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Potential and limitations of innovative housing solutions in planning for degrowth: the case of Vienna

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ABSTRACT

Limiting socio-spatial inequalities can be considered a decisive goal for a degrowth agenda. At different territorial scales, planning and housing policies have been crucial to achieve this goal, in terms of both reaching high environmental standards and framing the social reproduction of inequality. This article focuses on the implications, in terms of socio-spatial inequalities, of innovative housing solutions oriented to a degrowth agenda. It aims to answer to the following research questions: what are the socio-spatial implications of the most common innovative housing solutions that can best fulfil the degrowth principles/vision? How is it possible to ensure socio-spatial justice in housing projects inspired by a degrowth narrative? By analysing two cases of housing innovation in Vienna (qualitative analysis), we argue that many innovative housing projects, characterised by a degrowth narrative when it comes to the development of ecological and social practises, today show high level of elitism reproducing socio-spatial inequalities. However, we also argue that the role of local authorities can play a central role in up-scaling these housing innovations by ensuring higher level of inclusiveness.

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1. Introduction

Limiting socio-spatial inequalities can be considered a decisive goal for a degrowth agenda. Living within ecological limits by reducing production and consumption levels, striving for well-being for all and enhancing justice and democracy are shared principles in the degrowth research community (Schneider 2003). At different territorial scales, planning is crucial to achieving these goals in terms of both reaching high environmental standards and framing the social reproduction of inequality. The spatial organisation of human settlements has a significant impact on human ecological footprint and environmental impacts. Moreover, the location of various urban functions, infrastructure provision and especially housing provision affect accessibility to different resources and facilities.

Housing has remained a crucial topic in urban planning since its origins. As argued by Xue (2015), variations in dwelling type and size, residential area density, location and housing-related infrastructure affect the environment in different ways and to different extents. Meanwhile, with the privatisation and marketisation of the housing sector, the development of housing projects has increasingly raised issues of inequality and injustice. Therefore, how planners deal with residential development significantly affects environmental sustainability and social justice

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In the framework of this special issue on “Degrowth, Cities and Planning”, this article focuses on the implications in terms of socio-spatial inequalities of innovative housing solutions oriented towards a degrowth agenda. Specifically, it focuses on the provision of innovative housing solutions, taking into account issues related to socio-spatial justice. It aims to answer the following research questions: what are the socio-spatial implications of the most common innovative housing solutions that can best fulfil degrowth principles? How is it possible to ensure socio-spatial justice in housing projects inspired by a degrowth narrative?

Degrowth scholars have already investigated aspects related to housing provision (Nelson and Schneider 2018). Degrowth housing narratives involve a sequence of small and large transformations in line with key degrowth values, namely social justice in housing, voluntary simplicity in living practices, reducing housing sector material and energy flows, reducing the ecological impacts of housing activities, encouraging housing settlement types favourable to deeper democracy, and changing how we perceive or use time and interrelate with one another. In these narratives, innovative projects realised by different actors (communities, associations, local institutions, etc.) in different countries and cities are considered interesting experimentations. In particular, co-housing projects and eco-villages show good potential in terms of both ecological and social innovation, according to many scholars. However, to date, little attention has been paid to the socio-spatial implications of these innovative housing solutions.

By analysing two cases of housing innovation in Vienna, we argue that many innovative housing projects characterised by a degrowth narrative as regards the development of ecological and social practices today show high levels of elitism and thereby reproduce socio-spatial inequalities. However, we also argue that the role of local authorities can play a central role in upscaling these housing innovations by ensuring a higher level of inclusiveness.

Vienna represents a privileged context to understand the relationship between sustainable housing provision and socio-spatial inequalities. As a very large proportion of the housing stock is publicly subsidised (social or municipal housing), housing unaffordability problems are less prominent than in other global cities. Additionally, many housing projects have been sites of experimentation with new solutions for sustainability, by promoting bottom-up initiatives and providing ecological innovation in the social housing stock. In this framework we investigate outputs related both to distributional and procedural aspects of socio-spatial justice, with a specific focus on housing accessibility, diversity in the composition of residents, the development of different socio-ecological orientations and practices and the implications for neighbourhoods.

The article is organised as follows. In the first section we discuss the state of the art of the literature on the socio-spatial implications of the current approach to sustainable housing. The aim of this section is to highlight the main criticalities and risks connected to a shift towards more ecological housing under the current pro-growth agenda. Additionally, it focuses on degrowth perspectives towards housing, in particular towards the state of the art of the knowledge produced so far on collaborative housing. In the second section we explain the methodology used to investigate the case studies, before describing them in the fourth and fifth sections. Finally, we provide some concluding remarks on the opportunities and challenges characterising these projects as far as a possible transition towards a degrowth society is concerned.

2. State of the art: sustainable housing and socio-spatial inequalities

Green buildings: between ecological gentrification and self-segregation

Building healthy, comfortable and sustainable ecological residential areas is an important goal in many cities. Housing location, construction, design, maintenance, management, use, regeneration and demolition can have significant impacts on the physical and social environment. In terms of location, sustainable land use planning at the city scale requires a shift towards increased housing construction within mixed-use developments. It also implies limitations on scattered settlements

and a preference for brownfield rather than greenfield sites. Current sustainability criteria demand that housing be built close to urban centres and have access to good quality public transport and, ideally, employment. In terms of construction, sustainable development requires a shift towards high-quality building at higher residential densities in green and safe residential environments. In addition, it demands the use of sustainable building and design techniques to increase energy standards, reduce the use of non-renewable materials, and facilitate the recycling of resources (e.g. water, energy, waste). In terms of housing accessibility, sustainability involves ensuring the right supply of affordable housing to guarantee social justice and cohesion (Haase et al. 2017). This goal also requires the adequate planning of social infrastructure such as community centres, play facilities for children and schools.

However, under current circumstances, housing regeneration or construction according to sustainability criteria has played an uncertain role in the promotion of more ecological and just cities (Cucca 2020). First, previous investigations have identified possible rebound effects that limit the environmental benefits of ecological innovation in housing driven by an ecological modernisation approach (Xue 2015). Second, some research has revealed increasing socio-spatial inequalities connected to sustainable housing regeneration and green building. As we argue in the following paragraphs, greening the housing sector has been associated with processes of gentrification and residential segregation dynamics.

- (1). *Efficiency strategies and residential segregation dynamics.* The first topic explores the implementation of energy efficiency strategies and residential segregation dynamics. This is in line with the emerging debate on green gentrification, concerned with the unjust effects of some strategies oriented towards creating more sustainable urban forms (incorporating concepts such as compactness, sustainable transport, density, mixed land uses, diversity, passive solar design, greening, etc). As improvements need investment and thus – under pro-growth market conditions – trigger a return on investment, the concern is that current policies favour a green growth agenda, enforce the upgrading of neighbourhoods and foster rather than reduce socio-spatial inequalities (Dooling 2008; Anguelovski et al. 2019; Beretta and Cucca 2019). This literature highlights how different mechanisms seem to be at work by changing the availability of affordable housing in the name of greener housing standards. In Berlin (Holm 2011) and other German cities, many buildings characterised by low energy efficiency standards and affordable rent have been affected by ecological retrofitting and increasing rental costs. According to Grossmann and Huning (2015), low-income residents often relocate when retrofitting measures are announced. For this reason, the implementation of building renovation for greater energy efficiency is highly contested and does not have a positive impact on all residents. In these authors' view, a new form of segregation endangers the positive outcome of retrofitting (which is greater energy efficiency in the building sector). This has two implications. First, the amount of affordable housing stock shrinks; second, poor households cannot afford the new rents and must move to less insulated housing stock (Grossmann 2019). Bouzarovski, Frankowski, and Tirado Herrero (2018) define this process as "low-carbon gentrification", stimulating displacement via the retrofitting of existing housing. They analyse planning documents, policy reports and interviews with policy makers, companies and local resident representatives in order to coin the phenomenon of "renoviction" in Gdąnsk, Poland. Interestingly, they conceptualise renoviction as "a politically embedded process of changing the social and spatial composition of urban quarters under the pretext of climate change and energy efficiency imperatives" (Bouzarovski, Frankowski, and Tirado Herrero 2018, 846). Therefore, this process can be seen as a specific form of state-led gentrification that uses the rhetoric of sustainable development to produce social and spatial compositions.
- (2). *Self-segregation processes in eco-districts.* Another mechanism pertains to the self-segregation processes of affluent groups in new buildings, neighbourhoods and cities designed to meet very high environmental standards. Some surveys have highlighted the increasing proliferation

of eco-city projects globally, to the extent that more than 170 eco-city initiatives at various stages of planning, design, construction and implementation were identified by 2011 (Wu 2012). However, “eco” has been defined as the discursive construction of environmentally friendly cities, districts or buildings *for their inhabitants*, filtering and protecting them through highly technological envelopes, being places within which urban life can be made clean, healthy and comfortable, but also potentially becoming areas of self-segregation for a green elite (Caprotti 2014). Indeed, eco-districts have been criticised for their high costs and their failure to meet expectations with respect to increased environmental quality (Holden, Li, and Molina 2015). Moreover, housing and services are usually affordable only to a small elite and consequently spatial segregation as well as social inequality may increase. In addition, eco-districts are sometimes built *ex novo* rather than on existing urban sites and thus increase land use. As reported above, during the last couple of decades, countries have developed approaches to green housing framed within growth paradigms, mainly by using “innovative”, “smart” and “green” technologies, materials, energy sources and devices. However, on the one side these strategies have focused on encouraging the construction of more sustainable housing without sufficient account of householders continuing unsustainable practices within it (rebound effect). Additionally, new socio-spatial inequalities are increasing as a result of the higher costs of these housing solutions, their increased desirability on the housing market among the most privileged and processes of self-segregation and gentrification related to ecological retrofitting.

Intentional communities and the degrowth agenda

Consistently with environmental and social challenges, degrowth scholars (Nelson and Schneider 2018) have developed different housing narratives involving small and large transformations in line with key degrowth values. Some of them concern spatial patterns of development and techniques of construction, such as refusing certain housing technologies (Schneider 2003), or reducing the need for urbanisation, urban sprawl and the availability of housing under-used by the most privileged groups. Degrowth narratives focus on transforming existing housing to improve the allocation and use of the available stock, creating communal houses from previously individualised buildings. These transformations also require a profound change in management and inhabitants’ participation in decision-making processes by developing alternatives such as the creation of small-scale socio-ecological projects (Schneider 2003). Moreover, in degrowth narratives, housing becomes central to enhancing individuals’ quality of life and reducing their daily consumption patterns to fall within environmental boundaries (Lietaert 2010; Hagbert 2018). Collaborative housing, in the sense of “an umbrella term that encompasses a variety of housing forms with different degrees of collective self-organization” (Czischke, Carriou, and Lang 2020).

Among already existing projects, co-housing initiatives are regarded as the most promising in allowing for more radical transformations and challenging current socio-technical and economic systems (Hagbert 2020). Co-housing builds upon the key values of (intentional) community, autonomy, affordability and ecology, which are often subsumed under sustainability and are characterised by a certain amount of collectivity in everyday life, self-organisation and a spatial setting that organises individual housing units in a collective manner (Thörn et al. 2020, 2). The co-housing literature has recently focused on numerous aspects.¹ One stream emphasises the social benefits of co-housing in urban settings, such as fostering a higher quality of social relations in contemporary hyper-individualised urban life (Lietaert 2010), thereby contributing to a re-emerging sense of community through collaborative activities (Jarvis and Bonnett 2013) as well as fostering health, care needs, well-being and neighbourhood support (Kehl and Then 2013). A separate, more environmentally oriented research stream emphasises the potential of such intentional communities to foster more environmentally sound everyday practices (Lietaert 2010; Hagbert 2018) as well as to cultivate

what Chatterton (2013) has coined “post-carbon value change”. Indeed, the trend of reducing environmental footprints has already been identified across a number of studies, highlighting in particular sharing practices related to food, household appliances of different sizes and transportation as key mechanisms to reduce everyday consumption practices (Lietaert 2010; Jarvis 2011). According to Hagbert (2020, 190), these practices should not be overly idealised as they are still marginal and “are at best to be understood as incremental improvements”. Nevertheless, Hagbert (2020, 197) also states that sharing practices in co-housing are not insignificant because they are exactly the type of collaborative practices that are needed for a sustainable future. For such projects to be just and environmentally sound, much depends on their spatial and social configuration.

Common spaces, as integral parts of co-housing projects, often contribute to small, compact dwellings (Marckmann, Gram-Hanssen, and Christensen 2012), whereas the location and design of common spaces are integral to reinforcing pro-environmental behaviour towards “saving by sharing” of co-housers (Vestbro 2012). Furthermore, Lietaert (2010) and Hagbert (2020) argue that the lifestyle of co-housing residents does not automatically reduce their environmental footprint and activities differ considerably from project to project. However, many studies have already illustrated issues related to the socio-spatial justice implications of these intentional communities, not least that despite their aspirations to achieve a socially mixed structure, co-housing inhabitants are predominantly well-educated, middle-income households (Bresson and Deneffe 2015; Lang, Carriou, and Czischke 2020). Although those in the sector and especially activists hardly consider themselves “gentrifiers”, critical research is ambivalent, pointing out that in owner-occupied middle-class projects, it is hardly possible to plan the social mix or to encourage the co-use of space. Indeed, the predominant social homogeneity of self-chosen neighbourhoods often coincides with intensified segregation. Focusing on the case of Berlin, Holm (2011) considers *Baugruppen* pioneers of gentrification and states that households driven out of upgrading areas often themselves become actors of upgrading elsewhere. Nevertheless, intentional communities have been perceived in many contexts as opportunities for vulnerable urban areas. Significant differences among co-housing projects lie in their everyday practices and design features, such as whether or not to open their common gardens or services to outsiders (Ruiu 2014).

The role of local authorities

How public authorities might enable or hinder social and ecological practices in co-housing contribution to degrowth narratives has received little attention in recent academic studies. Nevertheless, local authorities’ role has been considered vital in defining co-housing’s different levels of inclusiveness through planning practices (Droste 2015). There are three ways for municipalities to support co-housing: they can promote the concept directly, commission external partners to facilitate new projects in a public-private partnership, or encourage private investors and owners to include municipal goals and co-housing in projects.

However, local authorities also seem to have learnt lessons from the social and environmental practices developed within these intentional communities and have attempted to scale up such innovations in the general provision of social housing, with interesting effects both in terms of ecological innovation and social inclusion. By analysing two cases of housing innovation in Vienna, we argue that many innovative housing projects characterised by a degrowth narrative when it comes to the development of ecological and social practices today show high levels of elitism and thereby reproduce socio-spatial inequalities. However, we also argue that the role of public institutions can play a central role in upscaling these housing innovations by ensuring a higher level of inclusiveness. Vienna is an interesting case study for understanding the socio-spatial implications of these innovative projects and the potential of scaling up innovations. In recent years, the municipal administration has been subsidising different kinds of housing projects (both co-housing and social housing initiatives) characterised by socio-ecological innovation, but also showing very significant

differences in terms of management and access procedures, which deeply affect the condition of socio-spatial justice.

After outlining our methodology in the next section, we analyse how the changing role of the local authority has affected the provision of collaborative and sustainable housing in section three. Section four then compares the implementation of degrowth-oriented sharing practices and the underlying socio-ecological inequalities of two contrasting collaborative housing models: a co-housing project and a social housing project, both strongly oriented towards collaborative and sustainable aspects.

3. Methodology

In order to answer our research questions empirically, we structured our qualitative analysis in two phases. First, we collected policy documents, grey literature and academic literature on collaborative housing and recent changes in housing policy. We applied thematic coding covering (a) recent reforms that foster innovative housing solutions, (b) different types of collaborative housing and (c) the socio-spatial effects and implications.

Second, we selected two contrasting yet innovative models that feature a strong collaborative and ecological orientation as case studies in Vienna. The first case study is a *Baugruppen* project, an international community characterised by a quite radical, self-determined approach to collaborative housing. The second is a social housing project that focuses – among other communal infrastructure – on the provision of urban gardening infrastructure as a stimulus for collaborative housing. Information on the collaborative and ecological orientation, built environment, communal facilities, housing costs, diversity and housing allocation of the projects was obtained via online content, official documentation of developer competitions and other policy documents. Observations during site visits included six unstructured interviews with tenants in the smaller *Baugruppen* premise and thirteen in the bigger social housing premise. The interviews focused on capturing the relationship between everyday practices of sharing, the uses of different communal facilities, the effects on individual apartment use and how these facilities were planned and equipped, for instance collectively planned or pre-planned. The interviewees were characterised by diverse household and family types, such as single households, couples, families across all age groups and, in the case of the social housing project, socioeconomic positions and cultural backgrounds. Data from the observations and unstructured interviews were captured in field notes. Finally, thematic coding was again applied to analyse the data with regard to the sharing and using practices known from the degrowth literature.

The results of this analysis are presented in the next two sections, where we provide an overview of recent trends in collaborative housing in Vienna in section three and compare the degrowth-oriented practices and socio-spatial inequalities of the selected case studies in section four.

4. Recent trends in Viennese housing policy: differentiated forms of collaborative housing

Collaborative housing in Vienna dates back to the Viennese settlers' movement, which first claimed for self-organised and self-built housing in the context of devastating housing conditions after World War I (Lang and Novy 2011). In the early 1920s, the settlers' movement was integrated into the housing policy of Red Vienna (1922–1934), a housing policy and urban development policy that has remained characterised by strong public intervention ever since. To meet the social needs of this era rather than serving environmental concerns, the municipal housing programme of Red Vienna extensively constructed an impressive number of schools, libraries and green spaces as well as common washing and laundry rooms in social housing. Due to changing demographic and economic conditions, the City ceased the construction of social housing by 2004. The construction of social housing was increasingly undertaken by big, limited-profit housing

associations (LPHAs) and to a lesser extent by non-profit cooperatives (Lang and Novy 2011). LPHAs and cooperatives continued the tradition of incorporating communal facilities and experimented in the 1970s and 1980s with participatory models, whereas the first experimentation with self-organised *Baugruppen* began in the 1990s (Brandl and Gruber 2014).

This collaborative housing legacy has recently re-emerged in Vienna's social housing approach, but very much differentiated. The local authority of Vienna mainly takes a steering role in urban development, focusing on subsidising housing construction, managing land allocation and ensuring housing quality. Subsidised housing has somewhat replaced the notion of social or municipal housing in the current housing approach of the City, as big LPHAs receive subsidies to construct and maintain large-scale social housing. Nevertheless, the existing stock of municipal housing is still maintained and owned by the City. In contrast to municipal housing, newly built social housing constructed by LPHAs is considered to be rather middle-class-oriented as it requires substantial capital contributions for land and construction costs (Franz and Gruber 2018).

The mainstream model of subsidised social housing saw renewed interest in collaborative housing with the introduction of developer competitions in 1995. Developer competitions, which are mandatory for projects that exceed the construction of five hundred apartments on building lots owned by the City, aim to ensure high-quality standards in subsidised housing. Until 2009, projects were assessed (a) on the basis of economic criteria such as land costs, construction costs and affordability, (b) architectural features such as urban form and building structure and (c) ecological criteria. The latter focus as much on the implementation of climate-friendly technologies as on the provision of green space and the support of environmentally friendly lifestyles, through constructing cycling garages, for instance.

In 2009, collaborative housing was revived with the City's introduction of "social sustainability" as the fourth pillar in developer competitions. Top-down planned communal facilities gained momentum, but evaluations showed that the provision of communal infrastructure alone led to insufficient use (Gutmann and Huber 2014). Therefore, in most projects, consultants specialised in group formation now initiate the use and furthermore support the self-maintenance of common spaces after tenants move in (Brandl and Gruber 2014). Furthermore, in 2013 the developer competitions became a "dialogue-oriented" two-stage approach aimed at integrated neighbourhood development to guarantee well-coordinated and efficient provision with communal facilities.

Baugruppen projects are a recent phenomenon in Vienna's urban development, which after the initial experiments in the 1990s have seen significant growth since 2009. Three main types of *Baugruppen* have evolved in Vienna, which as reported in various co-housing studies tend to be rather homogeneous in socioeconomic and socio-demographic terms: usually higher educated groups equipped with sufficient financial capabilities and time to be able to participate in such projects (Temel et al. 2009). Nevertheless, they differ not only in their legal status, diversity and autonomy, but due to the differentiated subsidised housing framework in Vienna also in their state support (Gruber and Lang 2018):

- (1). Closest to the contemporary subsidised housing approach is the participatory model, although future tenants are able to co-plan communal spaces and individual apartments. Tenants rent their apartments individually and organise themselves as an independent tenant association to manage the communal spaces, while a LPHA finances, constructs and owns the building. Such projects usually receive housing subsidies from the City of Vienna and in return are obliged to hand over one third of the apartments to the communal allocation system for social housing called *Wiener Wohnen*. Therefore, dependent on subsidies, this type produces mixed- to middle-income forms of co-housing.
- (2). A second model enables the autonomous, self-organised management of the entire building by tenant associations due to a specific subsidy, originally meant for dormitories or elderly homes (*Wohnheim*). The house is owned and managed by a "mini-cooperative" comprising all its tenants (Gruber and Lang 2018, 50). Less strict building code regulations and the availability

of subsidies facilitate an easier implementation of social and cultural infrastructure. This type was first developed during the planning process of Vienna's iconic *Baugruppe Sargfabrik* in the 1990s and became the organisational blueprint for *Baugruppen* in Vienna. These projects' considerable autonomy also enables co-housing groups to set their rents and select residents according to their intentions, resulting in a clear middle-class structure, but self-organised forms of solidarity as well.

- (3). Inspired by the German "*Mietshäuser Syndikat*" (Tenement Syndicate), this *Baugruppen* model has only recently emerged in Vienna. It radically emphasises collective organisation and collectively owned and financed housing projects. In practice, its financing often relies on a broad mix of bank loans, direct credits, subsidies from the municipality and major investments of future tenants. If subsidies are used, again a limited number of housing units are allocated by the City. Nevertheless, this model caters for low-income to middle-income housing, with a clear emphasis on alternative ways of living.

Finally, the City of Vienna's contemporary land allocation practices tend to reinforce the middle-class orientation. The construction of new large-scale social housing concentrated on urban development areas at the outskirts of Vienna since the 1970s. In the last decade, this trend is being reinforced since Vienna started to experience steep population growth. Indeed, a combination of massive in-migration and economic growth policies led the local authority to turn again towards urban expansion (MoCCA, Friesenecker, and Kazepov 2020). Not to mention the fact that urban expansion stands in opposition to degrowth narratives, as explored by Exner (2018) already, but Vienna aims to transform brownfield sites rather than use greenfield sites for urban expansion. In contrast to urban development on the outskirts, only recently has new social housing as well as co-housing been constructed on mixed- to middle-class-oriented inner-city brownfield sites (such as Sonnwendviertel or Nordwestbahnhof) as well as eco-districts (Seestadt Aspern) (see Figure 1).

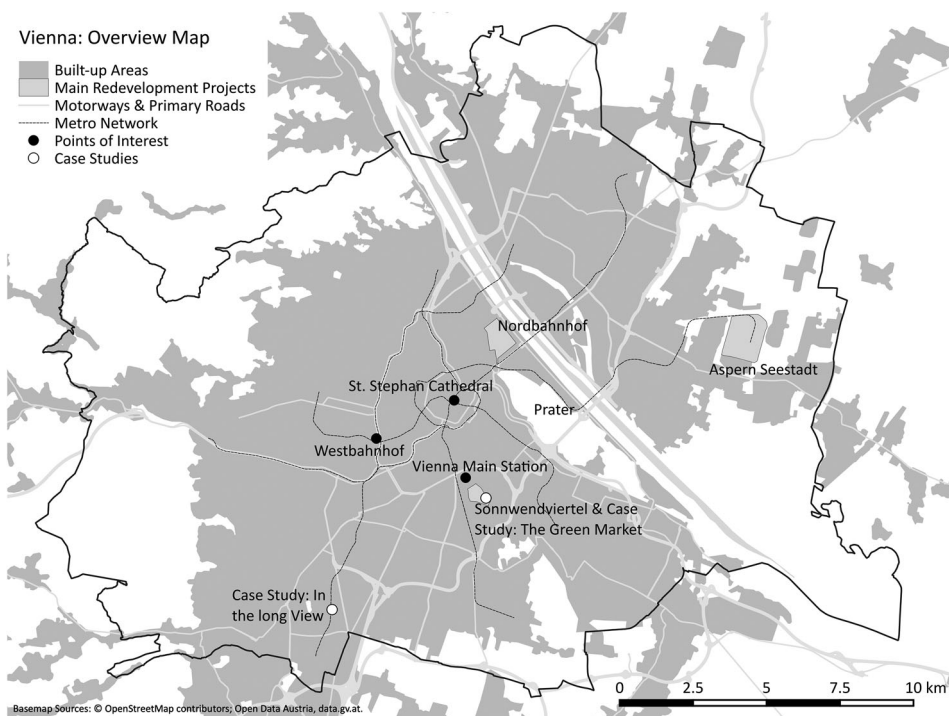


Figure 1. Vienna: Overview map and case study locations.

One of the City's key strategies was to allocate building lots to *Baugruppen* in these mixed-class developments with the aim of creating viable neighbourhoods (Temel and Weiser 2015).

5. Saving by sharing or “just” sharing? Degrowth-oriented practices of selected collaborative housing models

In order to compare the degrowth-oriented practices and socio-spatial inequalities of collaborative housing models with a strong ecological orientation, we selected two cases with contrasting neighbourhood characteristics. The *Baugruppe Wohnen im Grünen Markt* (The Green Market) offers an interesting case to investigate degrowth-oriented practices due to its mixed-use design, combining workspaces, shops, offices and collaborative housing in one building. It is located in the inner-city development area of Sonnwendviertel, which is a mixed-use and mixed-class neighbourhood near to Vienna's main station (Figure 2). By contrast, the social housing project *Auf lange Sicht* (In the Long View) comprises working-class neighbourhoods on the southern outskirts of Vienna. The area is mainly characterised by large social housing estates from the 1960s, 1970s and 2000s, such as the *Wohnpark Alt-Erlaa* (Figure 2). The ecological orientation of this project focuses on the provision of urban gardening infrastructure, alongside other communal infrastructure, to catalyse collaborative elements in housing.

Realised in the form of the participatory model in co-construction with a limited-profit developer, The Green Market is split into two main areas: thirty percent representing workspaces and shops and around seventy percent constituting residential space with fifty apartments on the upper floors (according to <https://wohnen.gruenermarkt.at>, accessed 29 October 2019). Due to the high degree of self-organisation, The Green Market features a considerable number of facilities for collaborative living and for degrowth-oriented practices. Approximately 350 m² of facilities are shared, including a community kitchen, a library, a laundry room, a lounge, a cinema, an atelier, a sauna, a yoga room, a workshop, a children's playroom and a youth room. Additionally, two shared rooftop terraces of about 700 m² are equipped with playgrounds, urban gardening infrastructure and relaxation areas.

In the Long View consists exclusively of subsidised apartments, including so-called smart apartments. Smart apartments are intendedly planned smaller in size and furthermore capital contributions are capped to make them more affordable and accessible for low-income residents. Although this may contribute to resource-friendly behaviour, it may also result in the overcrowding



Figure 2. Neighbourhood contexts of the case studies.

of low-income residents. Nevertheless, the social side effects of smaller apartments are compensated by communal social and green facilities, as demanded by the city authority. Four terraces, extensive public green spaces with edible plants and a public children's playground are therefore integral parts of the project. In addition, arable spaces for tenants, a terrace with raised beds and shared greenhouses are ecological core features and emphasise the integrative aspect of urban gardening. In order to foster climate-friendly lifestyles, the project has several bike storage rooms for 720 bikes and shared-use facilities such as two laundry rooms and four multi-purpose rooms including community kitchens.

Sharing and swapping as two essential degrowth-oriented practices are more pronounced in The Green Market, encouraged by the large number of common spaces in combination with the collective planning process (see Table 1). First, a common understanding of shared use possibilities was initiated by the co-planning of the communal spaces and led to smaller individual apartments. The co-planning process resulted in truly shared infrastructure, such as car and cargo bike sharing, shared IT infrastructure without individual Wi-Fi connections and a food cooperation. Second, degrowth-oriented practices were inscribed into the physical space, enabling the sharing of small and medium-sized items such as books, movies, music, clothes and kitchen utilities.

By contrast, the self-organisation of tenants of In the Long View was limited, the communal facilities all being pre-planned by architects and the LPHAs, albeit supervised by a two-stage developer competition. This competition also demanded a two-year lasting participatory process aimed at turning "dwellers to neighbours" (Wohnfond Wien 2017, 200). Consultant companies aimed to empower the tenants to organise themselves in the equipping and use of the common spaces. A first outcome of this process was the allocation of urban gardening infrastructure according to the "first-come, first-served" principle. However, tenants started to collaboratively plant their garden beds due to the high demand for urban gardening infrastructure. Besides the shared use of garden beds, however, communal facilities today are used by households rather individually. Common spaces are generally used for birthday celebrations of families, individual sports activities and cultural activities as opposed to being genuinely shared like in the *Baugruppen* example. Nevertheless, from a degrowth perspective the collaborative use of spaces regulated by time slots contributes to the more efficient use of space. Usage regulations, like the online room booking system utilised at In the Long View, seem to hamper the development of sharing practices. Even though

Table 1. Comparison of the planning approaches and degrowth-oriented practices of the selected projects.

The Green Market	In the Long View
<i>Autonomy and self-organisation</i>	
Very high degree of self-organisation:	Lower degree of self-organisation:
- Self-organised co-planning with architects	- Infrastructure pre-planned by architects
- Early consideration of shared use and exchange scenarios by future tenants	- Enabling self-organisation in the use and equipment of pre-standardised common rooms by consultants
	- Self-organised planning of neighbourhood-wide community garden (supported by consultants)
<i>Degrowth-oriented practices</i>	
Leading themes:	Leading themes:
- Mixed-use: spatial proximity of living and working	- Urban gardening and collaborative housing
- Sharing and informal swapping of everyday objects	- Affordable housing
Inscribed swapping and sharing practices in communal facilities:	Communal facilities for shared or individual use:
- Community kitchen and common meals	- Garden beds, green spaces with edible plants for individual or shared use
- Shared library, shared tools in workshop, shared IT infrastructure, spaces for sharing other everyday objects	- Community garden and glass houses for shared use
- Bike and car sharing	- Somewhat individual use of shared space such as multi-purpose community rooms, a sports hall, gardening infrastructure and laundry rooms
- Food cooperation	Provision of small yet affordable apartments, including compensatory spaces
Smaller individual apartments and alternative living arrangements (cluster living)	

consultant companies have pursued sharing aspects such as private car sharing, sharing practices are therefore not (yet) substantially developed.

Comparing the socio-spatial implications of the two selected projects reveals that tenants of The Green Market pay substantial rents and capital contributions, partly because the construction of the building was not subsidised. Nevertheless, the main cost drivers are payments for the equipment and renting of common spaces as well as the participatory planning process (Table 2). Individual renters pay a monthly fee to the tenant association that rents the common spaces as well as a fee for equipping the communal spaces, yet they were able to co-organise the interior design of one communal space according to their own needs. A consequence of this co-planning approach is that the usage of The Green Market's communal spaces and therefore its sharing possibilities is limited to members of the tenant association. Given that the development was co-planned by the tenant association, the divide between the workspaces and the residential areas has raised questions about the accessibility of communal spaces and potential entrepreneurs and tenants who do not want to become part of the association are excluded from using them.

Although the above-mentioned common spaces which enable sharing and swapping practices are limited to the rather homogenous *Baugruppen* members, the Machhalle (which literally translates as the "Hall of Doing") is open to the wider neighbourhood as a semi-public space for local everyday supply, a lively neighbourhood centre and an event location on the ground floor. Attached to this is the Scala Publica, a semi-public staircase that can also be used as an event location, whereas a fore-court and a (green) playground is part of the pedestrian zone of the neighbourhood. This (limited) provision of shared spaces for the neighbourhood reduces the wider beneficial effects of The Green Market, while the overall collaborative focus on sharing, swapping and "mixed use" to reduce commuting and leisure mobility clearly contributes to a degrowth agenda.

The large-scale social housing premises In the Long View consists of 323 subsidised apartments catering to mid-income residents, of which 108 are smart apartments catering to low-income residents, resulting in a diverse and mixed residential setting. In contrast to the *Baugruppen* case, the

Table 2. Socio-spatial implications of the selected collaborative housing projects.

The Green Market	In the Long View
<i>Housing costs</i>	
- Rent: €11.62/m ²	Regularly subsidised apartments
- Capital contribution: €700/m ²	- Rent: €6.95/m ²
- Association fee: €40 per month per adult	- Capital contribution: €459/m ²
- Equipment and planning fee: €5,000 per adult	Smart apartments
	- Rent: €7.5/m ²
	- Capital contribution: €60/m ²
<i>Housing allocation</i>	
- Tenant association allocates on the basis of get-to-know meetings	- Income limits and split allocation between the City and the developer
- Aimed at a mix of different household types, genders and ages	- Smart apartments require additional housing needs and are allocated by the City only
<i>Social composition</i>	
Rather homogeneous:	Rather mixed:
- Higher educational backgrounds	- Mixed educational backgrounds
- Mid- to high incomes	- Low to mid-incomes
- Predominantly Western European backgrounds	- Diverse cultural backgrounds
<i>Access to sharing and swapping infrastructure</i>	
- Limited to a homogeneous group of higher status	- Possible for a heterogeneous group of residents, yet sharing is hindered
- Limited benefits for the wider neighbourhood and entrepreneurs in the building	- Benefits for the wider neighbourhood, but limited to the same development area

planning approach was not limited to the building itself, yet most of the common spaces can only be accessed by tenants. However, as part of the development area Erlaaer Flur, the second stage of the developer competition focused specifically on the coordinated provision of communal infrastructure across five subsidised housing premises, including In the Long View. As a consequence, each of the five buildings provides one communal space to the neighbourhood in order to avoid duplicates. A chip-based system booking system grants the tenants of these five premises access to a sports hall, a gym, a neighbourhood kitchen, an atelier/workshop and a seminar room. The neighbourhood garden, which aims to foster the “community aspects of gardening in large-scale social housing” (Wohnfonds Wien 2017, 4), allows all of the development’s tenants to participate in planning, construction and collective gardening beyond “private” beds. The neighbourhood’s five housing associations share the investment costs of the community garden, which even in Vienna represents a unique experiment.

To sum up, the *Baugruppen* project’s high degree of self-organisation and the early involvement of tenants in planning generated a substantial number of communal spaces, where scenarios of degrowth-oriented practices at later stages of living together were integrated from the very beginning. The planned infrastructure is therefore more compatible with smaller apartment designs due to sharing practices in the everyday lives of tenants. However, the distributional aspects remain rather limited for *Baugruppen*. The catering to rather homogeneous residents of higher status adds up to a rather elitist provision of housing and sharing practices. This orientation stands in stark contrast to the top-down approach of the social housing project, which shows strong distributional aspects. Access to swapping and sharing infrastructure in the selected social housing premises is more equal, as social housing in Vienna includes lower and mid-income groups. Furthermore, the more efficient use of physical space in the form of compact apartments includes environmentally friendly aspects. By providing public green spaces and communal, social infrastructure to the wider neighbourhood, the spatial dimensions of the distributional aspects tend to be higher. Nevertheless, the constraints on self-organisation also limit the full realisation of degrowth-oriented practices. Involvement in the use and equipping of communal infrastructure after moving into the building, in comparison with technical solutions to organise the use of the spaces, results in a “just” use of common spaces rather than fostering sharing practices oriented towards degrowth.

Concluding remarks

This article has focused on the implications in terms of socio-spatial inequalities of innovative housing solutions oriented towards a degrowth agenda by answering the following research questions: what are the socio-spatial implications of the most common innovative housing solutions that can best fulfil degrowth principles? How is it possible to ensure socio-spatial justice in housing projects inspired by a degrowth narrative?

Degrowth narratives focus on transforming existing housing to improve the allocation and use of the available stock, creating communal houses from previously individualised buildings. These transformations also require a profound change in management and inhabitants’ participation in decision-making processes by developing alternatives such as the creation of small-scale socio-ecological projects (Schneider 2003). Co-housing initiatives remain the most popular projects among degrowth scholars. However, many studies have already shown the ambiguous socio-spatial implications of these intentional communities, not least that despite their aspirations to achieve a socially mixed structure, co-housing inhabitants are predominantly well-educated, middle-income households (Bresson and Deneffe 2015; Lang, Carriou, and Czischke 2020). Although intentional communities have been perceived in many contexts as opportunities for vulnerable areas, the predominant social homogeneity of self-chosen neighbourhoods has often coincided with intensified segregation or gentrification (Holm 2011). Critical studies have highlighted how significant differences among co-housing projects lie in their everyday practices and design features, such as whether or not to open their common gardens or services to outsiders (Ruij 2014).

Although we have only focused on two cases in Vienna, we have highlighted similar criticalities for co-housing projects promoted locally as well as explored additional opportunities. On the one side, our investigation of The Green Market has shown how intentional communities may be affected by self-segregation processes, bringing limited distributional benefits in terms of environmental and social justice. On the other side, we have found that in Vienna, local authorities have learnt relevant lessons in terms of the social and environmental practices developed in *Baugruppen* and other kinds of intentional communities. Moreover, they have been able to scale up ecological innovations, using social housing policies to provide greater opportunities for inclusiveness and justice, as the case of The Long View shows. Indeed, this social housing project displays strong distributional aspects, such as: more equal access to green spaces, because social housing in Vienna includes lower and mid-income groups; an efficient use of physical space in the form of compact apartments; distributional aspects that are more open to the neighbourhood, as the building provides it with public green spaces and communal, social infrastructure. However, aspects of procedural justice as well as sharing practices are weaker than in The Green Market project.

To conclude, by analysing these two cases of housing innovation in Vienna, we argue that many intentional community housing projects characterised by a degrowth narrative as regards the development of ecological and social practices still show high levels of elitism. However, we also argue that they play a relevant role as innovators when it comes to socio-ecological practices, fulfilling degrowth principles. Moreover, local authorities can play a central role in upscaling these housing innovations by ensuring a higher level of inclusiveness. Finally, we believe that the role of local authorities in fostering a transition towards a degrowth society should be regarded as more relevant and investigated in the degrowth literature concerning housing studies and urban planning. Our investigation has focused on just two case studies, but we believe that in order to enhance the degrowth debate on housing provision it would be beneficial to replicate similar investigations to more numerous cases and to different territorial and institutional contexts.

Notes

1. see Thörn et al. (2020, 3) for a more comprehensive overview.

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