the city of Brussels is struggling to maintain housing accessibility for both young single or double households, as well as young families. The first group is pressuring the demand for small apartments, and taking into account that a couple with two incomes is searching in the same segment as the single household, couples tend to surpass the singles in allocation. This is one example of how this overcrowded dynamic segment is driving up its own price. The increase in single and double household in turn stimulates the conversion of larger apartments into several smaller ones, as these are more profitable. As a result, young families have little chance of finding an affordable apartment large enough to fit more than 2 people. (Vastmans, Buyst, & Ryckewaert, 2011)

Starters in Brussels

"The small and falling share of home owners experiencing affordability problems hides the growing challenges for first-time buyers to buy a house. The recent low interest rates have a tempering effect on mortgage costs, but their decline over a longer period has merely led to higher prices. The surge in required own funds makes it increasingly difficult for first-time buyers to follow the traditional model where young people, soon after starting to work, acquire a house with the intention of staying there for the rest of their life. Without financial support from parents, many first time buyers can no longer afford housing of the same quality and quantity as a decade ago." (Zwart, 2015, p. 86)

"The overall shift in housing demand extends a long trend: nowadays 65% of households consist of one or two people, up from 58% in 1990. As a result, construction of apartments has surpassed that of new single family houses. The increasing demand for smaller housing provides opportunities for spatial planning as it allows for a greater densification of residential areas." (Zwart, 2015, p. 87)

This densification is necessary, as in Brussels, as well as in many other European cities, is becoming increasingly attractive for living. Especially young, highly educated starters value the many amenities the city offers. However, a part of this group view the urban housing market as a step up the housing ladder. They often buy a small apartment in the city, sometimes upgrade the apartment while living there, and use the capital to buy a larger house in the suburban areas of Brussels. (Vastmans, Buyst, & Ryckewaert, 2011)

Self-organisation

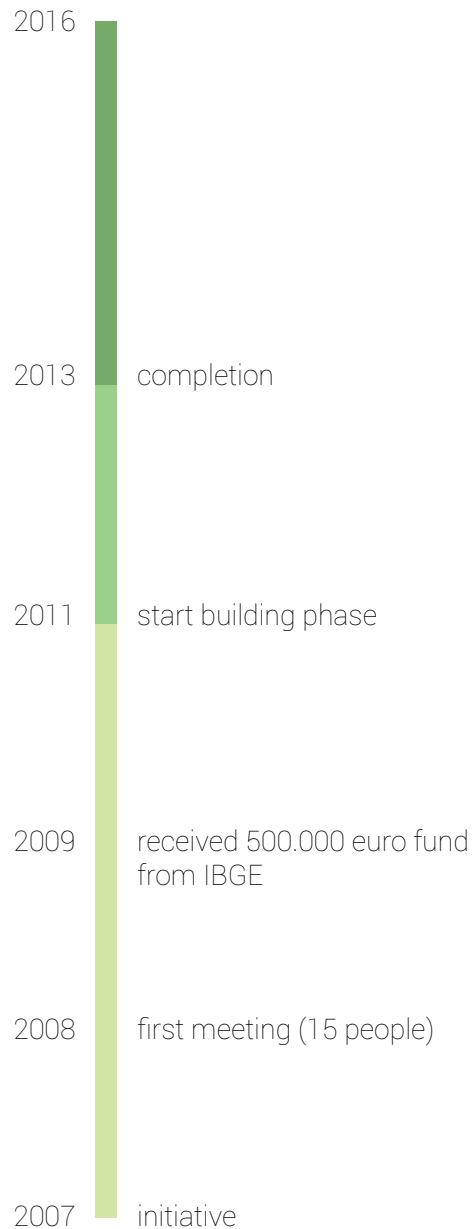
Collective self-organised housing takes up a very small part of the housing market of Brussels. In general, collective private commissioning (CPC) in Brussels is not always inclusive of all income groups. Furthermore, there seems to be little public support for the projects; facilitating initiators of self-organised housing has not been a priority among city planners.

However, some successful projects have been developed in Brussels in the past decade specifically. "Centraal Wonen" (central living), the most common form of CPC in Brussels, have taken on both new-build projects and renovation of (industrial) heritage buildings. (Serroen & Tregarot, 2013)

'Living groups' form the second largest form of collective housing in Brussels; residents in this type of living arrangement are primarily elderly in need of care, minority groups or people that have a strong preference for living in a group. Although sometimes initiated by individuals, these projects are often started by social housing corporations or social institutions. (Serroen & Tregarot, 2013)

Recently, a CLT named 'Community Land Trust Brussel' has been formed; however, no projects have been realised yet. Aspects of the CLT, such as cooperative ownership, do not match the established housing culture, and therefore projects struggle to take form. (Serroen & Tregarot, 2013)

Case study: Brutopia



Housing units: 29

Floor area apartments: 63-141 m²

Type of dwellings: regular housing

Shared spaces: laundry room, communal garden, multifunctional space, bike parking, offices, service centre for elderly

Form of ownership: owner-occupied

The project was initiated in 2007 by Mark van der Dries, who was approached by his daughter who was pregnant and could not find affordable housing for her future family in Brussels. In June 2008, there was a first meeting with 15 people who were interested in participating in the project as residents, one of which was Serge Fraas. He got to know of the project because he designed the house of Mark, but at first he did not have the ambition to be the architect himself. From the beginning, the main intentions of the group were directed towards creating both affordable and ecological (which later was described as sustainable) housing.

The group acquired the land by dividing the the map of Brussels into 15 pieces and looking for vacant lots, empty buildings etc. and approaching the owner whether or not he wanted to sell the land. After making a shortlist of 24 possible plots, they did a short analysis and determined 11 plots to do a feasibility check, after which 2 plots were left, the present one and one in Molenbeek. The group decided to pursue the present plot, mainly because they valued the neighbourhood better than the other location. (S. Fraas, personal communication, December 14, 2015) A grant from IBGE secured the project and in 2011 the group started building. The project was completed in 2013. (S. Fraas, personal communication, December 14, 2015)

Finances

Ownership

The residents have private ownership over their apartment; they are allowed to sell it on the private market and are able to rent it out permanently. The land is collectively owned, by the non-profit organisation the initial residents installed to act as a legal entity in their names (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

The fact that the dwellings are owner-occupied, means that the apartments will not be affordable for lower incomes in the long term. (S. Fraas, personal communication, December 14, 2015) Property prices within the project are expected to turn out high; this is indicated by the expensive rent asked by participants that do not live in Brutopia yet and are (temporarily) renting out their apartments. Residents are unsure if there should be rules or guidelines to manage the housing prices to make the project accessible for low to middle incomes, although the current form of home ownership does not support those restrictions. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Individual financing

The eligibility of participants to get a mortgage were checked by the father of one of the participants. Some participants borrowed money from residents in addition to the mortgage. Individual mortgages for individual households are organizationally easier to manage than cooperative ownership. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

The project required significant investments in the beginning, without the guarantee that the project would be realised. At 3 or 4 phases money was collected. In the very beginning about 10.000 euro was required per household to do the first spatial studies. Participants could get their money back when they would leave

the project. The second time money was collected, it became an issue for people without much savings, as they could not yet apply for a loan. Participants asked family members for loans, and some dropped out. (M. Seegers & M. van der Dries, personal communication, December 14, 2015)

Financial resources

A major financial contribution was done by IBGE, a governmental service for "environment and energy" of the city of Brussels. At the very start of the project in 2009, as part of a competition, the project was marked as a 'pioneer project' because of its sustainability goals. They received a funding of 100 euro per square meter, resulting in a total funding of 500.000 euro. All of it was saved up for the construction phase, in order to compensate for the extra expenses on having the construction meet the set requirements for sustainability. (S. Fraas, personal communication, December 14, 2015)

Additional funding has been provided by subsidies related to passiv-haus, solar panels and central gas powered heating. These subsidies were quite small and did not contribute much to the overall feasibility. (S. Fraas, personal communication, December 14, 2015) As the design and building process took multiple years, regulations changed as new politicians on municipal and governmental level were elected and policy changed. For Brutopia, this meant that a lot of the submissions, that were done to receive subsidies, were not approved. (M. Seegers & M. van der Dries, personal communication, December 14, 2015)

In the particular area the plot is located in, a tax benefit is given on "demolition and new-build" (in order to stimulate urban renewal). Only 6% VAT was applied, instead of the normal 21%. (S. Fraas, personal communication, December 14, 2015)

Solidarity

In order to make the project affordable for lower

incomes, the different apartments were checked on certain criteria to value their market price. The average price, which came down to 1600 euro per square meter, was then evaluated on the points it received for those criteria. This meant that the penthouse apartment with a private terrace and maximum daylight would cost about 2400 euro per square meter, and the lower, smaller apartment with less windows would only cost about 1200 euro per square meter. (S. Fraas, personal communication, December 14, 2015)

Organisation

Self-management

First the group thought of conditions in case one of the participants would make immediate use of the profit from self-organisation. However, ultimately no conditions have been set, and this has not been a

problem as none of the participants have moved out yet. (S. Fraas, personal communication, December 14, 2015)

The participants of Brutopia form a very pragmatic group, so from the beginning they decided to take on much of the organization themselves. Therefore, working groups were installed to handle different aspects of the organization, which had almost all responsibility in researching but also in decision-making. In every working group there were one or more professionals that had expert knowledge on the topic. The participants were expected to put in 100 hours a year into the working groups. When someone would resign to do so, they would have to pay 1% on top of the price of the apartment. As the project took 4 year from when the working groups were formed to realization,

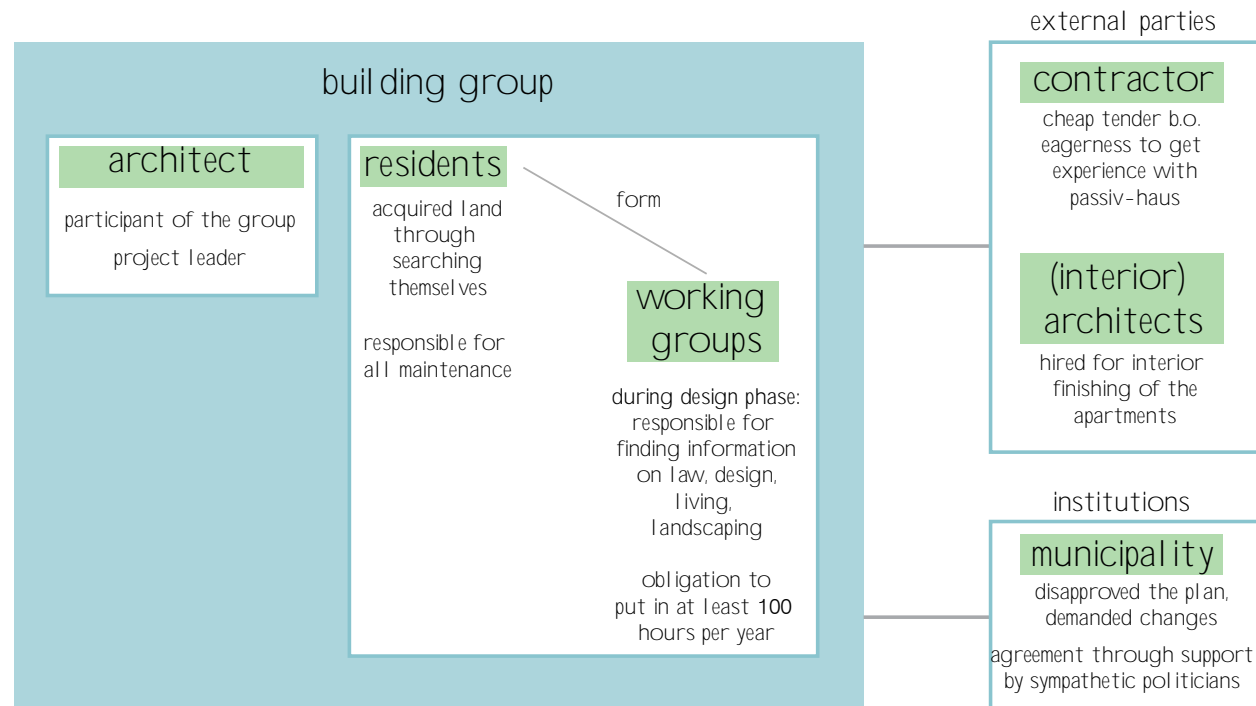


Figure 8: Organisational model of Brutopia (own illustration)

total retraction from the working groups would lead to 4% increase of the price of the apartment. (S. Fraas, personal communication, December 14, 2015) This also meant that people that participated in a later stage, had to pay the extra percent for the years that they did not contribute. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

All maintenance is done by the residents themselves, except for very technical problems with for instance the heating system. There is a quite rationalized system for dividing the maintenance work; as in a normal project, residents are required to pay a certain amount of money for the maintenance. However, residents are able to “pay off” the money by putting in hours. Ideally, as a result all maintenance work would be done by residents equally. In reality, some residents do pay to compensate for the hours they did not put into maintenance. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Two times per year during the weekend, every resident household has to work for 8 hours, doing incidental maintenance such as cleaning the solar panels. Every week, one of the households is responsible for cleaning the lift, stairs and horizontal circulation space. (S. Fraas, personal communication, December 14, 2015)

Collaboration with institutions

Building permits and aesthetic checks were conducted and approved at every phase by the city of Brussels, but in the final phase before the building permit, the state of Brussels did not approve the plan. The group was asked to either change the façade material from aluminium to stucco or take of one floor of from the top. The group rejected this proposal, and pulled strings with their friends who were involved in politics in Brussels. Luckily, the head of the IBGE, who is also the Minister of Environment, was living in the area of Brutopia and demanded the state of Brussels to approve the plan. (S. Fraas, personal communication, December 14, 2015)

The group had the intention to include social housing in the project but decided not to do so, because it would overhaul the design and building process as various steps in the design and building process would have to fulfil many requirements, such as the selection of contractors, the allocation of apartments etc. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

External parties

Triodos bank, which is a ‘green’ bank, was the only bank willing to consider giving out mortgages for the project, as other banks considered the project to be too risky. The sustainable character of the project made it interesting for them to work with the group. A condition that was set by Triodos was that the lent money could only be spend on the project. (S. Fraas, personal communication, December 14, 2015)

The relationship with the contractor was particularly good; since he was not familiar with building with the passiv-haus principle, and from 2015 all new build structure have to be passiv-haus, he had the unique opportunity to get experience with this project. In the future, he can give the project as a reference, to apply for new projects also on the public market.

Since the money from the loans of Triodos bank could only be spend on the project, he had security that he would get paid. This form of financial security is rare among self-organised projects. (S. Fraas, personal communication, December 14, 2015)

It took 3 months of negotiation, to discuss the details of the construction and to fix all the prices so that in the end it would not cost more. In fact, in the end the bill of the contractor turned out cheaper than the estimated price. (S. Fraas, personal communication, December 14, 2015)

As the apartments were given to the residents as a shell, the intention of the group was that residents would together hire a contractor out of a selection of

contractors given to them by the architect, Serge, to do the interior finishing. This was to maintain a good overview of the work and the site.

Groups of about 7 households worked together with a resident architect, who recommended them 2 contractors of which they chose one. Having an architect between the residents and the contractor made communication easier and more professional, and allowed the residents to leave the controlling on site to the architect. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015).

Design

Lay-out / program

Although Brutopia is a community-oriented housing complex, the apartment are very much independent and similar to ‘standard’ housing. The communal space is seen as an extra; it is not needed to compensate for limited space in the apartments. (S. Fraas, personal communication, December 14, 2015)

Maximizing the density of the building block by creating 5000 square meter of usable surface, further decreased the land price to 300 euro per square meter, which is very low for Brussels. (S. Fraas, personal communication, December 14, 2015)

The interviewed residents express that they would prefer to have a slightly larger apartment, but also believe that building passive is the future and view overconsumption of space is a negative. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Because none of the participants wanted to live on the ground floor of both buildings, a working group was set up to find ways to fill up the 600 m² of vacant space. This was a difficult process as businesses did not want to commit to the project in the beginning and wait several years until construction is finished. (S. Fraas, personal communication, December 14, 2015)

The group restricted the possible infill of the vacant space to businesses that would have a social or cultural character, which would have added value for the neighbourhood and society in general. Ultimately, three architecture offices, one of which is Serge + Fraas, the 'energy house' and the 'neighbourhood service centre' for elderly and children agreed to set up office there. Mark van der Dries and another resident financed one of the spaces on the ground floor which was still vacant at the time of construction, and now rent it out to the 'energy house' (S. Fraas, personal communication, December 14, 2015)

There is still a certain flexibility in the floorplan, as the main structure is fitted to have walls anywhere in the apartment. However, as people have made the interior division by themselves, it might be that electric wiring is incorporated in the interior walls and has to be altered too. (S. Fraas, personal communication, December 14, 2015)

Some design decisions have been made because of affordability. The common laundry room has been one way to save space in the apartments. (Dezeen, 2015) Saving space was however not the main motivation for sharing the laundry room; together they could afford a gas-heated washing machine, which is environmentally friendly. (S. Fraas, personal communication, December 14, 2015)

Also, the shared courtyard has given the residents the opportunity to have a garden in Brussels, something that is usually unaffordable. The spacious balconies offer private outdoor space. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

A great benefit of the galleries leading to the apartments on the first floor is that it doubles as a balcony. The gallery functions as a meeting space and offers more privacy than the balcony directly facing the courtyard. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Construction

The concrete structure is not particularly expensive as a structure. It was chosen as a construction method also because it allows for freedom in partitioning inside the apartments. It would be possible to join apartments as the structure is a solid concrete structure, although this would be expensive. (S. Fraas, personal communication, December 14, 2015)

Materials were chosen because of a combination of reasons. Aluminium as cladding was chosen because of its recyclability, its durability in relation to pollution from the nearby road and its lightness. The latter was important because the thick layer of insulation made the distance between the cladding and the main construction very big. The aluminium was in fact very expensive. (S. Fraas, personal communication, December 14, 2015)

Stucco would have been the cheapest solution, but was not chosen because of aesthetic reasons and bad protection against pollution in the long term. Wood as a façade material was not approved by regulations related to fire. (S. Fraas, personal communication, December 14, 2015)

Sustainability

27 of the 29 apartments in Brutopia are marked as passiv-haus. To fulfil the requirements for passiv-haus, the building has to achieve certain levels of air-tightness, the façade has to have thick insulation and the indoor climate is highly regulated by natural central ventilation. Therefore, the façade of Brutopia contains 24 cm of insulation, the windows have external blinds that automatically close when the temperature inside rises too much. (Brussel Duurzame stad, 2015) Because much of the success of passiv-haus buildings relies on the use of the building by the occupants, the residents of Brutopia are given a 'green book', with guidelines for living in a passiv-haus. (Dezeen, 2015)

Energy consumption is expected to be between 13-26 kWh/m². (S. Fraas, personal communication, December 14, 2015) The exact energy consumption has not been monitored, but residents confirm a significant decrease

in energy consumption compared to their previous dwelling. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

The passiv-haus principle has spatial consequences: the ventilation unit takes up a lot of space (about the size of a washing machine), and the horizontal ducts used to supply the entire apartment with fresh air are big. This requires the resident to either reduce the height of the apartment by covering up the ducts, or showing them in the interior.

Some residents have a duplex; in that case residents could discuss early on with the contractor to put the ducts between the two floors in the concrete. This was an expensive design decision.

Although theoretically the investment into passiv-haus will return itself in energy costs in the long term, the investment had to be made and this was very hard for resident household with middle to low incomes. The expectation of saving money by putting in hours themselves and working with a group, was effectively undone by choosing to build according to passiv-haus. Because the contractor was inexperienced, the building process was longer. In addition, the technical installations were less available than now. Both these conditions resulted in high expenses related to passiv-haus. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Self-build

The apartments were given to the resident as a "shell". The finishing and internal partitioning was left up to the residents to do themselves or hire an external party to do it. This has often resulted in open plans and sliding walls. (Dezeen, 2015)

Many people hired professionals to do the 'big work', but painted the walls, installed the kitchen and did the tiling of the bathroom themselves. (S. Fraas, personal communication, December 14, 2015) Many residents

considered themselves unfit to do the technical part of the interior themselves. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Only 3 participants did the entire finishing themselves, partly because they are natural DIY-ers, but also as a way to save expenses on the work done by professionals. In addition, the own responsibility for the finishing allowed residents to take time to finish the apartments, which made it possible to save up in the meantime. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

When asked to evaluate the amount of hours put in organization and finishing, together with investments into the installations for passiv-haus, residents are unsure if they have met the affordability goals set in the beginning. (M. Seeghers & M. van der Dries, personal communication, December 14, 2015)

Case conclusions



solidarity

Solidarity

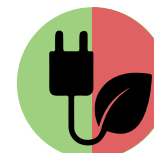
The group artificially lower the prices for the apartments which were in lower floors, as they were of less value already because of limited daylight. The penthouse apartments were valued higher than normally, to compensate for the lowered prices. This form of solidarity among participants allowed for middle low income participants to be able to afford an apartment too.



self-management

Self-management

The group installed a strict participation system for participants. During the design and building phase, each participant had to put in 100 hours a year. Refraining to do so, meant a 1% increase of property price per year. After completion, the residents maintain a strict system to manage maintenance and cleaning of the communal spaces and installations. When residents chose not to do their task, they have to pay a fine. In this way, residents can choose to pay off their task and others can intensify their participation to save.



sustainability

Sustainability

Advanced sustainable measures, such as incorporating the passiv-haus principle, gas-powered washing machine etc. resulted in a large subsidy by IBGE (500.000 euro) at an early stage and low energy costs on the long term. However, these measures were very costly, and the initial investment needed from participants was high. Lower income participants had to ask family members for informal loans and some even dropped out because they could not fulfill the financial requirements.



self-build

Collaboration with institutions

The building was completed as a shell; the resident could decide how and by whom they wanted to do the finishing, including the bathroom, staircase etc. However, it turned out few residents took this opportunity to save by doing many tasks, which they otherwise could not do, themselves. Therefore, the self-build aspects was not a convincing means of creating affordability.

Zürich

Context

Housing market

Rental vacancy rates are typically low in urban areas, especially in Zurich and Geneva, where spatial development is constrained by the lack of available urban sites. (Lawson, 2010) The Zürich housing market has been under strain since the mid-1990s. In 2014 the vacancy rate was 0.22 percent. (Hugentobler, Hofer, & Simmendinger, More than housing, 2016)

The larger rented segment is divided into market value rented properties, which are owned by private individuals or commercial developers, often insurance companies, banks etc., and non-profit housing or limited profit housing. Limited profit housing (LPH) is a form of tenure, which is based on the cost capped, cost-rent, limited profit provision of decent dwellings by private associations and co-operatives, which emerged in the early decades of the 20th century and maintains a strong foothold in the major housing markets of Zurich. It accommodates a relatively wide range of low and middle incomes. (Lawson, 2010)

In Switzerland, LPH contributes 13.8% of total housing stock, 20% in Zurich.

Typically non-profit housing belongs to small landlords managing fewer than 100 dwellings, yet several are much larger, managing up to 15,000 dwellings.

Home ownership in Switzerland is low compared to other European countries; about 30% and for a large part in rural areas. One reason for that are pro-tenant laws. Rent increases must be justified by the landlord's cost increases. Tenants are also protected against eviction. In addition, owner-occupancy is discouraged by taxation; property is treated as an asset subject to both wealth tax, and to income tax for imputed rental income. Income tax rates in Switzerland can easily exceed 50%, among the highest in the world. Capital gains are also taxed at cantonal level, with rates differing by duration of ownership. (Bourassa & Housli, 2009)

Today there are a dwindling number of sites available and in order to continue the promotion of affordable rental housing, Zurich puts in an effort to lease some of its land specifically to non-profit developers. Thereby, the city preserves housing for families and the elderly, and provides eco-friendly housing in the lower-priced segment of the housing market. (Hugentobler, Hofer, & Simmendinger, 2016) In 2007, the city council published a long-term strategy report on the development of the city that forms the basis of the spatial development strategy – the 'Zurich Strategies 2025', aiming for a proportion of at least 25% of its total portfolio of non-profit apartments. (Plüss & Schenkel, 2014) In 2050, one third of the rental apartments should be non-profit, according to a referendum held in 2011. (Hugentobler, Hofer, & Simmendinger, 2016)

Starters in Zürich

Finding living space in the city of Zürich has become particularly difficult for people on average-to-low incomes. Swiss starters will often rent an apartment, which makes the mortgage threshold and required savings of less importance to their success in finding a place. Most threatening for the position of starters in the housing market, are the rising property prices and rents. Between 2004 and 2013, rents have risen by 13 percent. (Hugentobler, Hofer, & Simmendinger, More than housing, 2016)

Starters are characterised by single or two-person households and young families. Currently 45 percent of all households in Zürich are single-person. As many existing, but also new developments, in the free sector provide larger luxury apartments, cooperative housing offers different forms of living to accommodate the demand for smaller or (semi) shared flats. (Hugentobler, Hofer, & Simmendinger, 2016)

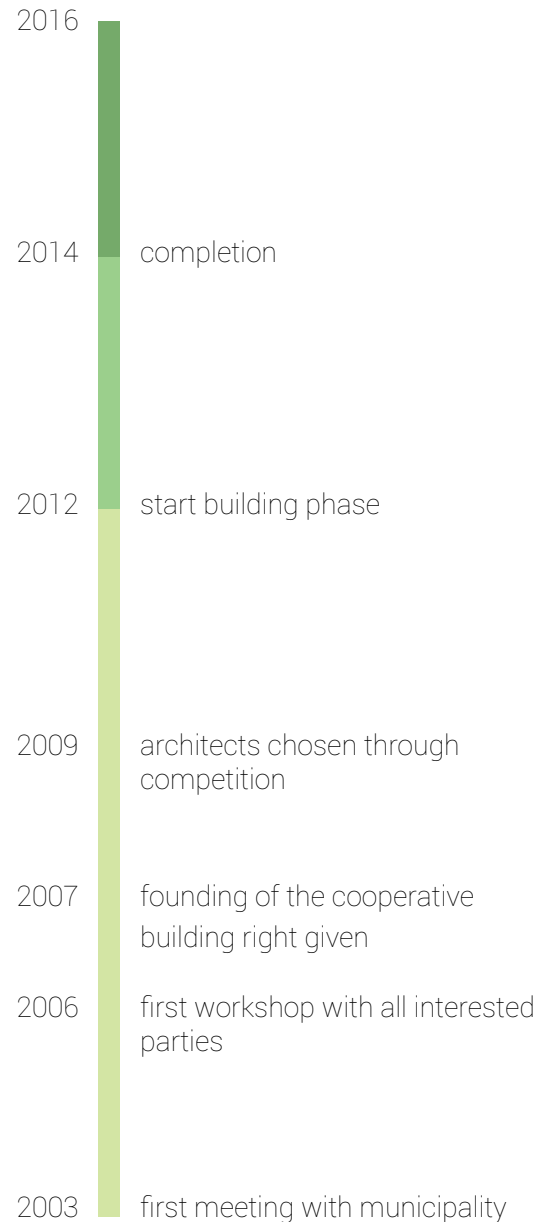
The communal living space of cooperative projects have proved to contribute to the attractiveness of living in the city for families, thereby countering the increasing numbers of single-person households in Zürich. (Hugentobler, Hofer, & Simmendinger, 2016)

Self-organisation

The origins of non-profit residential construction date back to 1907. However, since the shortage of housing, squatting and youth unrest in the 1980s led to a new interpretation of the cooperative model. (Hugentobler, Hofer, & Simmendinger, 2016)

The municipality of Zürich has been a pioneer in supporting initiatives by resident groups. An incentive for the acceptance of self-organised housing was the goal set by the municipality 1998 to build 10.000 homes for large families within 10 years. The various 'Baugenossenschaften' (cooperative building groups), which were formed during that period, created projects that were a social and economic oasis amidst the increasingly overpriced housing market of Zürich. The 'rent' paid to the cooperative is often cheaper than the mortgage payments made by owner-occupants. In addition, the residents of cooperative housing do have a democratic say in their living environment, as they have a share and are considered co-owners. (Serroen & Tregarot, 2013)

Case study: Kalkbreite



Housing units: 88

Floor area apartments: 25-200 m²

Type of dwellings: regular housing, shared apartments, cluster apartments

Shared spaces: laundry room, communal garden, multifunctional space, bike parking, restaurant, café, sauna

Form of ownership: share in the cooperative

Already in the 1970s, individuals started getting ideas on appropriating the site of Kalkbreite for housing. In 2003, there was the first meeting with the municipality where the possibility for this initiative was discussed. In 2006 approximately 50 inhabitants of the Kalkbreite community together with some experts took part in a public workshop dedicated to the design of new visions for the future of Kalkbreite. Right after the completion of the workshop was founded the Kalkbreite Association which set the transfer of the property to a non-profit organization as its central objective. The Kalkbreite cooperative received the building rights in 2007. The building phase started after 3 years of detailing the design together with the members of the cooperative, and the project was completed mid 2014.

Finances

Ownership

The entire project is owned by the collective. (Hugentobler, 2015) When a resident moves in a payment is made to acquire a share in the cooperative. The shares are earning a small interest rate, which is however currently more profitable than a savings account. When a resident household moves out, the share is paid back along with the interest rate over time. (Hugentobler, 2015) Ten per

cent of the complex was financed by cooperative capital raised as shares from inhabitants. (Hugentobler, 2015)

Individual financing

The share in the cooperative at the time of moving in, amounts to approximately 250 CHF per m². (Hugentobler, 2015) In addition, rent is paid on a monthly basis. (Ibrahim & Müller, 2014) To include different disadvantaged social groups, the share can be paid for in instalments. The collective set up a solidarity fund to support individuals and families that do not have the necessary capital available when moving in. (M. Hugentobler, personal communication, February 16, 2016)

Financial resources

Cooperatives can apply for a low interest loan from a revolving fund for cooperatives, by providing information about the project's ecological, socio-ecological and urban goals. The low interest on these loans is beneficial for the beginning of the process, when the project is not realised yet. Kalkbreite also received a low interest loan from the city of Zurich. (D. Slooters, personal communication, February 13, 2016)

10 percent of the apartments are subsidized by the kanton of Zurich and belong in the social housing category. The subsidised apartments have to fit certain criteria in size; they cannot be either too big or small. (Hugentobler, 2015)

The rent of the commercial spaces flows to the cooperative. (D. Slooters, personal communication, February 13, 2016) It is unclear to what extent the rent from the commercial spaces is supportive of the affordability of the residential units.

Solidarity

There are about 1000 members of the collective, many of which do not live in Kalkbreite. Each one of them has to pay 1000 CHF to become a member. This is returned

when they leave the cooperative, with a small interest. Private investors can invest more than the required 1000 CHF. Private investors are interested in investing in cooperatives because they are a save investment as there is much demand for it, there is a slightly higher interest on it than on a savings account and because they value the positive effects of cooperatives on the city. (D. Slooters, personal communication, February 13, 2016)

Organisation

Self-management

The project was mostly led by Geschäftsführer Res Keller, who was experienced with setting up cooperatives in Zurich. He approached the municipality with the plan and contacted other people that were strategically interesting to get involved in the project. After the cooperative was made official, he started working on a conceptual strategy and business plan, together with another person from the cooperative. For this, he was paid by the cooperative, although not at his usual rate. (D. Slooters, personal communication, February 13, 2016)

In different phases of the design there were degrees of participation. The members of the cooperative elected a committee of about 8 people. The team that discussed with the architects consisted of this committee and two hired project leaders, one responsible for the planning team, and one responsible for attracting businesses to fill up the commercial space. In the beginning there were presentations by us, and the members could give feedback to the committee. (P. Müller, personal communication, February 15, 2016)

The cooperative themselves organized 3 workshops, the results of the workshop went back to the committee and they decided what would be put in the design and what not. The workshop concerning the apartments suggested some changes to the distribution of different

apartment sizes and types.

In addition, participants took an online survey, including questions about the family compositions in 5-10 years. After that, more family apartments were included in the program of requirements. (P. Müller, personal communication, February 15, 2016)

For many apartments, there were multiple members who were interested. The apartments were allocated based on how long they were member of the cooperative but also based on having a balanced mix of age, income and ethnic groups. The aim was to have a more or less 24/7 occupation of residents. New members are selected on the same basis from the existing members. (D. Slooters,

personal communication, February 13, 2016)

Kalkbreite enforces strict "occupancy guidelines" of a maximum of 35 m2 per person. This means that when a household no longer fits these regulations, they are asked to move within the block if possible, and otherwise an apartment in another building of the cooperative is sought. A negative connotation to the security of having an apartment within the cooperative are the long waiting list and a constant factor of vacant apartments in case people from within the cooperative have to move. (Hugentobler M. , Case Kalkbreite, 2016)

As a result, there is a strong rotation of residents, which

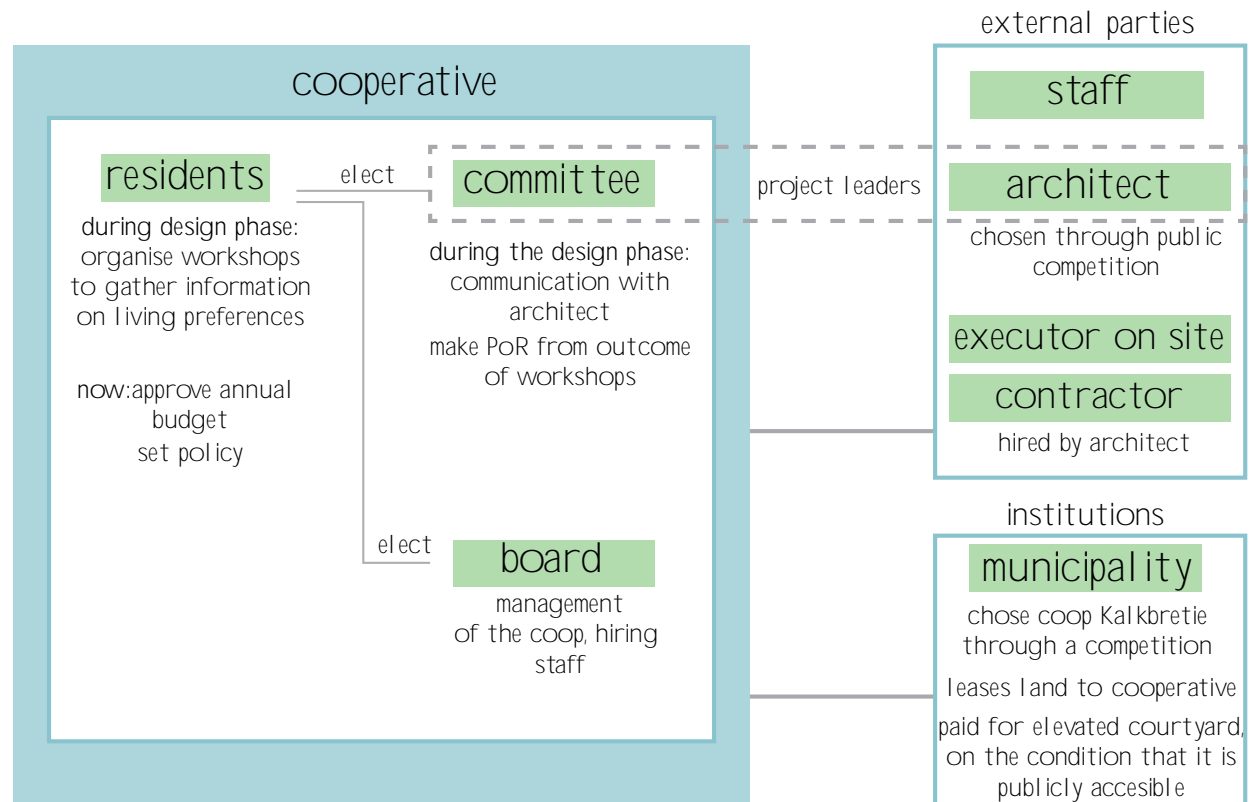


Figure 9: Organisational model of Kalkbreite (own illustration)

works well in the flexible floorplans and less personalized finishing. (D. Slooters, personal communication, February 13, 2016)

Now that the project is completed, the co-op members elect a board, which governs the co-op affairs and hires the staff to take care of the day to day management of the co-op. All members approve the annual budget and set the policy. (Ibrahim & Müller, 2014) General meetings take place once a month, at which the use of communal space, rules for the cooperative etc. are discussed, and activities are planned. (Rutz, 2015)

Collaboration with institutions

The municipality issued an official competition for the area of Kalkbreite, for which all cooperatives in Switzerland could apply. The cooperative formed for Kalkbreite was new; they decided to cooperate with existing cooperatives Dreieck and Carthago, in order to compete with established cooperatives with larger capital and many members. (D. Slooters, personal communication, February 13, 2016)

The municipality paid for the roof above the tram depot where the elevated courtyard is, on the condition that it will remain open to the neighbourhood. (D. Slooters, personal communication, February 13, 2016)

The initiators collaborated with social institutions in an early phase, such as Jugendwohnnetz and Stiftung Domicil. (Ibrahim & Müller, 2014) Domicil is an organisation which helps low income households, often immigrant families, who cannot find housing on the free market. In Kalkbreite, 4 apartments are reserved to be given to families from Domicil. These apartments are also subsidised. (Hugentobler M., Case Kalkbreite, 2016)

External parties

The cooperative selected the architect by issuing a competition. The 4 years after that were used to develop the program of requirements between the architect

and the cooperative. The architects were in charge of the design and building process. They hired an external executor on site, with whom they controlled the costs. (P. Müller, personal communication, February 15, 2016)

As the building contains many shared and commercial functions, partly ran by external operators, and partly by residents, a full-time staffed service centre is installed to manage the daily activities and upkeep of the internal system. (Ibrahim & Müller, 2014) The cooperative has chosen to outsource the management, partly because of the scale of the project. The cleaning team includes some of the residents, but they are hired as employees. The costs for maintenance are included in the rent. (D. Slooters, personal communication, February 13, 2016)

Design

Lay-out / Program

About 75% of the apartments in Kalkbreite are 1-4 bedroom apartments, 25% are larger. The larger apartments are mostly used by larger families or combined families. (D. Slooters, personal communication, February 13, 2016)

A survey among participants determined how many of each apartment type should be incorporated. Other individual wishes are not reflected in the floorplans; one of the main reasons for this is the long term lease by the cooperative and stimulating rotation of residents within the block. (D. Slooters, personal communication, February 13, 2016)

Because of the occupancy guidelines of 35 m² per person, many residents do not have a guest bedroom. To compensate, residents get 50% discount on the pension within Kalkbreite when they have guests staying there. (D. Slooters, personal communication, February 13, 2016)

The cluster apartments are a concept developed by the architect for grouping the studio apartments. They comprise about 8 studios with a shared kitchen -

living room and a box. The boxes each have a special function (gym, sewing room etc.) and are accessible for all residents. The kitchen - living room is only for the residents in that cluster. Because the studios have minimum space and appliances (no oven), residents are stimulated to use the communal living room and kitchen. (P. Müller, personal communication, February 15, 2016)

A system of "joker rooms", which are rooms with a bathroom and a small kitchenette. They are used in the design to respond to changing needs of residents without them having to move out. Jokers can only be rented by residents, and for a minimum of 6 months. (D. Slooters, personal communication, February 13, 2016) There is only 2 m² of communal space per resident. The architect is of the opinion that a certain scale is needed to have a successful use of the communal space, and he considers Kalkbreite to be a positive example of this. (P. Müller, personal communication, February 15, 2016)

The municipality demanded the amount of commercial space that is in Kalkbreite. The cooperative aimed to have a diverse range of commercial and office spaces. They rejected collaboration with large supermarkets; instead they offered small commercial space in the plinth to small local businesses. The cooperative thinks that the small shops, ateliers and offices make the Kalkbreite into an attractor, and thereby contribute to the liveliness of the neighbourhood. It was hard however to find businesses that were interested, because the location is at the border of the city centre, and there was not much activity in the area. Because it was not clear yet in the beginning which businesses would rent the spaces, they asked the architects to include a certain amount of big and small spaces. (D. Slooters, personal communication, February 13, 2016)

Iris Vollewijer, who is experienced in repurposing empty buildings, and Res Keller, who were both part of the committee, used their network and communication skills to attract businesses to rent the commercial and

office space in Kalkbreite. Once major businesses like Greenpeace and Houdini (the cinema) committed to the project, they were financially more secure than before. (D. Slooters, personal communication, February 13, 2016)

Noise regulations and the tram hall were the main limitations for the building volume. In addition, fire regulations further limited the height of the building; buildings higher than 30 meter have to fulfil special fire regulations, such as fire protection for the elevator, more shafts etc. In Switzerland, for affordable housing, buildings would have to be higher than 60 meters to return the investment into these measures. (P. Müller, personal communication, February 15, 2016)

Construction / materials

Meeting the standard set by the SIA 2040 "energy efficiency path" meant that the building had to be constructed as a simple structure with small spans, with a simply building envelope and a short distance of supply. Therefore, the building has a hybrid concrete structure, clad with prefabricated Pavatex Diffutherm wood fibre façade modules. (McDonough & Braungart, 2002) The cinema and the tram depot however required larger spans. A positive effect of the high beams used for the roof of the tram depot, is that trees could be planted in 1.5 m layer of soil hung between the beams. (P. Müller, personal communication, February 15, 2016)

Future changes in interior partitioning are possible, but will be costly as floor heating is installed per room. Therefore, it is likely that it will only happen once or twice during the lifespan of the building. (P. Müller, personal communication, February 15, 2016) The cluster apartments can easily be converted into 3-4 bedroom apartments by incorporating the interior street into the dwelling. However, this is not supportive of the concept of the interior street as a continuous line through the building. (P. Müller, personal communication, February 15, 2016)

For Swiss standards, the finishing is of less quality than normal. The interior surfaces are not perfectly finished (exposed concrete, no plinth, no suspended ceiling etc.), but attention has been given to the kitchen and window frames. (D. Slooters, personal communication, February 13, 2016) The optimisation of the materials in the finishing was not only because of affordability, but also sustainability. (P. Müller, personal communication, February 15, 2016)

Some design effects of affordability were:

- Raw finishing of the interior street, less paint
- Shafts should go straight through the building, therefore some floorplans were compromised in lay-out.
- Small kitchens compared to regular apartments
- Less bathrooms per amount of bedrooms
- Small bedrooms
- Small combined kitchen-living rooms

(P. Müller, personal communication, February 15, 2016)

Commercial developers often save on the finishing of the outdoor spaces. The cooperative pushed their plans for the outdoor areas through, because they considered it to be one of the key elements to make Kalkbreite into a real attractor. (D. Slooters, personal communication, February 13, 2016)

Many of the materials used to construct the building, are chosen because of their sustainable characteristics, both in terms of embodied energy, thermal performance and recyclability. The embodied energy of the materials used is restricted to 30 kWh/m²/a, in line with the SIA 2040 "energy efficiency path". (Bauproject Kalkbreite: Genossenschaft Kalkbreite, 2015) However, certain materials were replaced with cheaper materials because of budget cuts. The architect proposed to use only wood and concrete in the interior, but the wood frame interior walls were replaced by metal stud and plaster board (saving of 30%). Wooden planks and stone tiles on the public terraces were cut. (P. Müller, personal

communication, February 15, 2016)

A smart design decision was to use a more expensive façade system of only 40 cm instead of 60 cm, which resulted in a greater usable floor space, which in turn could be rented out. (P. Müller, personal communication, February 15, 2016)

Sustainability

The project fulfils the requirements for the 2000-watt-society, which comprises "resource efficient construction methods, renewable energy use, limited per capita floor space consumption and a mobility concept." (Hugentobler M. , 2015, p. 11) The Kalkbreite collective therefore does not allow residents to own cars, and individual floor space use is limited to 35 m². (Hugentobler, 2015) Compared to an average of 50 m² per person in Switzerland, this is a significant decrease. (Ibrahim & Müller, 2014) This reduces the amount of heated surface, which affects the energy consumption. (Bauproject Kalkbreite: Genossenschaft Kalkbreite, 2015)

The 2000-watt-society sets guidelines for the design volume as well. The building had to be a compact volume, there could be no balconies because they would minimize the impact of the sun on the energy, the amount of building elements had to be minimised etc. The Minergie P Eco brand requires use of ecological materials and, together with the noise of the street, passiv-haus ventilation. (P. Müller, personal communication, February 15, 2016)

Car-sharing is done between residents, and use of bicycles as transportation is further stimulated by the 300-spot indoor bicycle parking. (Ibrahim & Müller, 2014)

Self-build

There was no degree of self-build in this project. Do-it-yourself is uncommon in new build building practice in Switzerland, and the scale of the project is also unsupportive of this. In addition, there was a financial

benefit for placing a large order for all kitchens. Therefore, residents could only express their personal preferences about the kitchen together with the architect. Even this small degree of direct participation resulted in many hours of work for the architect, as all preferences had to be communicated to the producer. (P. Müller, personal communication, February 15, 2016)

Case conclusions



solidarity

Solidarity

The cooperative enforces occupancy guidelines, which means that floor area is restricted to 33 m² per person. While only 2 m² of shared space per resident is given, the scale of the project allows for many shared functions, which compensate for the reduced space per person.



financial resources

Financial resources

In Switzerland, cooperatives are supported through governmental loans and special funds with low interest rates. However, the majority of the cooperative projects is financed through bank loans. For banks, cooperatives are a safe investment; they are always fully occupied and have long term leases. For lower income groups, the availability of these means of financing are beneficial, as individual credit-worthiness of participants is not required.



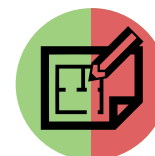
ownership

Ownership / individual financing

The non-profit nature of cooperative ownership allows for long term low rent, independent of market value. Thereby, accessibility for lower income groups is guaranteed. The share residents pay for when entering the project, has a small interest rate, and members have the possibility of investing more if they want to. Furthermore, once someone enters the cooperative, a new apartment will be sought for when the household situation of that person changes. Therefore, it provides stability uncommon to rented situations.



individual financing



lay-out / program

Program / Lay-out

The block accommodates a variety of different sized dwellings, thereby allowing for various household types and income groups to enter the project. A negative of the program, was the struggle to find businesses to rent the many square meters for commercial space, as demanded by the municipality. It was not possible to use these spaces for residential use either, because they are located next to the tram hall. This put the project under pressure.

Synthesis

The goal of the multiple case study is to evaluate how the CSO groups in the three cases have dealt with the aspects related to affordability, as identified in literature. These approaches can be evaluated between the cases, keeping in mind the specific context of the cases. By doing this, we can point out both universal and locally specific approaches towards achieving affordability.

Finances

Ownership

Cooperative ownership guarantees long term accessibility for lower income groups, whereas owner-occupied dwellings are often sold at market value and no longer contribute to affordability after the first sale. Unless the group install system in which speculation is countered and below market prices are maintained, owner-occupied CSO housing works only benefits the first participants.

Individual financing

The starting phase of self-initiated projects is often financed by participants, while access to (official) loans is not available yet. This causes participants with little own capital to drop out. One strategy to counter this, is to open up the project to more people than the maximum amount of residents, as members which have a share in the project.

Collaboration with an existing housing provider, such as a social housing provider or housing corporation, can (temporarily) strengthen the financial security of the group.

Financial resources

Cooperatives in Switzerland are supported with low interest loans from the city of Zurich and large bank loans. Opposed to mortgages, these loans do not require the credit worthiness of all participants and allows for a more mixed group.

Private investments by individuals in self-initiated

housing projects, as in the case of Kalkbreite, are also uncommon in Belgium and the Netherlands. However, in the light of the emergence of crowd-funding, there seems to be a new opportunity to explore these methods of additional financing.

Having a strong sustainability strategy can help in collaboration with other 'green' parties, and makes the project eligible for subsidies. These subsidies however hardly contribute to the overall affordability, as they will be used to compensate on the extra expenses on installations and materials associated with sustainability.

Solidarity

Solidarity among participants can be achieved in many ways, for instance by founding a solidarity fund, artificial lowering of price for some apartments by upping price for other apartments etc. In all three cases, solidarity has proven to be a successful means to include lower income groups.

Self-management

The level of self-management should be established with the group in an early stage. Strict rules and a system in which people that put more effort in are rewarded are required when a high degree of self-management in maintenance and cleaning is chosen, as shown by the Brutopia case.

A larger group requires a more professional attitude towards management, while smaller groups tend to take care of maintenance and organisation of other activities themselves; on the scale of the Kalkbreite it is hard to manage the quality of the maintenance and cleaning of the communal spaces when done by residents, whereas hiring someone to do the cleaning on the scale of Brutopia would be inefficient.

When the group is the coordinator of the project, it is beneficial to have professionally trained participants in law, architecture, finance etc. in order to save on hours

spent by professionals. However, these participants tend to take on more work than the others, which results in hours not billed by them to the group. This should be treated with caution in regard to their professional careers/businesses.

Collaboration with institutions

Although processes of organisation and design tend to take longer when more institutions (municipality, social (housing) organisations, and housing corporations) are involved, they are generally more successful in including lower income groups. In the case of Vrijburcht, collaboration with housing corporation De Key even helped in the continuation of the process.

A mutual interest in the success of the project offers opportunities for negotiation with the municipality about the financing of facilities beneficial to the neighbourhood, such as a publicly accessible courtyard and roof terrace (Kalkbreite) or theatre (Vrijburcht).

External parties

It is useful to appoint either an external project manager, architect or someone within the group to manage the entire project strictly. Too much freedom for external parties often leads to speculation, lack of control on budget and miscommunication.

Program / Lay-out

The ground floor of CSO projects is often used for commercial spaces, offices, multi-functional space for residents etc. Incorporating commercial functions can become a risk for the group; it can become a major financial problem when businesses are uninterested in renting/buying the space. Furthermore, in case of renting, the space can be pre-financed by residents themselves (Brutopia) or by a housing corporation (Vrijburcht).

Various sizes of dwellings, together with occupancy guidelines, can stimulate the diversity of the group.

Given the participatory nature of CSO housing, it is useful to incorporate flexibility and allow for adjustments in the design.

Maximizing the density to increase feasibility, can have limiting effects on the design. For instance, dwellings might be deeper than in regular housing, dwellings can be smaller than average and appliances/fittings can be minimized.

CSO projects allow for experimentation with different ways of living, which commercial developers would find too risky to invest in.

Structure / Materials

It is useful to invest in the building elements that are more permanent (window frames, bathrooms, kitchens, facade, outdoor terrace), especially in case of cooperative ownership and long term rotating occupancy.

Space is valuable in dense urban environments; the building system and materials should be considered in relation to usable floor space and flexibility.

Sustainability

Although investment in advanced sustainable measures is large, energy costs will be reduced and comfort levels are high. Also, in the long term it adds value to the property.





Strict sustainable principles, such as 2000 Watt society and energy neutral building, have strong implications for the design, such as reduced floor area, large installations in the apartment, a thick facade, and no balconies.








Self-build

The level of participation and self-build affect the future occupancy and flexibility in rotating residents.

Incorporation a degree of self-build gives residents the option to save on expensive fixtures and finishing, while others are free to spend more. On the other hand, the individual expression prevents rotation in residents, and stimulates speculation in a privately owned situation. In cooperatively owned projects, self-build would be less desirable, because the quality of the building cannot be controlled, especially on the long term.

Figure 10: Scheme with synthesis of three cases per aspect (own illustration)

finances	Vrijburcht - Amsterdam	Brutopia - Brussels	Kalkbreite - Zurich	synthesis
 ownership	profit owner-occupancy land leased from municipality theatre own legal entity kindergarten, care homes, café -> owned and rented out by De Key	profit owner-occupancy	Cooperatively owned by a Genossenschaft residents have a share in the Genossenschaft prevents speculation and guarantees accessibility for lower income groups	Cooperative ownership: long term accessibility owner occupancy: one-time profit for first participants cooperatives: low interest loans from the city of Zurich and large bank loans -> not available in the NL and Be cooperative ownership -> supported by housing corporations
 individual financing	design work financed by phased payments by participants AMH-mortgage -> special conditions	financial checks on individual households by father of participant design work financed by phased payments by participants sustainable goals -> mortgages by 'green' bank	cooperative is non-profit -> residents pay cost-rent no land costs -> tram depot rent is much cheaper than in the rest of Zurich residents have share in the cooperative -> will be returned when moving out + interest rate	starting phase -> financing by participants + no access to loans -> participants drop out Pos. solution: having people become members before allocation Teaming up with an existing organisation (housing corp. or existing cooperative) can provide financial support.
 financial resources	vacant dwellings + other functions -> pre-financed by De Key	major subsidy received for 'pioneer project' by IBGE for sustainable goals -> expenses on passiv-haus requirements small subsidies received for solar panels and gas powered heating	big companies committed to the project (greenpeace, houdini) -> more financial security low interest loans by the city of Zurich + revolving fund for cooperatives + bank mortgages Private investors put medium high investment -> good cause + better interest rate than banks	sustainability -> collaboration with 'green' parties, + subsidies financing through other means than individual mortgages, can strengthen the acceptance of CSO housing in Europe opening up the project for private investors, could be interesting means to strengthen cooperative capital (crowd-funding)
 solidarity	communal spaces paid for as part of own dwelling solidarity -> artificial lowering of price for AMH-dwellings	accessibility for lower income households -> higher price for top apartments, lower price for first and second floor apartments	1000 members of kalkbreite, who pay at least 1000 CHF for a share in the cooperative -> capital solidarity fund is available for residents who (temporarily) cannot pay rent	Solidarity among participants can be achieved in many ways (solidarity fund, artificial lowering of price for some apartments by upping price for other apartments).

organisation	Vrijburcht - Amsterdam	Brutopia - Brussels	Kalkbreite - Zurich	synthesis
 self-management	<p>self-organised kindergarten not realised because of regulations and lack of time</p> <p>process managed primarily by architect(s) within the group -> many hours not billed</p>	<p>land acquired through active searching by participants and buying from a private owner</p> <p>minimal 100 hours of input per year -> 1% on top of property price per year</p> <p>all maintenance is done by residents themselves -> if not, fine has to be paid</p>	<p>selection based on early commitment to the project + mix of different age, income and ethnic groups</p> <p>occupancy guidelines -> maximum of 35 square meters per person -> rotation of residents within cooperative</p> <p>maintenance is outsourced -> residents can be hired</p>	<p>The level of self-management should be established with the group in an early stage. high degree of self-management -> strict rules and system with rewards/fines</p> <p>Larger group requires professional attitude towards management</p> <p>professionally trained participants in law, architecture, finance etc. necessary for high degree of self-management</p>
 collaboration with institutions	<p>municipality supportive -> discount on land lease and charging no fee for theatre</p> <p>many facilities open to neighbourhood -> value for municipality</p> <p>land acquired through a commission for CPC housing</p>	<p>rough cooperation with municipality -> sympathetic politicians convinced mun.</p> <p>tax benefit of 6% VAT instead of 21% VAT for demolition and new-build in this district</p> <p>intention to include social housing -> prevented by many requirements</p>	<p>square meters of com. space was required by city -> hard to find businesses to rent space</p> <p>courtyard paid by municipality -> condition: publicly accessible</p> <p>20% of the apartments social housing -> subsidised</p> <p>4 apartments reserved for Domicile -> accommodates low income (immigrant) families</p>	<p>Municipalities tend to support collaborative housing projects (financially) when they provide public facilities.</p> <p>The inclusion of social housing -> administratively challenging, but successful for accessibility for lower income households.</p>
 external parties	<p>vacant dwellings -> pre-financed by De Key -> checkpoints for design</p> <p>design not 100% detailed -> responsibility of contractor is great -> speculation</p>	<p>contractor wanted to get experienced with passiv-haus -> low price for the group, but longer building process</p>	<p>the architects were in charge of the entire project -> external executor was working on site -> together they controlled the costs</p>	<p>an external project manager or architect or someone within the group -> manage the project strictly.</p> <p>Too much freedom for external parties -> speculation, lack of control on budget and miscommunication.</p>
design				
 lay-out / program	<p>relocation/conversion within block has happened</p> <p>work-living spaces -> reduced lease payment</p> <p>maximised density -> maisonettes and patio houses (deep dwellings)</p> <p>small flexibility in structure -> interior walls can be moved</p>	<p>apartments are 'small' but do not require use of the communal space (only laundry room)</p> <p>problems with filling up ground floor space with businesses -> mainly because of long trial from committing to using</p>	<p>75% 1-4 room apartment, 25% 6-9 room apartment</p> <p>different apartment sizes stimulates different family compositions, income groups etc.</p> <p>residents could choose kitchen in the apartment -> no other individual preferences</p> <p>the program of requirements -> only type of dwelling participants wanted -> % of certain types</p> <p>Fittings and spaces smaller than usual</p>	<p>Ground floor space -> often used for commercial spaces, offices, multi-functional space for residents etc. -> but, dependant on location, risk for residents to find businesses to rent/buy</p> <p>Various sizes of dwellings, together with occupancy guidelines, can stimulate the diversity of the group.</p> <p>participatory nature of CSO housing -> flexibility in initial design + allow for adjustments during the lifetime of the building.</p> <p>Max. density to increase feasibility -> limiting effects on design</p> <p>CSO projects allow for experimentation with ways of living, which commercial developers would find too risky to invest in.</p>
 construction / materials	<p>aesthetics < functional -> cheap but durable materials</p> <p>regret for saving on material for galleries (deckwood)</p>	<p>stairs, partition walls, bathroom -> 'finishing'</p> <p>flexibility within block-> concrete structure can be changed by making holes in walls</p> <p>flexibility within apartment -> yes in theory, but resident did partitioning -> electricity</p> <p>concrete -> affordability and flexibility</p> <p>materials -> durability, sustainability, aesthetic</p>	<p>Swiss standards -> interior finish is not of a high standard, but kitchens, window frames etc. -> good quality</p> <p>more expensive materials were changed for less expensive materials because of the budget</p> <p>Facade = 40 cm (normal in Switzerland is 60 cm) -> more expensive, but more usable floor space</p>	<p>invest in the building elements that are more permanent (window frames, bathrooms, kitchens, facade, outdoor terrace), especially in case of coop ownership and long term rotating occupancy.</p> <p>Saving on materials is often done when changes are 'invisible'</p> <p>Space is critical in urban situations; careful consideration of building system and materials <-> usable floor space + flexibility</p>
 sustainability		<p>extremely low energy costs</p> <p>investments for installations rel. to passiv-haus are large</p> <p>installations rel. to passiv-haus take up a lot of space in the apartments</p>	<p>sustainability -> no (private) balconies, compact volume, passiv-haus (also because of noise)</p> <p>limited use of resources -> simple detailing</p>	<p>investment in advanced sustainable measures -> large, but reduced energy costs + comfort + added value in future</p> <p>Strict sustainable principles -> strong implications for the design -> reduced floor area, large installations, thick facade, no balconies (solar access).</p>
 self-build		<p>splitting up building into 'casco' and 'finishing' -> finishing managed by (other) architect</p> <p>participants often overestimated how much they can do themselves.</p>	<p>no degree of self-build -> chaotic building process on large scale + uncommon in Switzerland</p>	<p>participation + self-build -> future occupancy and flexibility</p> <p>self-build -> option to save on expensive fixtures and finishing</p> <p>individual expression prevents rotation in residents + stimulates speculation</p> <p>coop owned projects -> self-build -> long term quality cannot be controlled (long term).</p>

4. Conclusions

In general, the aspects found in literature, which are most influential on the affordability of self-organised housing project for lower income groups, were reflected in the case studies. Although the cases are strongly related to their political, institutional and social context, some general conclusions can be drawn, which touch several aspects.

The aspects related to the general conclusions are highlighted in green.

Feasibility

It is important to realise that collective self-organised housing is not a utopia; because it is self-initiated and (partly) self-managed, the group itself is in charge of choosing and distributing the program of the building in such as way that the project becomes feasible.

Including non-residential program is often stimulated by site constraints, municipal force, or can be part of the groups' philosophy on promoting mixed-use developments. Regardless of the groups intentions, the non-residential functions have to be financed. The exploitation of these spaces can be financially supportive of the project, by eligibility for tax benefits or by collecting rent, but they can also delay the process if they remain vacant. In that case, the group either has to pre-finance the vacant spaces themselves, or find an external (housing) provider to do so.

The success of incorporating commercial space is often related to the location and infrastructure, but even then, it requires a strong network and communicational skills from the key participants of the group and is heavily influenced by the economic situation, which cannot be controlled.

The overall feasibility can further be threatened by limited means of individual financing by participants and expenses on sustainable measures. These issues however can be resolved through solidarity within the group or collaboration with institutions, which back the project in case participants drop out. The level of (financial) involvement of institutions in CSO projects differs strongly per country.

Ownership

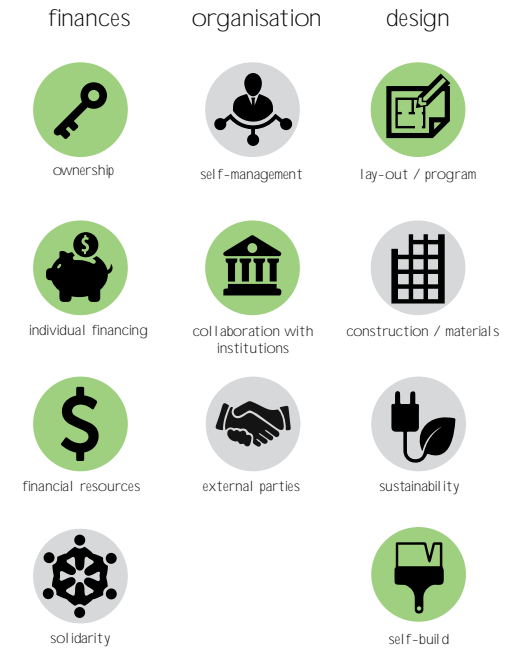
The form of ownership affects many other aspects within the scope of this research. For instance, participants tend to invest more into the (finishing of the) dwelling in an owner occupied situation, because they anticipate on selling in the future. Also, the need for a private outdoor space seems to be stronger among private owners. Participants of a cooperative, in that sense, are more willing to let go of some of their individual desires for the "greater good" of the cooperative, than participants in owner-occupied CSO housing. They also tend to feel stronger about long term accessibility for lower incomes, social inclusiveness and anti-speculation.

The institutional, political and financial frameworks of Amsterdam and Brussels however are not responsive to ideas on cooperative ownership, mixing private

Feasibility



ownership

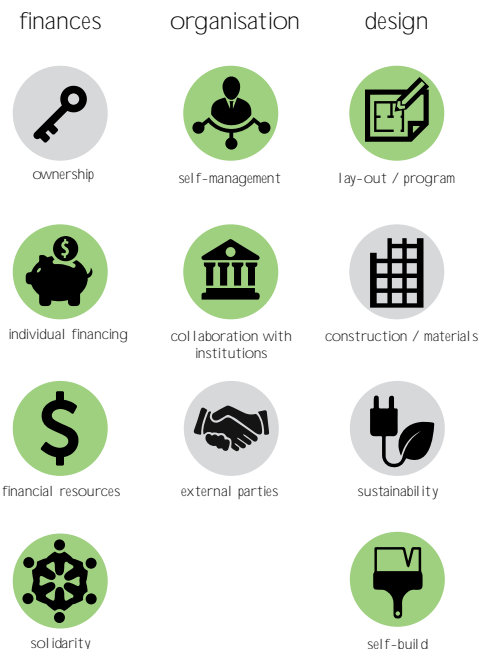


Figures 11: Aspects related to themes affecting affordability (own illustration)

and social housing, long interest cooperative loans etc. Hence, it would be shortsighted to propose the cooperative model as a solution to affordability issues in cities throughout Europe. Cooperatives in Switzerland have historically been incorporated in building culture for more than 100 years. In addition, they are strongly connected to the economic and political conditions, and rely heavily on state support. (Lawson, 2009)

Nevertheless, it would be valuable to research the possibilities for the cooperative model in other cities, as they have proven to be successful schemes for creating affordable housing amidst distressed housing markets. An alternative to financing independently from individual mortgages, private savings, and home ownership has to be found, in order to assure long term accessibility for lower income groups in CSO projects.

scale



Scale

The scale of the project affects finances, organisation and design of CSO housing.

Financially, the scale of project requires different means of financing. As larger projects require more funding, they will generally rely less on individual credit-worthiness and more on collaboration with institutions and external financiers.

Solidarity, through a solidarity fund or by manipulating the price of property, becomes more substantial with more participants. Both effects result in a greater accessibility for lower income groups in larger projects.

Organisationally, it affects the level of self-management. In small projects, a degree of self-build can simplify the work for the contractor, thereby speeding up the building process. In large projects, the building process could quickly become inefficient and messy when part of the building would be self-build. The same goes for maintenance of the building after completion.

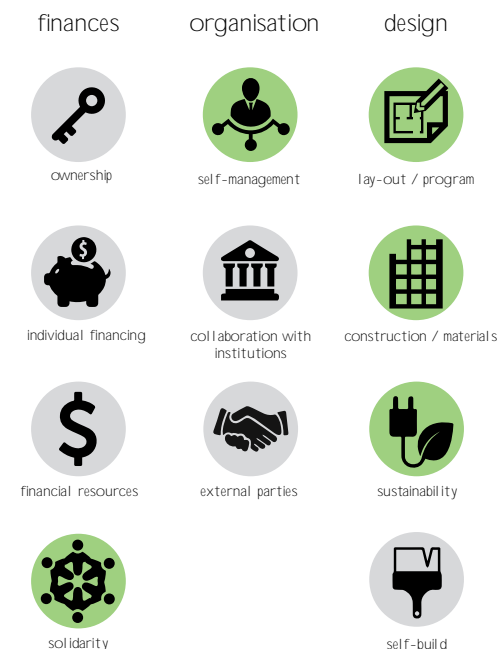
Most striking design-wise, is how the scale of the project can contribute to the very essence of self-organised housing: how sharing and pooling resources can lead to a greater living quality. Vrijburcht and Kalkbreite, for instance, have the same percentage of shared space in relation to the total floor surface. But because Kalkbreite has almost twice as many dwellings, more added program, such as a sauna, gym, sewing room, rooftop garden, has become feasible.

New mentality towards consumption

One of the tangible components to achieving affordable collective self-organised projects, seems to be a new mentality towards consumption. All cases, although more explicit in Brutopia and Kalkbreite, have tried to create a maximum of living quality with minimum means. This is achieved through maximizing density, compact volume of the block, reduced floor surface per person, reduced energy use and the minimisation of the materials used in the building.

The reduced floor surface per person can successfully be compensated for by sharing additional program, as mentioned before.

new mentality towards consumption



5. Recommendations & design principles

The synthesis and the conclusions drawn from the multiple case study, in relation to the aspects identified through a literature study, can be applied to the Amsterdam case, which has been the starting point of this research.

Now, recommendations and concrete design principals are presented, informing architects about the characteristics of self-organised housing related to affordability, which can strengthen the position of starters in Amsterdam.

Feasibility

When viewing the potential of self-organised housing in Amsterdam, we can identify the areas around the ring road as high potential locations. It is likely that commercial spaces will be rented/bought by businesses due to good infrastructure and visibility, whereas land prices are relatively low and demand among starters is strong in this area.

In terms of institutional involvement in financing, options are limited. The city of Amsterdam does not provide loans, and cannot back the project financially. However, the possibility of solidarity through membership or crowd-funding can contribute to the feasibility. This implies a participatory and interactive design and planning process, and a high degree of flexibility in allocation and use of spaces.

Ownership

Starters have few own capital and are often not eligible for a sufficient mortgage. Therefore, it would be preferable, also in relation to long term accessibility for starters, to try to establish cooperative ownership as a model supported by institutions and banks in the Netherlands.

Another option is to team up with a housing corporation. Offering to housing corporations to realise part of their social housing stock in CSO projects, similar to Kalkbreite, would be a possibility to still be able to cooperate with housing corporations.

Both these forms of ownership would require major changes in Dutch building culture, politics etc.. In self-organised projects in the Netherlands, participants are almost exclusively owners. However, starters as a target group, would likely be most open to this new form of affordable housing.

For the design, it implies a low degree of self-build and self-management after completion, highly mixed dwellings and the opportunity to explore new housing typologies unfit for private ownership.

Scale

The scale of the project defines the organisational model and the possibility for sharing additional program. Starters can be generally identified as occupied with work and social life, open to sharing facilities, and they tend to value location over the quality of the dwelling; yet, there might be atypical starters, eager to participate more or able to afford a larger, more private apartment. A mixed building, in which various demands can be met, increases the feasibility of the project, as different income groups are included. Furthermore, a large project can contain a variety of shared facilities, without adding significant floor surface per capita. Together with an organisational model in which maintenance and cleaning is outsourced, but residents can be hired if they want to compensate for service expenses, would be most fit.

New mentality towards consumption

The new mentality towards consumption is well represented among starters in Amsterdam. It fits their awareness of climate change and the need for sustainable solutions. Therefore, it is recommended for the project to have a sustainable strategy for the building, in which energy use is reduced and resources are used efficiently, and floor surface per capita is limited.

Design principles

Housing units

The principle of occupancy guidelines (for example limiting the floor space per capita to 35 m², or 'number of rooms = number of residents + 1' rule) together with providing a spread of housing units representative of the population of the city, has proven to be an effective strategy for creating a mixed community. Including a percentage of social housing further enables housing accessibility for lower income groups.

In Figure 11 the different household types in Amsterdam and Amsterdam-West, an area along the ring road identified as a potential location for CSO housing, are shown. In the entire city of Amsterdam, as well as in Amsterdam-West, about 58-73% of the population consists of 1-2 person households. (Kerncijfers Amsterdam, 2015) This strengthens the argument Hassink et al. (2012) made for increasing the amount of new-build apartments within the ring area between 40 and 60 m². For a CSO project in Amsterdam-West specifically, the percentage of different-sized units, based on the percentage of household types in Figure 11, is shown in Figure 12. Both the single family unit and the single/double unit, which together make up around 70% of the total residential program, will have limited private space and will likely make more use of the communal spaces. In addition, the building can offer new forms of living to these groups, similar to the cluster apartments in Kalkbreite.

Hybrid structure

In all three case studies, changes to the structure could be made relatively easily, to enable future change in unit size. The use of a hybrid structure could also answer to the demand for combinations of working and living, popular among starters and other entrepreneurs in the city. (Daman, Uittenbogaard, & Blom, 2009)

Including small and large office spaces, similar to Kalkbreite, allows for further division into rentable spaces during the building process and after completion. This increases the feasibility of the project.

household type	Amsterdam	Amsterdam-West
single	53%	34%
couple w/o children	20%	24%
couple with children	16%	29%
single parent	9%	10%
other	2%	3%

Figure 12: Percentage of household types in Amsterdam and Amsterdam West (amsterdam.nl: Kerncijfers Amsterdam en Kerncijfers Amsterdam-West, 2015)

housing units	percentage
single / double (1-2 rooms)	60%
family unit (3-6 rooms)	30%
small family unit (2-3 rooms)	10%

Figure 13: Percentage of different sized-units (own interpretation)

Ratio shared space / commercial space / residential

When comparing the ratio of shared space, commercial space and residential units in the three cases, the % of shared space compared to the total floor surface is similar (see Figure 13). However, Kalkbreite incorporated much more commercial functions than the other cases, which can be explained by the requirements of the municipality, the central location and the tram depot, which prevented residential functions in the first three floors.

For a location inside the ring area, it is probable that the municipality of Amsterdam would set similar requirements related to the inclusion of commercial functions and mixed program, open to

program	Vrijburcht	Brutopia	Kalkbreite
residential	80%	85%	59%
commercial	14%	13%	36%
shared	6%	2%	5%

Figure 14: Percentage of residential, commercial and shared space in the three cases (own information)

commercial functions	shared functions
cinema	laundry room
parking garage	bike storage
office space*	guest rooms
shops*	café (public)
public facilities*	workshop space*
theatre / performance space	gym / sport hall (public)*
kindergarten	
café / restaurant	

Figure 15: Possible commercial and shared functions, as determined by cases, * flexible (own interpretation)

the neighbourhood. Furthermore, as mentioned in the recommendations, a large project with a variety of shared facilities, fits the target group of starters. Therefore, the project of Kalkbreite can be instructive for the Amsterdam case, and the location of Amsterdam-West specifically.

The commercial and shared functions as found in the cases, which can be of interest for incorporating in the Amsterdam project in relation to starters, are shown in Figure 14. A selection of these functions is to be made in relation to the specific site conditions.

Bibliography

Literature

Bauproject Kalkbreite (2015) *Genossenschaft Kalkbreite*. Retrieved 29 November 2015 from Genossenschaft Kalkbreite: <http://www.kalkbreite.net/projekt/bauprojekt/>

Boelens, L., & Visser, A.-J. (2011). Possible Futures of Self-construction: Post-structural Reflections on Ten. In L. Qu, & E. Hasselaar, *Making room for people* (pp. 103-128). Amsterdam: Techne Press.

Boelhouwer, P. (2012) Market orientated housing policies and the position of middle-income groups in the Netherlands. *Housing and the Built Environment*, 729–739.

Boterman, W. R., Hochstenbach, C., Ronald, R., & Sleurink, M. (2013). *Duurzame Toegankelijkheid van de Amsterdamse Woningmarkt voor Starters*. Amsterdam: University of Amsterdam.

Bourassa, S. C., & Housli, M. (2009). Why do the Swiss Rent? *The Journal of Real Estate Finance and Economics*, 24, 286-309.

Bouwtechnische keuring: Vereniging Eigen Huis.. Retrieved February 11, 2015 from Vereniging Eigen Huis: <https://www.eigenhuis.nl/webwinkel/keuringen/bouwtechnische-keuring/>

Brouwer, J., Esra Bektas, D. G., Pasqualis, M., Quentin, C., & Savanovic, P. (2014). Novel design principles and process models for emerging CSO housing market. 40th IAHS World Congress on Housing. Funchal.

The Blue House (2013) Brussel Duurzame stad. Retrieved November 7 from Brussel Duurzame stad: <http://www.duurzamestad.be/node/18101>

Damen, T., & Botman, H. (2014). Organisational structure, building concept and financial model for self-organised housing for elderly people. 40th IAHS World Congress on Housing. Funchal.

Dezeen. (2015) *Brutopia is an aluminium-clad apartment complex built by a cooperative in Brussels*. Retrieved November 7, 2015 from Dezeen: <http://www.dezeen.com/2015/06/21/brutopia-aluminium-clad-apartment-complex-cooperative-brussels-belgium-stekke-fraas/>

Dezeen. (2015) *Architects propose 100 ideas to solve London's housing crisis*. Retrieved March 25, 2016 from Dezeen: <http://www.dezeen.com/2015/09/16/new-london-architecture-competition-100-designs-solve-london-housing-crisis/>

Doling, J. (2012) Housing and demographic change, in: R. Ronald and M. Elsinga (eds) *Beyond Home Ownership: Housing, Welfare and Society*, London and New York: Routledge

Field, Martin (2005) Thinking about CoHousing, the creation of intentional neighbourhoods. *Diggers and dreamers*

Gameren, D. van (2013). Onderscheid en samenhang. *DASH*, 4-15.

Gemeente Noord-Holland. *Uitvoeringsregeling subsidie collectieve zelfbouw*. Retrieved October 1, 2015 from Gemeente Noord-Holland: <https://www.noord-holland.nl/psstukken/openbaar/AVV/AVV-PB2015-167.pdf>

Geröházi, E., Hegedüs, J., & Szemző, H. (2014). Towards a new business model for collective self-organised housing interventions. Budapest: Metropolitan Research Institute.

Hasselaar, B. (2014). State-of-the-art of CSO energy efficient new districts. Delft: Proficient.

Hassink, W., Dröes, M., Manshanden, W., & Steegmans, J. (2012). De starter op de Amsterdamse woningmarkt. Utrecht; Delft: *Utrecht University School of Economics*; TNO.

Hochstenbach, C., & Boterman, W. (2014). Navigating the field of housing: housing pathways of young people in Amsterdam. *Housing and the Built Environment*, 257-274.

Hugentobler, M. (2015). The provision of affordable housing as a key aspect for social inclusion in cities. RC21 International Conference on "The Ideal City: between myth and reality" . Urbino: ETH Wohnforum.

Hugentobler, M., Hofer, A., & Simmendinger, P. (2016). *More than housing*. Zurich: ETH Wohnforum.

Ibrahim, M., & Müller, S. (2014). *Case study Kalkbreite Zürich*. Ljubljana: Future City SI Ljubljana.

Johann, R., & Janssen, N. Vrijburcht: Amsterdam Oost Retrieved November 2, 2015 from Knooppunten van zachte infrastructuur: <http://www.knooppuntenvanzachteinfrastructuur.nl/portfolio/vrijburcht/>

Jonckheere, L., Kums, R., Maelstaf, H., & Maes, T. (2010). *Samenhuizen in België*. Antwerpen.

Kurz, K. & H. Blossfeld, eds. (2004) *Home Ownership and Social Inequality in Comparative Perspective*, Stanford University Press

Lawson, J. (2010). Path Dependency and Emergent Relations: Explaining the Different Role of Limited Profit Housing in the Dynamic Urban Regimes of Vienna and Zürich. *Housing, Theory and Society*, 204-220.

Lawson, J., Berry, M., Milligan, V., & Yates, J. (2009). Facilitating Investment in Affordable Housing – Towards an Australian Model. *Housing Finance International*, 18-26.

McDonough, W., & Braungart, M. (2002). *Cradle to Cradle: Remaking the way we make things*. New York: North Point.

OIS Amsterdam (2015) *Kerncijfers Amsterdam 2015*. Amsterdam: Gemeente Amsterdam

Plüss, L., & Schenkel, W. (2014). *Governing Urban Diversity: Creating Social Cohesion, Social Mobility and Economic Performance in Today's Hyper-diversified Cities*. Urban Policies on Diversity .
Rutz, E. (2015). *Wohnen als Gemeinschaftswerk*. St. Galler Tagblatt.

Serroux, F., & Tregarot, J. (2013). *Bewoonbaar verklaard*. Brussels: EHB.

SEV (2010). *Zelfbouw in reflectie*. Rotterdam: Stuurgroep Experimentele Volkshuisvesting.

The Guardian. (2015) *Tenants in England spend half their pay on rent*. Retrieved March 25, 2016 from <http://www.theguardian.com/money/2015/jul/16/tenants-in-england-spend-half-their-pay-on-rent>

Tummers, L. (2015). The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. *Urban Studies*, 1-18.

Vera, D. (2009) Interview Samenhuizen. *Samenhuizen in België*.

Vlug, J., Hartog, S., & Vergunst, M. (2007). *CPO: Anarchistisch idee of realiseerbaar initiatief*. Amsterdam: VvE; Stichting Vrijburcht.

VlugP. (2015). Vrijburcht CPO: VlugP Stedebouw &

Personal interviews

Fraas, Serge. [Architect Brutopia, Stekke + Fraas] Interview. 14 December 2015.

Hugentobler, Margrit [Professor ETH Wohnforum] Interview. 16 February 2016.

Müller, Pascal [Architect Kalkbreite, Müller Sigrist architecten] Interview. 15 February 2016.

Seeghers, Maarten & van der Dries, Marijke [Residents of Brutopia] Interview. 14 December 2015.

Slooters, Dimphie [Resident of Kalkbreite] Interview. 13 February 2016.

van Gils, Willem. [Involved architect Vrijburcht, CASA architecten] Interview. 17 November 2015.

Vergunst, Menno. [Resident of Vrijburcht, member of board of residents] Interview. 17 November 2015.