

# ACRP - Austrian Climate Research Program

**Transitioning buildings to full reliance on renewable energy and assuring inclusive and affordable housing (Decarb\_Inclusive)**

[www.eeg.tuwien.ac.at/decarb\\_inclusive](http://www.eeg.tuwien.ac.at/decarb_inclusive)

**Report Working Package 4 – Structures of Housing Provision – Possibilities for and Limits to Ecological, Inclusive and Affordable Housing Solutions**

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## Project synopsis

The project Decarb\_Inclusive focuses on transitioning buildings to full reliance on renewable energy, while assuring inclusive and affordable housing. It combines (1) techno-economic modelling of decarbonisation scenarios with (2) an analysis of possible effects on real estate prices and aspects of social inclusion, and (3) transdisciplinary research on policy options to implement social innovations. The active engagement of stakeholders and municipalities will ensure the targeting of policy makers and academia.

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## Table of contents

1	Introduction .....	4
2	The Concept of Structures of Housing Provision .....	7
2.1	Production .....	9
2.2	Distribution .....	12
2.3	Consumption .....	14
3	The Regulatory Context.....	15
3.1	Housing Promotion ( <i>Wohnbauförderung</i> ) .....	15
3.2	Limited-Profit Housing Act of 1979 ( <i>Wohnungsgemeinnützigkeitsgesetz</i> ) .....	17
3.3	Tenancy Law ( <i>Mietrechtsgesetz</i> ).....	19
3.4	Residential Property Act ( <i>Wohnungseigentumsgesetz – WEG 2002</i> ).....	20
4	SHP in Austria.....	21
4.1	Socio-Economic Household Analysis .....	21
4.2	Owner-Occupied Detached Housing .....	24
4.3	Owner-Occupied Flats.....	26
4.4	Private Rental Housing.....	30
4.5	Limited-Profit Rental Housing.....	33
4.6	Municipal Housing.....	35
4.7	Investors in Residential Buildings and its Refurbishment.....	37
5	Decarbonisation of Residential Buildings.....	39
6	Assessment of Affordability and Inclusion.....	45
6.1	Household Income and Wealth.....	45
6.2	Housing Prices and Rent Levels.....	47
6.3	The Political Economy of Housing Affordability.....	49
7	Na-Wo Award Laureates .....	53
7.1	Modellvorhaben KliNaWo – Feldkirch, Vorarlberg .....	53
7.2	Haus of Commons – Innsbruck, Tirol.....	56
7.3	Sonnengarten Limberg – Zell am See, Salzburg .....	58
7.4	Bikes and Rails - Vienna .....	60
7.5	Summary.....	62
8	Conclusion .....	64
9	References.....	66
10	Appendix A – Methodology .....	76
11	Appendix B – EU-SILC Data .....	78
11.1	Weighted Arithmetic Mean .....	78
11.2	Weighted Median .....	86

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12 Appendix C – The Political Economy of Rent (Working Paper) .....88

12.1 Introduction .....88

12.2 Rent .....89

12.3 Rent and Capital .....92

12.4 Rent Types.....94

12.5 Great Rift?.....96

12.6 Conclusion .....98

12.7 References.....99

## 1 Introduction

It is virtually impossible to underestimate the importance of housing for our society. Independent from which perspective one approaches housing, it represents one of the main nodes in which multiple aspects come together, i.e. legal, political, economic, social, technological, geological, geographical and psychological. Within the context of the decarb\_inclusive project we focus on the interplay between the economic, the social and the energy-technological aspects of housing with respect to environmental sustainability and social inclusiveness. On the one hand, the New Urban Agenda of the UN (2016: 5-7) acknowledges the access to housing as a basic right of all citizens to achieve an adequate standard of living. It links the access to housing also to social inclusion, e.g. the access to food, culture, public services such as health, education and public space, and transport. The topic of housing accessibility is closely tied to the cost of housing. Data provided by the Austrian Federal Bank (OeNB 2018) show that between 2000 and 2017 the overall price of residential property increased by 87% without indicating a price dip in the wake of the financial and economic crisis of 2009. In addition, rents did increase by 43,5% between 2005 and 2017 (Statistik Austria 2018b). Simultaneously, the gross median wage income increased by 32,7% from 2000 to 2017 and by 23,37% from 2005 to 2017 (Statistik Austria 2019b). From a macroeconomic perspective it is clear that housing became more expensive.

On the other hand, the New Urban Agenda stresses the sustainability of human settlements, which should “minimize their environmental impact” (UN 2016: 7). This in conjunction with the Paris Climate Agreement requires national governments to implement ambitious decarbonisation strategies (Rogelj et al. 2016; Jenkins et al. 2018). Within this context, the housing sector is said to play a key role, since – from a technological standpoint – it offers large potentials for reductions in energy use and carbon emissions (Herring 2009: 193; Eker et al 2018: 738; Umweltbundesamt 2018: 134). Whereas there is thus clear potential in the decarbonisation of residential buildings, this occurs in a social context of increasing housing costs, which can severely impede or even deteriorate social inclusion.

The decarbonisation measures, which Working Package 3 (WP3) fleshed out, fall crudely into two categories. One set of measures aims at reducing the energy consumption of households in their housing units. These measures increase the thermal insulation of housing units, e.g. replacement for more energy efficient windows, additional roof insulation, thermal upgrading of the building façade or low-energy radiators. The other measures replace current unsustainable heating/energy systems for CO<sub>2</sub>-neutral heating/energy systems. Renewable energy can stem from biomass, solar energy, ambient heat (e.g. heat pumps) or green gas, each of them within their physical, technical and economic potential constraints. Moreover, the possibility of decarbonised district heating should be considered. As discussed in WP3 the applicability of decarbonisation measures is restricted by the overall availability and potential of energy carriers, which is influenced by the physical surroundings of housing units (e.g. level of urbanisation, topography, and climate). At the same time, the physicality of housing units is affected differently. The switch to a district heating system can be less invasive than the installation of a photovoltaic based heating system or of energy-efficient radiators. Furthermore, a possible discrepancy exists if the real estate owner does not coincide with the real estate user (e.g. tenant). The multi-level framework developed in WP5 highlights corresponding challenges, as the existing regulatory framework does not provide adequate incentives or regulations for owners to invest in their residential real estate not used by themselves.

In order to discuss the proposed decarbonisation measures from WP3 of residential real estate, we need an approach, which deals with the historical and spatial specificity of housing within the Austrian context. The aim of WP4 is twofold. On the one hand we develop a comprehensive institutional framework of housing in Austria. The insights from this structural analysis are used in WP3 as parameters for the techno-economic model and consequently form the base for articulating the decarbonisation pathways. On the other hand the developed framework in conjunction with the concept of rent provide the analytical basis for a thorough assessment of the decarbonisation pathways affordability. To tackle these challenges, we opt for a critical political economy approach, since this enables us to analyse the major social relations, which are relevant for the transitioning process and price dynamics.

In general, housing literature is rather vague on the land-housing nexus, although it implicitly assumes such a link. This becomes especially clear within the critical political economy debate, which uses *land* rent theory to analyse urban *housing* processes such as gentrification, residential segregation, the financialisation of land/housing, etc. However, some exceptions exist such as Lovell and Smith (2010), Bryson (1997) and especially the work on housing provision by Michael Ball (e.g. 1981; 1985; 2003). Ball (1985: 504) defines provision as “the production, exchange, distribution, and use of a built structure”. We add to this definition both refurbishment and valorisation (Bryson 1997). This is necessary to include a transformational intervention within existing housing to increase energy efficiency and to substitute for CO<sub>2</sub>-neutral energy systems. We interpret the concept of structures of housing provision (SHP) in the tradition of institutionalism, i.e. it is time and space sensitive approach. To categorise and analyse different Austrian SHP we take following features into account: the network of interrelationships, the physical characteristics of housing units, the socio-economic position of the households, economic and financial factors and public policy (Ball 2003: 904). Furthermore, the prime functions of housing provisioning processes, i.e. the core of the social agent’s interaction, are not only residential land development (incl. solicit regulatory permissions), housing production, and house marketing and sales (Ball 2003: 902-904), but also housing refurbishment and redevelopment.

In the next section of this report we present our interpretation of the SHP-concept based on Michael Ball’s work on this subject. It starts with the observation that housing constitutes a rather complex subject matter which cannot be readily reduced to an assemblage of technological factors. Far from being an ordinary consumption good, it fulfils a key role in social and economic processes and is embedded in broader institutional arrangements (Aalbers and Christophers 2014). To structure this complexity we focus not only on the main agents, but also on the three functions of a SHP, *viz.* production, distribution and consumption. This approach acknowledges that although SHP are social constructs based on cooperation, they also imply potential conflict. This is especially relevant with respect to the measures of decarbonisation, since they are likely to have broader repercussion and may spur resistance by vested interests.

The general discussion of the SHP-concept is followed by an empirical analysis of Austria’s SHP in their historical and spatial specificity. Based on a mixed method approach, i.e. a well-thought combination of qualitative research with quantitative data, we identify five main SHP in Austria: owner-occupied detached housing, owner-occupied flats, private rental housing, limited-profit housing and municipal housing. Whereas it is straightforward that they differ with respect to legal status and physicality of the building, an analysis of household data (EU-SILC

data<sup>1</sup>) and data gathered through semi-structures interviews uncover in addition differences with respect to household characteristics and the configuration of involved agents.

The insights gained through the analysis of Austrian SHP serve as input to assess the proposed decarbonisation measures of WP3. This section of the report takes a closer look at the challenges, which come with implementing decarbonisation measures. Here we develop an investor-table, which does not only identify the responsible investors with respect to each SHP, but also discusses the respective conflictual institutional setting of decarbonisation investments. The institutional feasibility of these measures are used as input in WP3 to calibrate the model to develop pathways to decarbonised housing.

The results of WP3 (i.e. pathways to full decarbonisation) and input of WP5, especially with respect to processes of social innovation, are used to address the affordability and inclusiveness of the decarbonisation pathways. Next to a narrow discussion of price effects, we opt to include a broader discussion of housing affordability to put the measures of decarbonisation into a relevant perspective. This section draws on the critical political economy debate of rent theory and recent work on housing in Austria.

To conclude, the developed framework is used to discuss the four Na-Wo Award laureates: *Modellvorhaben KliNaWo* (Feldkirch, Vorarlberg), *Haus of Commons* (Innsbruck, Tyrol), *Sonnengarten Limberg* (Zell am See, Salzburg) and *Bikes and Rails* (Favoriten, Vienna). The Na-Wo Award was initiated in the context of our project (cf. WP6) to include best-practice examples of environmentally and socially sustainable housing innovations. The results should be regarded as a snap-shot of the ongoing intensive science-society interaction, which accompanied this project.

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<sup>1</sup> We would like to thank the employees at Statistik Austria for their cooperation and timely responses to our inquiries concerning EU-SILC data.

## 2 The Concept of Structures of Housing Provision

Michael Ball developed the concept of Structures of Housing Provision (SHP) in the wake of his preoccupation with particular housing forms in Britain. Refreshingly, Ball refutes popular approaches in housing analysis, whose explanations centre on the relationship between tenure types (e.g. owner-occupied, rental) and consumer income, while neglecting the influences and interplay of housing production. In contrast, Ball stresses both the physicality and the social embeddedness of housing, arguing that different perspectives on housing are viable and desirable (cf. Ball 1986a: 156). Ball's take differs from more prevalent approaches by its focus on the processes of housing provision and the involved social (or class) relations<sup>2</sup>.

By means of this approach, Ball (1981) delivers a minute explanation for working-class housing to rent in the 19th century. By elaborating on the differing economic interests of landowners, developers, builders and landlords as well as their historical setting, Ball (1981) avoids a technological deterministic explanation and shows that working-class rental housing is the outcome of specific social relations. Based on his findings with respect to the structure of owner-occupied housing provision in post-World War II Britain, Ball (1985b) formulates a broader housing policy, which could be more effective in meeting housing needs of Britons. At the same time, he avoids the common trade-off between tenure types, i.e. owner-occupied *vis-à-vis* rent.

In later work, Ball (e.g. 2003: 904) adds explicitly the adjective "institutional" to the concept of SHP. His understanding of institutions (and his work on SHP) can be integrated in the conceptual framework laid out by Hodgson (2006). Ball (2003: 904) stresses "the rules and the constraints influencing behavioural relations" between the agents involved in housing provision, whereas for Hodgson (2006: 2) institutions are "systems of established and prevalent social rules that structure social interactions". Moreover, Ball (1986a: 158) states rather clearly that SHP are the historical outcome of dynamic class struggles. As such, it should come as no surprise that SHP are always in the making, contain contradictions and are potentially conflictual (see also Gore and Nicholson 1991: 726). Ball (1986a: 162) identifies especially contradictions between the spheres of consumption, exchange and production as causes for change for SHPs.

Hayward (1986) offers a good example how to deal with such contradictions. In order to shed light on the dynamics of struggle within housing provision the SHP framework is combined with broader considerations of capital accumulation.<sup>3</sup>

"In Australia these relations [i.e. SHPs] involve actors and agencies with frequently (often necessarily) conflicting interests. Foremost amongst these are the speculative capitalist builders, building workers, and landowners involved in the production of housing, and the state agencies, finance institutions, estate agents, solicitors, and existing house owners involved in the exchange of housing. Neither the production nor the distribution of

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<sup>2</sup> Although Ball was probably unaware of it at the time of writing, his suggested approach echoes a major concern of John Kenneth Galbraith, a key figure in Original Institutional Economics. Galbraith (1970) argues that power is an important element, which should be included within economic analysis. Therefore, he coins the term of "producer sovereignty" to acknowledge that "the ultimate accommodation in a significant part of the economy is to the producer. The individual's wants, [...], are ultimately at the behest of the mechanism that supplies them." (Galbraith 1970: 472) Ball, however, stresses rather clear that he does not confine SHP to a production-centred approach. He uses the term "provision" as catch-all term for production, exchange and consumption (e.g. Ball 1985a; Ball and Harloe 1992:6).

<sup>3</sup> Ball and Harloe (1992: 10), it should be pointed out, consider this move a "separate theoretical injection".

housing are geared to satisfy the needs of the housing consumer; they are both structured around the unstable processes involved in the accumulation of capital within the house building industry itself and the rest of the Australian economy.” (Hayward 1986: 213)

Drawing on this, it may be instructive to investigate contestations within the provision of housing with respect to the climate crisis. Current societal negotiations on how to mitigate climate change can be, for example, be interpreted as a critical source of such external pressure. As established patterns of production, distribution and consumption are increasingly called into question, agents within SHPs struggle over adaptations and costs associated with them.

We acknowledge that the “popularity [of Ball’s framework] in housing research”, as Burke and Hulse (2010: 824) have put it, “has waned”. Still, there are several studies applying the SHP framework for empirical analysis. Ball himself, for example, has been interested in the house-building industry in the UK (Ball 1981; 2002 [1983]), conducted comparative studies of European and US housing systems (Ball et al. 1988; 2003), and explored innovation and housebuilding (Ball 1999). The SHP approach was also employed for several studies investigating housing in Australia. Subjects included private rental housing in Brisbane (Seelig 2001), a comparison of housing policies in Australia and the Netherlands with regard to affordability (Milligan 2003), and the impact of the Global Financial Crisis on the provision of housing in Australia (Burke and Hulse 2010).

For our purpose at hand, the SHP concept proves to be a well-fitting approach. Austria envelops a quite diverse environment, which should be considered with respect to an analysis of residential real estate. First, there are topographical differences mainly caused by the Alps and the Danube. Especially in the western parts of Austria land available for building is restricted due to the Alps. In turn, the larger metropolitan areas can be found in eastern Austria, especially along rivers such as the Danube. Second, Austria is a federal state and consists of nine autonomous provinces (*Bundesländer*). Housing and construction legislation has been, in part, devolved to provincial governments, resulting in a variety of regulative settings. Third, population density and demography within Austria vary substantially. Whereas Vienna represents the largest urban area with a population of almost two million people – more than a fifth of the total population<sup>4</sup> – almost 40% of households live in thinly populated, rural areas. Fourth, the physicality of housing buildings ranges from detached single-family houses to multi-storeyed houses. Fifth, limited-profit housing associations (LPHAs) and public housing cover a substantial share of Austria’s housing needs. The SHP approach allows us to consider this diversity within an institutionalist framework.

A Structure of Housing Provision is a specific constellation of social relations between social agents, which produces, exchanges, distributes and uses a built environment (cf. Ball 1985a: 504; 1986a: 147; 2003: 904; Ball and Harloe 1992: 3). SHP are located in a specific historical context and are subject to change (Ball 1986b: 448). Tenures do not define SHP, although they are definitely part of them. Different SHP coexist and are subject to interdependencies. In fact, a SHP is always in the making and can only be altered moderately. There is always the possibility that a SHP’s coherence is destroyed in the wake of processes of change.

Ball’s initial approach has also been subject to critique – most notably by Kemeny (1987). In a reply, Ball seemed rather anxious to present the core framework of the SHP approach as a neutral tool which can be and needs to be employed flexible in conjunction with various actual

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<sup>4</sup> The second largest city Graz lies already well behind that with less than 300.000 inhabitants.

theories on housing and the built environment (see Ball and Harloe 1992). Nevertheless, despite its claimed flexibility and lack of theory, there are several key assumptions inherently present within the SHP framework:

- (i) In housing-related issues, the spheres of production, exchange and consumption are inherently linked (Ball and Harloe 1992: 4)
- (ii) Housing provision is a physical as well as social process (Ball and Harloe 1992: 3)
- (iii) The SHP approach gives centrality to social relations of building provision and their historical dynamic and specificity. (Ball 1986b: 448, 462)
- (iv) Housing provision is continual subject to change (Ball and Harloe 1992: 4; Ball 1998:1514).

Considering these four points, Ball's SHP approach seems to complement original institutional economics, not least since the latter has a "strong impetus to specific and historically located approaches to analysis" Hodgson (1998: 168).

Possibly relevant agents identified by Ball (1981; 1985a) are landowners, developers, builders, landlords, exchange professionals, owner occupiers, tenants and financiers. Significant interaction within a specific SHP is the main criteria to be included as an agent. This interaction results in housing provision. Ball is, however, not consistent with respect to the concept of provision. It is clear that provision envelopes different functions. Whereas Ball (1981) identifies production, exchange, distribution and use as main functions, Ball (1985a) and Ball and Harloe (1992) drop the distribution function. Later Ball (2003) uses housing development synonymous to housing provision and identifies residential land development, housing production, and house marketing and sales as prime functions. For the purpose of this paper, we built on Ball and Harloe (1992) and regard production, distribution and consumption as prime SHP functions. We decided to replace exchange by distribution, since the former is too narrow to link production to consumption. Distribution can be organised through exchange, but is not limited to it. In what follows, we take a closer look at these functions.

## 2.1 Production

The physical production of housing requires a variety of inputs. One of them is land, since every building is grounded. However, not every house is constructed on previously unbuilt land. Therefore, it seems appropriate to consider also existing built environments as a second defining input factor.

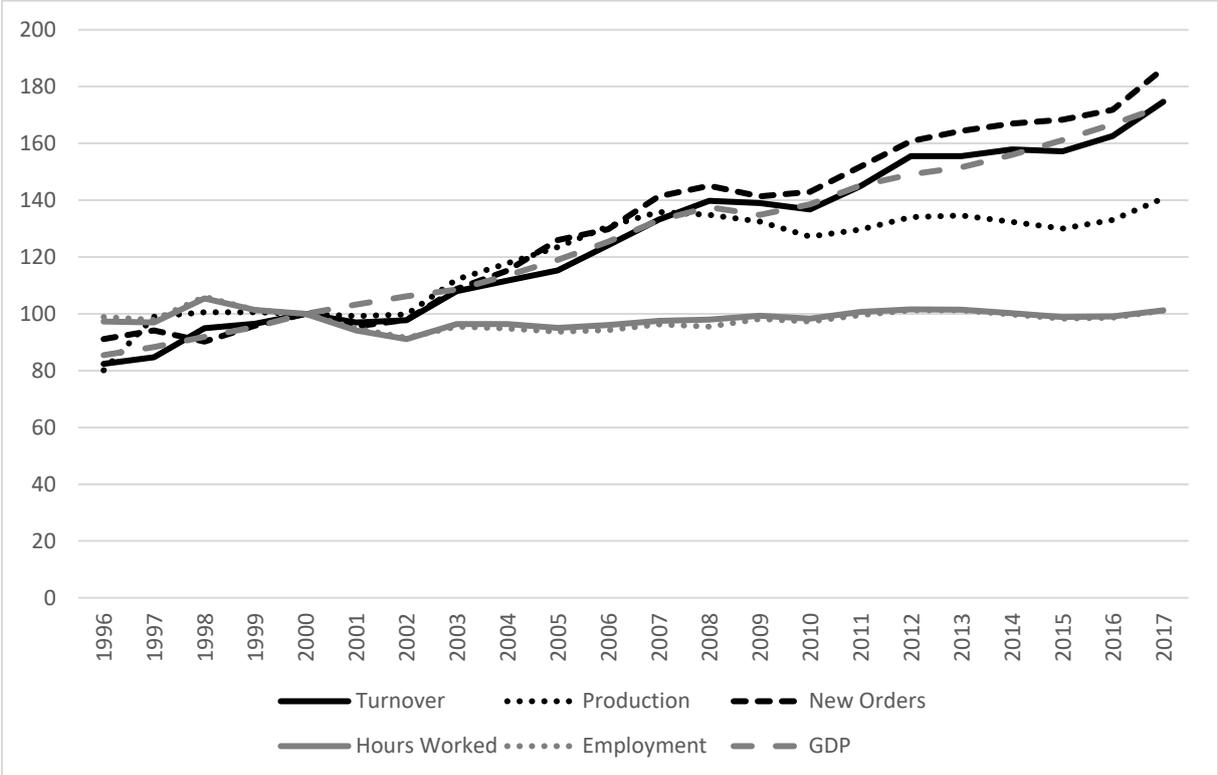
Dubois and Gadde (2002: 622-623) show that building materials are highly standardised, which is due to the complexity of construction. As a result they describe "the coupling between the production of building materials and what is done on site" (Dubois and Gadde 2002: 625) as loose, i.e. the interdependence between both components is low. Therefore, it is safe to focus only on land and built environments as defining inputs of housing units. The academic debate reflects this importance of land as housing input and stresses the role of landowners for the building process (e.g. Ball 1985a; Harvey 1974; Haila 1990; Ward and Aalbers 2016). Ball (2003: 908) regards the land market and therefore land development riskier and more capital-intensive as housebuilding. To cope with this risk and higher capital demands, developing firms are bigger than building firms.

The construction industry generally consists of small, flexible building firms, which use a labour-intensive production technique (Ball 2003: 897-898). Other peculiarities of the construction industry are low rates of innovation and automatization, which directly translate in low productivity (e.g. Fernández-Solís 2008; Pan et al. 2007; Winch 2003). As a result, there exist little scope for economies of scales and barriers to enter are low. Adding to the relative

low productivity of the construction industry, is the ratio of new housing to its existing stock. Since housing is a durable good this ratio is small. Consequently, new production (i.e. the construction industry) accommodates changes in housing demand only marginally. During boom phases, supply is rather slow to react and housing prices rise fast. According to Ball (2003: 898), this explains the cyclicity of housing construction.

Ball’s general assessment of the construction industry holds also for Austria. Figure 1 displays the indicators of the Austrian construction industry and their development since the mid-1990s. During the last two decades both the turnover as well as the index for new work orders doubled. However, there are distinct phases of stagnation: One around the end of the 1990s and another in the immediate aftermath of the financial crisis of 2008. This development is in line with overall GDP growth of Austria’s economy.

Statistik Austria (2018e) also provides an index for actual production that is corrected for inflation. Until 2008 this production index developed similarly to turnover, work orders and GDP. Since then, however, actual production in the construction sector seems to be stagnating (cf. Figure 1). Subsequently, real economic growth of the construction industry was consistently negative from 2008 to 2015 (Statistik Austria 2018e).



**Figure 1 Key indices of the construction industry (2000 = 100, Statistik Austria 2018e)**

Despite growth in revenue and – to a lesser degree – in production since 1995, hours worked remain largely stable over the years. A close correspondence between hours worked and the number persons employed can be identified. In the year 2008, there is, however, a clear divergence: while hours worked increased, the number of persons employed was slightly falling. This can most likely be ascribed to the financial crisis.

In absolute number, the construction industry employs about almost three hundred thousand persons (287.944 in 2015). These figures do not include contractual or temporary workers (*LeiharbeiterInnen*). The year 2011 saw – in total – 81.000 contractual workers employed in

Austria. Second only to manufacturing, the construction industry employs the largest share of these contractual workers with about 18%. It should be noted that this form of atypical employment is especially sensitive to fluctuations in the business cycle (Statistik Austria 2012: 57-58).

In addition to these aggregate data, we employ firm-level data from the ORBIS database to draw a more complete picture of both the building construction and the real estate sector<sup>5</sup>. This allows us to measure market concentration using revenue and ownership data of individual firms. For 2015 we find that both sectors are relatively un-concentrated. For the sector construction of buildings the three largest enterprise groups control a combined market share of 37% (C3-ratio), the ten largest groups control 49% (C10-ratio), and another commonly employed tool to measure concentration, the HHI, indicates a relatively competitive sector with a value of 839.<sup>6</sup>

Despite these low concentration figures, it should be kept in mind that there are still vast differences in terms of firm size and respective market shares. While numerous small and medium-sized enterprises operate in the construction sector, there are about twenty companies with revenues above the €100-million mark, for example subsidiaries associated with both the Habau Group and the Strabag, as well as the Buwog AG and the Porr AG. The latter is the largest company in the sector with sales amounting to more than 3 billion euro in 2015. Foreign capital plays an insignificant role in the construction sector – only about 5% of revenue is generated by firms owned by foreign corporations. A notable exception is the Buwog AG which is owned by Vonovia SE, one of the largest German real-estate enterprises. Quite in contrast, the case of GESIBA is of interest. As one of the larger players in the sector with a revenue of about €200 million in 2015, GESIBA is owned by the City of Vienna.

As argued by Winch (2003) the construction process should be regarded as a complex system. In a similar vein Dubois and Gadde (2002: 622-624) show that complexity in construction is due to two main characteristics of this industry. First, the construction process has to deal with different forms of uncertainty. Since each housing unit is unique, its construction process is also a unique project of different agents. Second, within a construction project a high level of operational interdependence is at hand. Whereas Dubois and Gadde (2002: 624-626) regard the construction industry as a loosely coupled system, they acknowledge that within a specific construction project a tight coupling between the involved agents is necessary. Within construction projects the activities of different agents are highly dependent on each other. Ball (2003) makes a similar observation. He stresses the importance of subcontracting for the production process to deal with problems of asymmetric information. This leads to standardisation and allows for flexibility (incl. labour flexibility), reduces management costs (cf. specialisation) and risk inherent to buildings cycles.

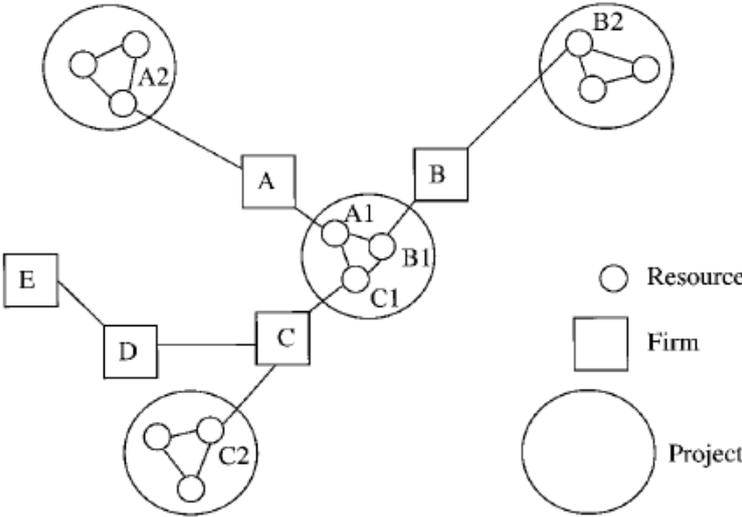
The work of Dubois and Gadde (2002) offers great insights with respect to inter- and intra-firm relations (Figure 2). Whereas they argue that inter-firm relations within a specific construction project are tight, other inter-firm and even intra-firm relations tend to be loosely coupled. Since

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<sup>5</sup> Specifically, we analyse companies that are classified as one of the following two NACE Rev. 2 categories: either the *construction of buildings* (41) or *real estate* activities (68). Of course, this approach is subject to limitations. Especially larger firms in our sample are active in a variety of areas and cannot be neatly restricted to one NACE category. The results must be treated with caution.

<sup>6</sup> The HHI (Herfindahl–Hirschman Index) is defined as the sum of the squared market shares of all independent companies within a given market. Hence, the HHI can range from 0 to 10,000. The US Justice Department (2018), for example, considers a market to be “moderately concentrated”, when the HHI is between 1,500 and 2,500 and “highly concentrated” when the HHI is above 2,500.

activities within a specific construction project are intertwined and interdependent, construction firms reduce risk by introducing internal and external organisational buffers. These buffers should absorb negative effects (e.g. delays), which would otherwise influence other construction projects.



**Figure 2: Stylised representation of the construction industry (Dubois and Gadde 2002: 625)**

In addition, production processes are influenced by regulatory frameworks. The input of building plots is subject to spatial planning and regional development policies. Within more densely populated areas urbanisation policies such as densification, i.e. the increase of buildings within a given urban space, and intensification, i.e. the increase of housing units per building. This can for example be attained by including concrete stipulations in building permits or in procurement and tendering procedures. Building regulations are another measure to administer construction. Building regulations are also the administrative instrument to establish standards with respect to energy efficiency and energy systems, which is with respect to the overall aim of our project highly relevant.

Object-based subsidies are another major element to regulate construction. Especially in Austria, these remain relevant as supply-side (i.e. object-based) subsidies, which target the production or refurbishment of residential real estate, account for the majority of granted housing subsidies. This reliance on object-based subsidies stands in contrast to the majority of OECD countries. While there exists mixed and ambivalent empirical evidence on the effects of object-based subsidies (Galster 1997; Yates and Whitehead 1998; Yates 2012), it seems clear that they have generally run out of favour in many countries due to changes in economic conditions, policy objectives and ideology (Yates & Wulff 2000: 45; Yates 2012: 399). It should be noted that Austrian policy is not completely impervious to these trends. As explained in WP5 this resulted due to institutional stickiness, however, in a shift of object-based subsidies towards private property.

**2.2 Distribution**

The distribution of housing is highly complex, non-standardised and involves a multitude of agents. Within the context of this report, distribution includes all processes, which link the physical infrastructure to consumers. Next to market exchanges, this also includes administrative procedures of public housing and limited-profit housing associations (LPHAs) to allocate their housing units.

Similar to Theurillat et al. (2013) and Heeg (2013) we distinguish between four different private settings, which have different implications for the distribution process. First, the construction of housing is promoted by private households, which function after production as owner-occupiers. For this group there is usually no distribution phase, as these households build for their personal use. Nonetheless, if household configurations change (e.g. children, old age, breakup) or due to foreclosure, these housing units could enter the distribution phase. Second, private companies construct housing units to sell them with profit. This business model is based on creating exchange value and cashing in on a one-time transaction. For this group of agents distribution is necessary as they produce for an anonymous market. This being said, they need to possess tacit knowledge about this market to be successful. Third, some agents regard housing units as a way to invest financial capital. They invest in housing units with the purpose of generating profit through a combination of renting out these housing units, which generates a constant cash flow, and speculating on the increasing market value of residential real estate. The distribution channel has a double function to this group. On the one hand, they have to acquire housing units, which they can subsequently let or resell. On the other hand, they also supply and distribute these housing units. With respect to the distribution of housing units they act both on the supply as well as on the demand side. Fourth, another group of financial agents are engaged in residential real estate by means of portfolio investments. In contrast to the other agents, these financial investors do have little to no interest in the physical infrastructure of housing, but they trade with property rights. The corresponding business model is based on generating profits by speculating on the value of these property rights. Whereas financial capital invested in residential real estate becomes spatially fixed and temporally bound, the distribution channel of these agents is based on financial instruments, which enable to overcome this temporal-spatial-fix (Gotham 2012; Harvey 1978: 122-124). As a result, of these financial instruments a link between local real estate markets and global financial capital is created (Crump et al. 2008: 746-750; Aalbers 2009; Dymski 2009; Martin 2011).

In addition to these four different groups of actors, it is necessary to include real estate agents. With respect to distribution processes they occupy a pivotal position as they are well informed about the local conditions of real estate markets. Since these markets are highly complex, this information can be turned into money. Evans (2004: 47-76) and Galster (1996: 1797-1799) offer a thorough discussion of this market complexity by showing that housing markets do not correspond to the common definition of a competitive market. Therefore, real estate agents' competitive advantage is based on information asymmetry (e.g. Levitt and Syverson 2008). The services they offer are catered to the specific needs of the second and third types of actors as well as those of customers.

Using the same approach of concentration indices, we find that the real estate sector appears to be even less concentrated ( $C3 = 24\%$ ,  $C10 = 45\%$  and  $HHI = 316$ ) than the construction industry. There are about two dozen entities which generate revenues above €100 million. However, in contrast to building construction, both the role of foreign capital as well as the role of the state are more pronounced. On the one hand, an estimated 17% of total revenue is generated by firms controlled by foreign companies. On the other hand, the Austrian state is the largest player by revenue due to having the majority interest in entities such as the Bundesimmobiliengesellschaft. Regarding the ownership structures another aspect is quite striking: Among the largest entities there is also a comparatively high number of private foundations, for example the Familie Benko Privatstiftung, Karl Wlaschek Privatstiftung and the Lugner-Söhne-Privatstiftung.

## 2.3 Consumption

One of the main challenges analysing residential real estate relates to the special features of housing (Weichhart 1987: 6-9; Galster 1996: 1797-1798). Residential real estate cannot be regarded as a common product. First, it is not possible to refrain from its consumption nor can it be substituted by another commodity, since it fulfils the basic human need for shelter. Second, the consumption of housing is also linked to important social and cultural functions. It offers not only a place for individual socialisation, but also represents social and economic standing. Third, since the location of residential real estate is immobile, each object is unique. Fourth, residential real estate is extremely heterogeneous due to internal as well as external properties (e.g. size, facilities, construction year, public infrastructure, and neighbourhood characteristics). Fifth, since residential real estate is durable and consumption is continuous, only a small fraction of the existing stock is available on housing markets.

The heterogeneity of residential real estate implies that one should speak of housing markets instead of a housing market. This inevitably leads to the question how these submarkets can be defined. Galster (1996: 1799-1780) argues that there are three possible classification approaches. First, housing sub-markets could be defined according to spatial characteristics. Second, the definition of sub-markets could be based on a bundle of housing unit characteristics. Third, the perception of consumers regarding housing units can be utilised to differentiate residential real estate.

In addition to housing heterogeneity, i.e. housing submarkets, it is necessary to discuss the definition of "consumption". It should be clear from the previous subsection that not every agent who buys housing units can be regarded as a consumer. Since agents, which regard residential real estate as a financial investment, are regarded as part of the distribution function, consumers are defined as those agents who withdraw a housing unit from a sub-market. In this regard, consumers are mainly owner-occupiers (principal residence, second home, etc.) or renter households. They have as main objective the satisfaction of their basic need for shelter.

### 3 The Regulatory Context

The concept of SHP clearly focusses on interaction between multiple agents, which in combination perform production, distribution and consumption of housing, i.e. they provide housing. Since this interaction is socially embedded in a specific spatial and temporal setting, it is irremissible to analyse the context of housing in Austria from a variety of perspectives. Based on this analysis we identify five distinct structures or institutional settings (cf. next section), which provide housing for around 90% of Austrian households, viz. (1) the setting for owner-occupied detached and semi-detached homes, (2) the setting for owner-occupied flats, (3) the limited-profit housing setting, (4) municipality housing setting and (5) the private rental setting. This section discusses constitutive regulatory elements of housing provision in Austria.

In general, Austria's housing policy still rest on a political consensus that housing should not be subject to the uncertainties of the market (Reinprecht 2014). This stance is mirrored by comprehensive regulations and a far-reaching policy regime targeting various segments of the population – from low income groups to the middle class. Interestingly, subsidies in this context primarily aim at the supply-side and hence in effect the *construction sector* (Amann et al. 2009:14; Lawson 2014:136).

#### 3.1 Housing Promotion (*Wohnbauförderung*)

The object-based promotion of residential buildings has a long tradition in Austria. Whereas elements can be traced back to the 19th century and the inter-war years, large-scale promotion of housing took off after the Second World War. In 1948 the housing and settlement fund (*Wohnhaus- und Siedlungsfonds*) created a broad financial basis, which was further secured by the housing promotion contribution (1952 – *Wohnbauförderungsbeitrag*) and the housing contribution (1954 – *Wohnbaubeiträge*). Moreover, the federal government opted for a two-tier approach. On the one hand, it provided municipalities and limited-profit housing associations with subsidies to construct rental housing. On the other hand, it financially supported owner-occupiers to refurbish or construct privately owned housing. In either case, subsidies took the form of long-term, low-interest loans. The generated return flows (i.e. loan repayments) created a sustainable financial basis (Kunnert and Baumgartner 2012: 88-93; Wurm 2003; Streimelweger 2010).

This two-tier approach was rather effective and explains the current balance between the two broad types of tenure: ownership and rent. About half of the population owns housing property - either in the form of a (semi-)detached house or a flat – and the other half rents. As can be seen in Figure 3, these figures have remained largely stable in the last decades. However, after the global financial crisis the number of households living in owner-occupied houses has begun to stagnate (in absolute terms), while rental agreements are still increasing unhampered.

Whereas in the beginning the federal government assumed the lead role in housing promotion and the provinces (*Bundesländer*) created complementary housing funds, the former increasingly delegated competences towards the latter. One milestone in this gradual process occurred in 1985, when the nine provinces became authorised to manage housing promotion. Another (and final stage) was implemented in the new millennium. Until 2008 the federal government earmarked a share of its financial transfers for housing promotion. Since 2009 the provinces determine independently of the federal government the volume of housing promotion. With respect to the form of housing promotion it should be noted that especially in the 1990s there was a significant increase of annuity payments at the cost of loans.

Streimelweger (2010) argues that this gradual retreat of the federal government is part of a structural shift in housing policy, which could jeopardise financial sustainability.

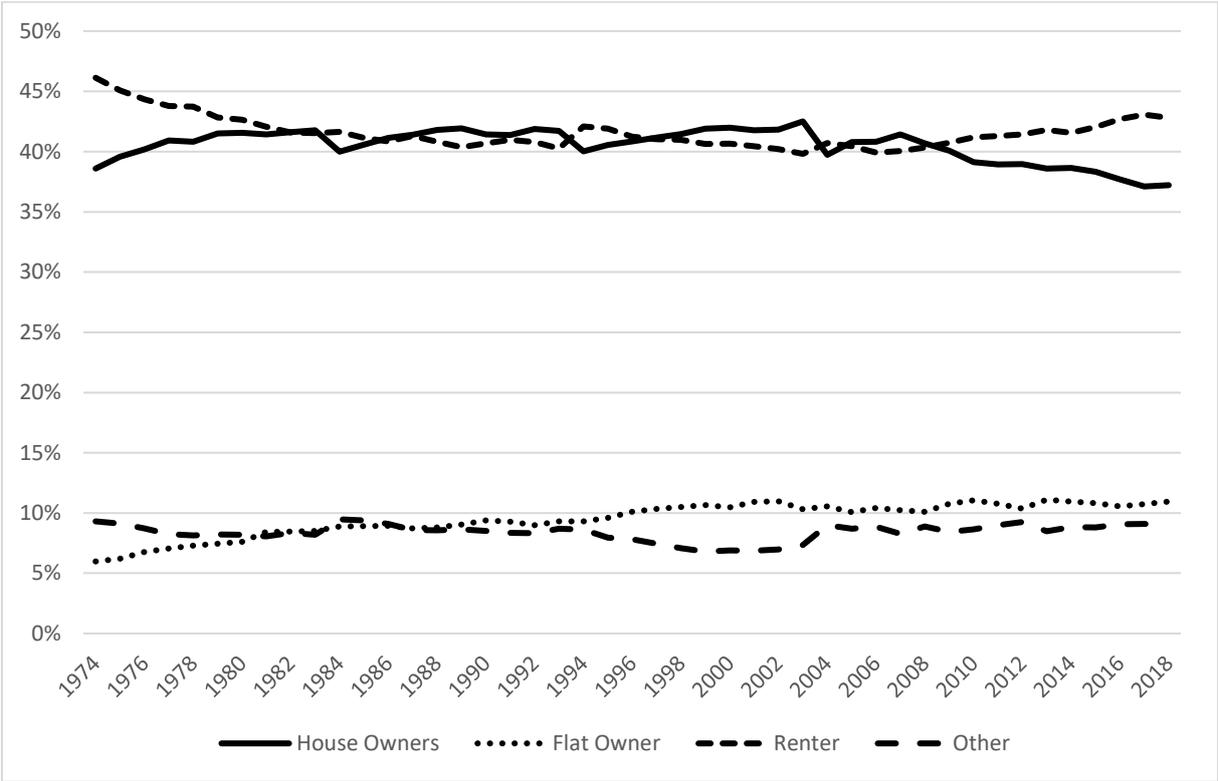


Figure 3 Distribution of Tenure (Statistik Austria 2020b,c)

Without going into details concerning neither the financial basis nor the structural composition, Figure 4 shows that housing promotion in Austria fluctuated between 2,5 and 3 billion Euro during the 2006-2015 period. Only in 2005, 2016 and 2017 it was slightly below 2,5 billion Euro. Whereas until 2008 the federal government annually earmarked 1,8 billion Euro, the end of this policy did not coincide with a major drop in housing promotion. Nonetheless considering that construction costs for housing increased in the same period by almost 50% (Statistik Austria 2018e), it is safe to say that in real terms housing promotion decreased.

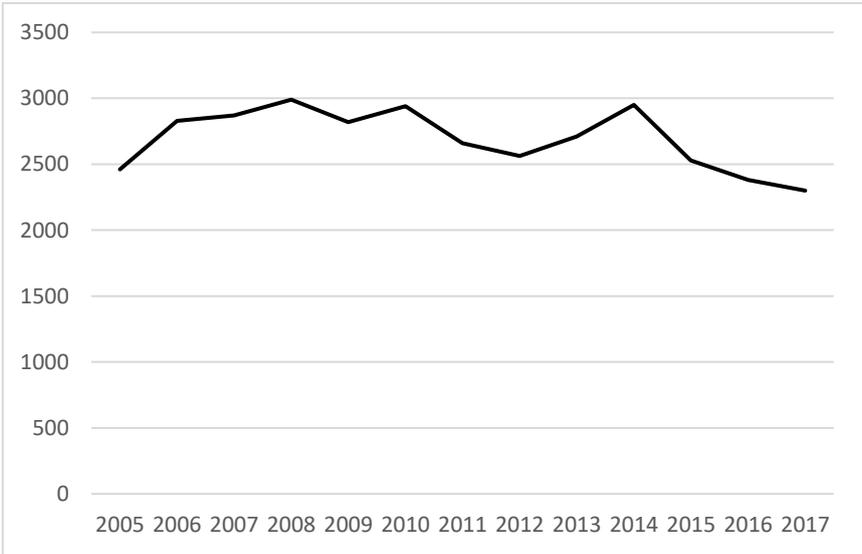
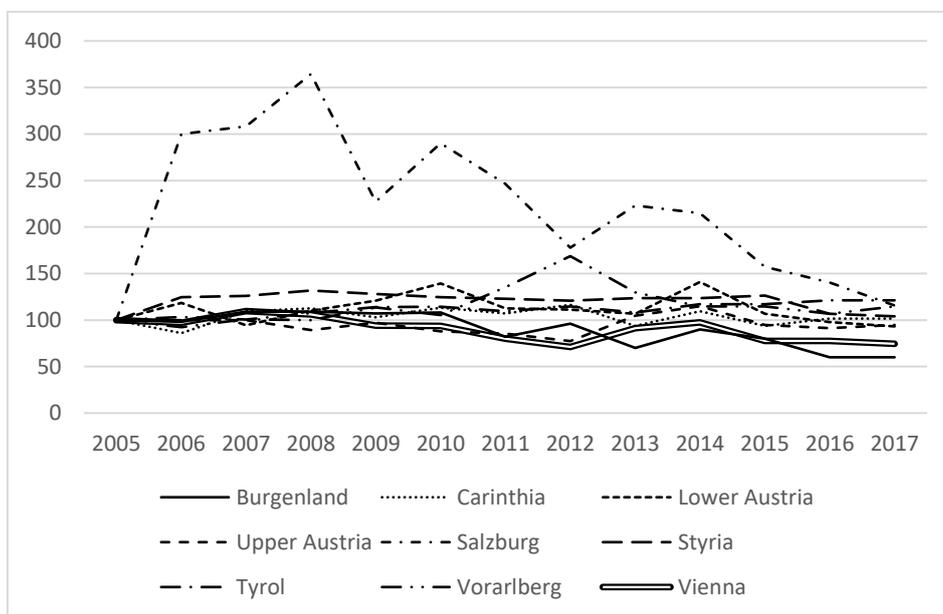


Figure 4 Housing Promotion in million Euro, nominal (IIBW multiple publications)

Since housing promotion is now a competency of the provinces, a regional level perspective should be considered. Figure 5 displays the diverse developments since 2005. Three broad groups can be classified. First, Vorarlberg, Tyrol and Salzburg<sup>7</sup> are three provinces, which managed to increase their spending on housing promotion. Second, Carinthia, Styria, Upper- and Lower-Austria more or less stabilised their spending on housing promotion. Third, Vienna and Burgenland display a clear decrease.



**Figure 5 Housing Promotion Indices (2005 = 100, nominal, IIBW multiple publications)**

In addition to establishing two institutional structures based on tenure type, housing promotion was and still is constituent for LPHAs and to a lesser extend municipal housing. In the following step we take a closer look at their institutional settings.

### 3.2 Limited-Profit Housing Act of 1979 (*Wohnungsgemeinnützigkeitsgesetz*)

The roots of limited-profit housing associations (LPHAs) date back to the second half of the 19th century, when a variety of organised efforts mitigated abysmal housing situations (GBV 2016: 32-33). The legal foundations for modern-day LPHAs were laid in 1908 with the set-up of a fund for housing issues (Lugger 1994: 26). Due to poor endowment, these initial attempts remained largely ineffective (Bonczak 1947 as cited in Lugger 1994: 26). By 1910 the funding improved significantly due to the Housing Welfare Act of 1910 (*Wohnungsfürsorgefondgesetz*). Consequently a number LPHAs were founded and buildings projects realized (Lugger 1994: 27-28; Lévy-Vroelant et al. 2014: 280). These initial successes were, however, short-lived due to the calamities of the First World War, the Great Depression, Austro-Fascism and the Second World War. Under national-socialist rule, the Limited-Profit Housing Act (*Wohnungsgemeinnützigkeitsgesetz*) was introduced. This new legislation facilitated political interference by the regime (Lugger 1994: 47). In 1945, this law became subject to denazification and in 1979 replaced by the new Limited-Profit Housing Act (Lugger 1994: 53;

<sup>7</sup> The development of the housing promotion budget of Salzburg is peculiar, because Salzburg introduced in 2006 a new funding system (*Wohnbaufonds*). The cost of establishing this fund is also included in the data (IIBW 2007). Moreover, in the wake of a financial scandal concerning this fund, a new housing promoting system was introduced in 2015 (Amann and Mundt 2017).

GBV 2016: 26-27). The previously mentioned *Wohnbauförderungsbeitrages* (1952) was pivotal to secure the financial means, which subsidised LPHAs.

In 1945, housing policy was confronted with large numbers of refugees, displaced persons as well as wartime damage. Yet this time was also characterized by emergence of the Austrian corporatist welfare regime as the political compromise between conservative and social democratic parties (Katzenstein 1984: 73; Lévy-Vroelant et al. 2014:284). The historical and institutional setting of the immediate post-war years saw a surge in formations of new LPHAs. Intertwined with the party system and representing different ideologies, their immediate objective, however, was the same: reconstruction (GBV 2016:34; Lugger 1994: 59-61).

Beginning in the mid-1950s, the number of LPHAs started to decline. Many LPHAs disbanded after they saw their initial purpose fulfilled (GBV 2016: 34; Lugger 1994: 61). Others merged due to efficiency considerations, i.e. economies of scale, which led to a significant concentration (GBV 2016: 34-35). With the beginning of the 1970s, the immediate aim of mitigating the wartime damages and housing shortages by providing new housing space was accomplished, hence the objectives shifted: The improvement of housing conditions was given priority. Average living area increased and modern bathrooms and heating systems became commonplace. Activities were increasingly directed at the middle class. Consequently, rents rose and the share of dwellings built for owner-occupancy increased (GBV 2016: 43-44; Lévy-Vroelant 2014: 286).

By the 1990s, the situation shifted again: Demographic trends and a refugee influx due to the breakup of Yugoslavia and the subsequent war led to higher housing demand. Construction was encouraged and owner-occupancy lost in importance, while there was a “renaissance of rent” (GBV 2016: 44; Amann and Mundt 2005: 13). Simultaneously, rental contracts with purchasing option were introduced, i.e. *Mietkauf*. Geographically, construction of new housing saw a shift from large cities to less-densely populated areas (GBV 2016: 44-45).

The 2000s saw the advent of a right-wing federal government whose reforms undermined the privileged status of LPHAs and reevaluated the role of private for-profit agents in the housing sector (Reinprecht 2014: 64). The most prominent case concerned the privatisation of three large LPHAs owned by the federal state. 62.000 home units changed ownership. Mundt (2008: 342) explains this policy with respect to LPHAs as on the one hand a desire for reducing public debt and on the other hand a fundamental shift in the understanding of the role of the state. This new role did apparently not include the provision of housing in the previous form and extent. Apart from the privatisations themselves, their implementation was heavily criticised and there are still legal repercussions.

The amended Limited-Profit Housing Act of 1979 (*Wohnungsgemeinnützigkeitsgesetz, WGG*) constitutes the current legal foundation for the limited-profit housing sector. Compared to other countries, LPHAs are regulated very tightly in their activities. Regulated core aspects are (see among others Mundt and Amann 2010: 38; Blaas and Brezina 1994: 148-149; Lawson 2014: 137; Orbán 1992: 553; WGG):

- (i) LPHAs’ main tasks are specified as (a) the construction of new homes, (b) the management their existing building stock<sup>8</sup> and (c) refurbishment<sup>9</sup>. This even extents

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<sup>8</sup> As Mundt and Amann (2010: 38) emphasize, it can be quite beneficial if the construction company also serves as the long-term manager of the housing asset.

<sup>9</sup> A legislative amendment in 1985 clarified that new constructions and refurbishment are of equal importance (Orbán 1992: 553).

to an obligation to build. Other business operations not specified in the WGG may need the explicit approval of the regional government.

- (ii) LPHAs have to remain independent from members of the construction sector and other related companies.
- (iii) Type and quality of constructed homes are specified. Size, for example, is restricted (up to a maximum of 150 m<sup>2</sup>). In addition accessibility and environmental standards have to be met.
- (iv) Price setting operates under a cost-covering principle. This regulation allows some profit that can be used for reinvestment, however, in general neither overcharging nor undercharging is permitted. Rents and purchase prices for homes are, consequently, partly shield off from market mechanism.
- (v) Profit distribution and capital commitment are strictly regulated: Pay-outs to shareholders are capped<sup>10</sup> and LPHAs are obligated to continuously reinvest their capital.
- (vi) LPHAs are only allowed to sell or rent dwellings to eligible individuals or households. Varying in heights across regions, income ceilings apply. However, in general these upper limits are extremely generous, excluding only 10 to 20 percent of the population. On the other side, down payments may apply, hindering the access for lower income groups<sup>11</sup>.
- (vii) LPHAs have to grant renters a permanent right of residence. This implies that the previously mentioned income ceiling is only checked at the start of the rental contract. Any later increase in income does not affect the rent relation.
- (viii) For a period of ten years individuals who have purchased a LPHA housing unit are restricted in their right to resell. These restrictions include a pre-emption right (*Vorkaufsrecht*) for LPHAs and limitations on the price-setting.
- (ix) LPHAs are subject to internal supervision by the GBV as well as to annual external audits by the regional governments. If misconduct is revealed, they may face sanctions such the reclamation of subsidies or the revoking of their status as LPHA.

In return to this strict regulation, LPHAs receive beneficial tax treatment. Among others corporate income tax and value added tax do not apply to their main activities (Blaas and Brezina 1994: 149-150; Lawson 2014: 138). In addition, the allocation of supply-side subsidies for new construction (*Wohnbauförderung*) favours LPHAs (Blaas and Brezina 1994: 149).

### 3.3 Tenancy Law (*Mietrechtsgesetz*)

The Tenancy Law, which entered into force in 1982, is an amendment to the Civil Law Code. Whereas tenancy regulations by the latter are non-binding, the Tenancy Law is binding when applicable. Since the Limited-Profit Housing Act has already been discussed, this housing type is not further discussed here. The main pillars of the Tenancy Law are the regulation of time limits, the protection against dismissal and the regulation of rents. Nonetheless, it should be noted that the Tenancy Law does not cover all rental agreements (AK 2010; Mieterschutzverband 2012; Kunnert and Baumgartner 2012: 58-60).

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<sup>10</sup> While this restriction ensures the continuous reinvestment of capital, it is also disincentives investments by the private sector (Blaas and Brezina 1994: 150).

<sup>11</sup> Lawson and Nieboer (2009: 8) state with respect to allocation that “[a]ccess to subsidised rental housing is increasingly conditional upon the (loan) contribution made, calculated as a flat rate per sqm, which is partly returned via the provision of affordable housing and partly considered a contribution to the overall subsidy system. Those household[s] without sufficient capital or unable to access commercial loans can apply for a public loan at zero interest rates, in order [to] contribute.”

The Tenancy Law defines three scopes of application (cf. Table 1): full-application, partial-application and non-application. Rental agreements for which the Tenancy Law does not apply are not subject to legal regulations with respect to rent level or to dismissal. Housing units, which are exempt from Tenancy Law regulation are for example one and two family houses with a rental agreement signed after 2001, asylums, secondary residences and holiday homes. The Tenancy Law is partially applicable for buildings with a building licence dated after 30 June 1953 and which were constructed without subsidies according to the 1968 Housing Promotion Law, condominiums in buildings with a building licence dated after 9 May 1945. In addition, attic-extensions (*Dachbodenausbauten*) with a building licence after 2001 and annexes (*Zubauten*) licenced since 1 October 2006 are also partially subject to the Tenancy Law. With respect to these housing types the Tenancy Law regulates time limits and the termination of rental agreements. Rental objects, which are fully regulated by the Tenancy Law, include old buildings licenced before 1 July 1953, condominiums in buildings licences dated until 9 May 1945 and subsidised buildings according to the 1968 Housing Promotion Law. Besides time limits and the termination of rental agreements the Tenancy Law in these cases also regulates rent levels (AK 2010: 22-28; Mieterschutzverband 2012; Kunnert and Baumgartner 2012: 58-60).

Housing Type	Rent Levels	Time Limits	Determination
Buildings licenced before 1-7-1953	V	V	V
Condominiums in buildings licenced before 10-5-1945	V	V	V
Promoted buildings (1968 Housing Promotion Law)	V	V	V
Buildings licenced since 1-7-1953	X	V	V
Condominiums in buildings licenced since 10-5-1945	X	V	V
Attic extensions licenced since 2002	X	V	V
Annexes licenced since 1-10-2006	X	V	V
Others (e.g. one and two family houses with a rental agreement signed after 2001, asylums, secondary residences and holiday homes)	X	X	X

Table 1: The applicability of the Tenancy Law – 1982

### 3.4 Residential Property Act (*Wohnungseigentumsgesetz – WEG 2002*)

The Residential Property Act is another important regulation, which should be considered with regard to multi-storey residential real estate. This act governs the relationships between the ownership of a housing unit and the ownership of the respective building in which this housing unit is located. It stipulates the rights and duties of owners and regulates the relations amongst the different owners and against the administrator of the building (*Hausverwaltung*). This includes the duties regarding the administration of the property (§28 WEG 2002), and regulations concerning useful improvements (§29 WEG 2002).

The Residential Property Act also includes specific regulations for LPHAs. In the case of an ownership transfer of LPHAs to private households it includes a clause for price determination (§13 WGG) and a non-speculation period of 10 years (§15g WGG). In addition, state legislation concerning Housing Promotion (*Wohnbauförderung*) may be applicable as in the case of Vienna, includes a specification of who is entitled (§11 and §29 WWFSG) and how ownership titles can be created (§77 WWFSG).

Furthermore, concerning the transfer of ownership tax regulations have to be taken into account. This includes the real estate tax (*Grundsteuer*), the real estate transfer tax (*Grunderwerbsteuer*) and various fees, like the land registry fee (Schneider and Wagner 2015: 49f). The real estate transfer tax is 3,5% for paid transfers, and 0,5-3,5% (progressive tax) for free transfers (incl. donations and inheritance). In addition, a real estate profit tax (*Immobilienvertragssteuer*) of 30% on net profits may be applicable when selling a property, if the property was not the main residence for at least two years (5 years for inheritances).

## 4 SHP in Austria

Based on the previous analysis of housing literature, secondary data and legal documents, we developed as working hypothesis that from an institutionalist perspective five distinct SHP can be identified: (1) owner-occupied detached housing, (2) owner-occupied flats, (3) private rental housing, (4) limited-profit rental housing, and (5) municipal housing. This working hypothesis was subsequently tested and confirmed by our qualitative analysis.<sup>12</sup> We complemented the initial conceptualisation of these SHP with qualitative data, which were generated by semi-structured interviews, i.e. guided interviews. In what follows we offer a detailed discussion of these five SHP. We start, however, with an analysis of households living in these SHP. This further supports our claim that the identified SHP do not only differ with respect to production and distribution, but that they are accompanied by a socio-economic differentiation of households.

### 4.1 Socio-Economic Household Analysis

For the analysis of households according to their respective SHP we use the Austrian EU-SILC<sup>13</sup> dataset for the year 2016, which was kindly provided by Statistik Austria. In the case of these data *nomen est omen*, i.e. it provides a vast amount of data with respect to income and living conditions of 6000 Austrian households. For the purpose at hand, we focus on total disposable household income and look for significant differences with respect to location (both on province levels and the degree of urbanisation), and to their legal relationship to their housing unit. Since the data set provides weights, we use weighted averages and weighted median data. The used formulas and detailed data are provided in Appendix B. Here we summarise our main findings.

Around half of Austrian households live in buildings with one or two housing units. It comes as no surprise that in densely populated areas (e.g. Vienna) slightly over 10% of households live in such buildings, whereas in less densely populated areas it is the main form of housing stock (e.g. Lower Austria 73,90%, Upper Austria 62,18% and Styria 58,27%). Almost all of these buildings are non-detached houses (2.632 of the 6.000 households sample), whereas only 403 semi-detached houses were reported. Only in Vienna a major share of buildings with 20 or more housing units (41,20%) can be found. Around 60% of all Austrian multi-family buildings were constructed between 1945 and 2000. Since 2000 another 17% was constructed. Minor regional differences can be observed, but only in Vienna the dwelling stock built before 1945 covers 34%.

Around 40% of all Austrian households are house owners, whereas another 10% own the flat they live in. In thinly populated areas the share of house owners increases to almost 64% and the share of dwelling owners decreases to 6%. This contrasts with the shares in densely populated areas, in which they are 10% and 16%, respectively. In 2016, 40% of house owning households paid mortgages, of which 47% were private (mainly bank) mortgages and 37% loans within federal state's housing promotion program. Almost 40% of households are tenants. These households either rent through the private market (16%), from LPHAs (15%) or from municipalities (7%). The remainder households (11%) have another form of tenure status. 60% of households, which do not own their housing unit, have a permanent contract. This figure, however, drops drastically to 26%, if housing through municipalities and LPHAs is not considered. Especially the impact of LPHAs in intermediate and densely populated areas, where they house around 20% of all households, cannot be ignored. The impact of municipal

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<sup>12</sup> Appendix A offers a detailed description of this qualitative analysis.

<sup>13</sup> European Union Statistics on Income and Living Conditions – EU-SILC

housing is only significant for Vienna, where it covers housing needs of around 22% of Viennese households.

As can be seen in Table 2 the Austrian weighted mean total disposable household income is almost 41.000 euro per annum. We tested if the differences in income are significant. Whereas the weighted mean household income in Upper Austria is insignificantly higher than the overall, the weighted mean household income in Lower Austria is significantly higher and differs significantly with those from the other (considered) provinces. Both Styrian and Viennese mean household incomes are significantly below the overall mean as well as the Upper and Lower Austrian mean household income. These findings are also reflected in the data corresponding to the level of urbanisation. A clear, statistically significant, negative relation exists between the level of urbanisation and mean household income. Higher levels of urbanisation correspond to lower levels of income. This is not that surprising considering the fact that Vienna is a densely populated area and Lower Austria does not entail any densely populated areas.

	<b>n</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Austria</b>	6.000	40.751,76	30.551,56
<b>Lower Austria</b>	1.203	44.089,39	27.485,86
<b>Upper Austria</b>	1.018	41.474,13	26.077,78
<b>Styria</b>	817	38.477,14	24.051,05
<b>Vienna</b>	1.301	38.201,85	36.278,51
<b>Densely populated</b>	1.668	38.068,31	33.212,38
<b>Intermediate populated</b>	1.774	40.975,11	26.955,10
<b>Thinly populated</b>	2.358	43.069,83	30.542,77
<b>House Owner</b>	2.414	51.804,09	30.947,02
<b>Flat Owner</b>	676	43.086,03	30.357,59
<b>Municipal Rental</b>	414	27.870,19	15.665,15
<b>Limited-Profit Rental</b>	909	34.154,72	18.554,23
<b>Vienna</b>	280	37.406,98	21.248,77
<b>Non-Vienna</b>	629	32.711,24	17.047,73
<b>Private Rental</b>	944	34.691,35	38.771,08
<b>Other</b>	643	28.463,14	20.886,68

**Table 2: Weighted Mean Disposable Household Income Per Annum (EU-SILC data)**

With respect to the five identified SHP, we find that owner-occupier households are characterised by significant higher weighted mean incomes. In addition, the income of house owning households is significantly higher than the income of flat owning households, the latter's does not differ significantly with the overall mean, whereas house owning households have an above average income and, on average, households, which do not poses real estate, have significant lower incomes. Tenant households can be divided into two subgroups based on income. Municipal tenant households and households, which cover their housing need in any form outside the five SHPs ("Other"-category) have significant lower incomes than households, which rent from LPHAs or on the private rental market.

In addition, we tested the claim that there exists an informal division of labour between LPHAs and municipal housing, which is concentrated in Vienna. Whereas in Vienna municipal housing covers housing needs of low-income households and LPHAs target mainly lower-middle and middle income households, outside of Vienna LPHAs cater more explicitly for low income households as well. Viennese LPHAs tenant households display a significant higher income than their non-Viennese counterparts and even with respect to the respective SHP's mean. Nonetheless, the two subgroups' mean incomes do not differ significantly from private rental households.

Next to the weighted mean household income, we calculated the weighted median disposable household income, which was 34.910,78 euro p.a. in 2016. Table 3 displays the distribution of households according to the previously discussed categories. Similar as in the analysis of the mean household income, it shows that in densely populated areas (e.g. Vienna) more households live with an income below the weighted median. The results classified according to SHP, confirm previous results. The incidence of households with an income below the median is the lowest for owner-occupier households, notwithstanding a clear difference between owner-occupiers of (semi-)detached houses and owner-occupiers of flats. Households, which rent a housing unit display a higher incidence of below-median income. The previous result that the poorest households can be found in municipal housing and outside of the SHP-framework ("Other"-category) is confirmed. Slightly different are the results of household, which rent on the private housing market. Whereas we previously identified a relative high weighted mean household income, we observe in Table 3 a high incidence of below-median income (63,14%). This clearly indicates a high variety of households within this specific SHP, which is also supported by the high standard deviation of the weighted mean household income.

	<b>n</b>	<b>Below Median</b>		<b>Below Poverty</b>	
<b>Austria</b>	6000	2910	48,50%	1274	21,23%
<b>Lower Austria</b>	1203	506	42,06%	196	16,29%
<b>Upper Austria</b>	1018	463	45,48%	189	18,57%
<b>Styria</b>	817	402	49,20%	191	23,38%
<b>Vienna</b>	1301	733	56,34%	351	26,98%
<b>Densely populated</b>	1868	1027	54,98%	490	26,23%
<b>Intermediate populated</b>	1774	839	47,29%	349	19,67%
<b>Thinly populated</b>	2358	1044	44,27%	435	18,45%
<b>House Owner</b>	2414	736	30,49%	238	9,86%
<b>Flat Owner</b>	676	300	44,38%	112	16,57%
<b>Municipal Rental</b>	414	308	74,40%	164	39,61%
<b>Limited-Profit Rental</b>	909	515	56,66%	223	24,53%
<b>Vienna</b>	280	141	50,36%	55	19,64%
<b>Non-Vienna</b>	629	374	59,46%	168	26,71%
<b>Private Rental</b>	944	596	63,14%	303	32,10%
<b>Other</b>	643	455	70,76%	234	36,39%

**Table 3 Weighted Median Disposable Household Income – General Distribution**

Analogue to the EU-poverty level (Eurostat 2019), we calculate a benchmark-income for poverty. This poverty income is defined as 60% of the weighed median, i.e. 20.946,47 euro in 2016. It is important to note that whereas the EU uses individual income data, we use household income data. As a result our poverty-income is higher than the income reported by for example Statistik Austria (2019d), which reports 25.175 euro p.a. as the weighted median

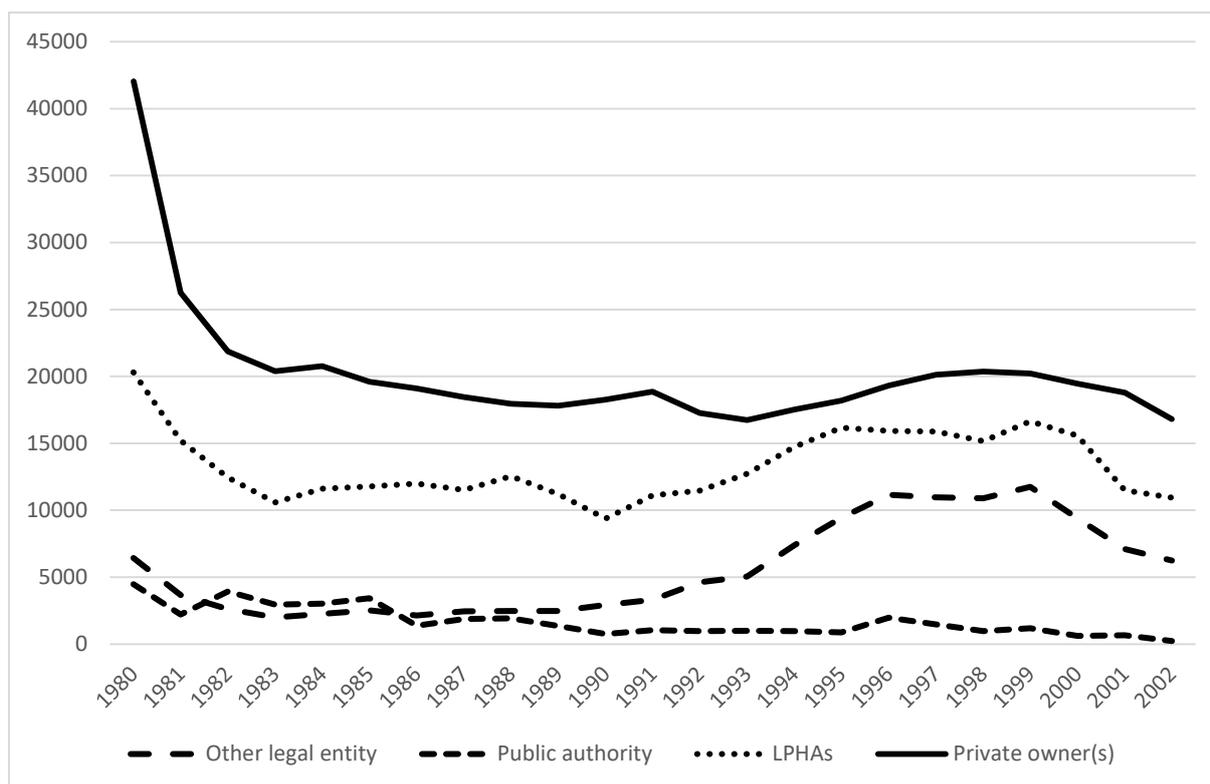
single household income and a corresponding poverty-income of 15.105 euro p.a. However, given the fact that we have a clear focus on housing units, which corresponds to a multitude of various households, we do not wish to break this data down on individual levels. Individual level data would sever the link between income data and SHP. Surprisingly, we see that the percentage of households with an income below the poverty benchmark is high for households, which rent on the private market. So whereas the data suggest that municipal and LPHA housing is rather effective to provide housing for low-income households, a substantial percentage of low-income households still has to rely on the more expensive, private rental market.

Going back to our SHP framework, it should be clear that the present analysis of the socio-economic characteristics of households covers an important aspect of the SHPs' consumption function. Whereas it is more sensible to discuss these characteristics in respect to each other, the production and distribution functions can be treated more-or-less independently. Therefore, each of the following five subsections takes a closer look at a respective SHP.

## **4.2 Owner-Occupied Detached Housing**

As previously discussed, Austria's housing promotion has as one primary objective the creation of private property, which is mainly centred on detached and semi-detached houses. Given this institutional setting and its longevity, it is not surprising that these housing forms are one of the main SHP. For 2011 Statistik Austria (2019e) counted 1.973.979 buildings, which mainly served housing purposes. Almost three-quarters of these buildings were detached houses (73,05%) and another 14,44% were semi-detached houses. Of both categories around two-thirds are located in Lower Austria, Upper Austria and Styria. Except for Vienna, close to 100% of these houses are in the hands of private persons. In Vienna private ownership is 80,51% for detached houses and 89,41% for semi-detached houses. The remainder is mainly in public hand or owned by LPHAs (Statistik Austria 2019f). Unfortunately the data provided by Statistik Austria (2019e; 2019f) does not include the legal status of households with respect to their housing unit. Therefore, we have to fall back on the EU-SILC data of 2016, which shows that 80% of households living in (semi-)detached houses can be classified as owner-occupiers. Around 7% of households in these housing units rent, of which three-quarters are private rental agreements and one-quarter is rented from LPHAs.

Taking a closer look at the production of these housing units shows that it is mainly the outcome of owner-occupier-developer households. As shown in Figure 6 private persons have always been an important group of residential building developers. From 1983 until 2002 they constructed between 15.000 and 20.000 buildings per year. Unfortunately, the data are not specific with respect to the type of residential building. Nonetheless, it would be safe to assume that it concerns mainly (semi-)detached houses. Due to legal issues concerning data gathering there is comparable construction data for the period 2003-2009. Newer data with respect to building permits clearly shows that private owners, i.e. owner-occupier-developers, are the main developers of (semi-)detached houses (cf. Table 4). Although LPHAs and other legal entities (e.g. commercial companies) cannot be neglected, they play only a marginal role as developers of these specific housing units



**Figure 6 Completion of new buildings with housing units (Statistik Austria 2019h)**

Given the fact that private households are the main developers of (semi-)detached houses, the access to building plots has to be affordable for their relative limited financial means. This explains not only their geographic concentration in less-densely populated areas, but also why they are relatively less prevalent in Vorarlberg, Tyrol and Salzburg. Housing construction in these three provinces is not only shaped by the topography of the Alps, but also by high land prices.

	Private owner(s)		LPHAs		Public authority		Other legal entity	
<b>2010</b>	13321	79,96%	1205	7,23%	5	0,03%	2129	12,78%
<b>2011</b>	13838	81,05%	947	5,55%	5	0,03%	2283	13,37%
<b>2012</b>	12398	82,79%	695	4,64%	7	0,05%	1876	12,53%
<b>2013</b>	12096	80,94%	783	5,24%	7	0,05%	2059	13,78%
<b>2014</b>	12661	80,78%	833	5,31%	5	0,03%	2175	13,88%
<b>2015</b>	12649	81,44%	552	3,55%	13	0,08%	2318	14,92%

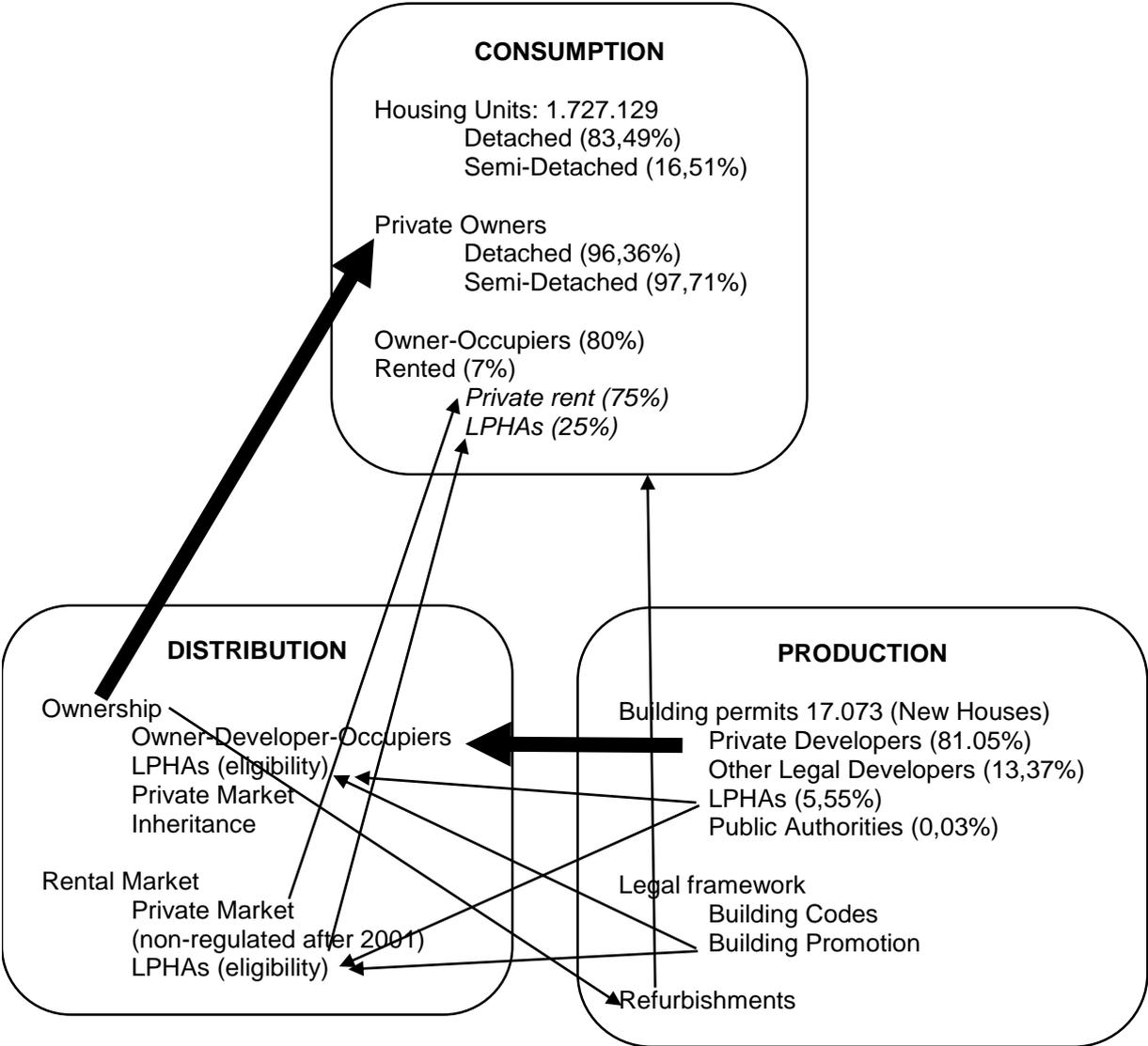
**Table 4 Construction permits for new buildings with one or two housing units (Statistik Austria 2019g)**

Constructions are regulated through building codes (*Bauordnung*), which fall under the authority of the respective provinces. However, on the basis of the federal OIB<sup>14</sup> guidelines there exists harmonization efforts, especially with regard to energy efficiency (OIB 2019). Another instrument indirectly regulating physical construction is Housing Promotion, which ties access and amount of subsidies to specific criteria (such as environmental standards).

Distribution encompasses not only the allocation of new housing units, but also the redistribution of existing stock (rental housing and ownership). Around 17.500 houses changed ownership in 2017 which roughly translate to 1% of the total stock (Statistik Austria 2018d: 57).

<sup>14</sup> OIB is an acronym for the Austrian Institute of Construction Engineering (*Österreichisches Institut für Bautechnik*).

As we will later address with respect to wealth distribution, the role of inheritance should not be underestimated when discussing redistribution.



**Figure 7 SHP – Owner-Occupied Detached Housing**

Figure 7 offers a visualisation of the principal elements of this SHP. It is clear that the main agent within this SHP are the owner-developers, as well as the state through its regulatory framework. This also implies with respect to refurbishments and renovations that the owner-occupiers are the beneficiaries of their own investments.

**4.3 Owner-Occupied Flats**

Next to 1.727.129 detached and semi-detached houses, Statistik Austria (2019f) reports 246.850 residential buildings with three or more housing units. These buildings are primarily in the hands of private owners (60,66%). In addition, LPHAs own around one-fifth of these buildings, whereas the remainder is owned by public authorities (11,93%) and other legal entities (7,39%). Especially in the western provinces (Vorarlberg 14,33%, Tyrol 19,36% and Salzburg 17,51%) and Vienna (39,76%) multi-family buildings make up a relative high share of the total building stock. Whereas in Burgenland the share of private owners is the lowest with 42,78%, private ownership is high in Salzburg (73,46%) and Tyrol (76,90%). Moreover,

the share of LPHA ownership in Salzburg (15,76%) and Tyrol (11,43%) is relative low. The ownership share of public authorities is especially high in Vienna (27,46%).

There are three types of the developers of multi-family residential buildings (cf. Table 5). First, private owners, which develop mainly smaller multi-family buildings. Whereas they accounted for one-fifth to one-fourth of building permits for new multi-family buildings with 10 or less housing units between 2010 and 2015, they accounted for only 2% to 5% of the bigger buildings. For both categories the role of public authorities is negligible. Whereas around 40% to 55% of multi-family buildings were developed by other legal entities, only with respect to bigger multi-family buildings LPHAs reach also such levels. Based on the data in Figure 6 it should be noted that other legal entities as developers of multi-family buildings are a relative recent phenomenon, which emerged slowly during the 1990s. This is also reflected in the ownership structure of multi-family houses as previously discussed. Recently, a boom in new construction of owner-occupied flats can also be observed. In 2017, 20.000 new owner-occupied flats were built (compared to 6.000 in the 2000s), which were mainly based in privately financed construction in cities like Vienna (IIBW 2018: 13).

	<b>Multi-Family Buildings ≤ 10 Housing Units</b>							
	<b>Private owner(s)</b>		<b>LPHAs</b>		<b>Public authority</b>		<b>Other legal entity</b>	
<b>2010</b>	305	22,38%	491	36,02%	4	0,29%	563	41,31%
<b>2011</b>	336	21,12%	548	34,44%	4	0,25%	703	44,19%
<b>2012</b>	389	25,16%	469	30,34%	5	0,32%	683	44,18%
<b>2013</b>	356	23,80%	407	27,21%	8	0,53%	725	48,46%
<b>2014</b>	407	23,16%	535	30,45%	3	0,17%	812	46,22%
<b>2015</b>	447	26,93%	377	22,71%	1	0,06%	835	50,30%

	<b>Multi-Family Buildings &gt; 10 Housing Units</b>							
	<b>Private owner(s)</b>		<b>LPHAs</b>		<b>Public authority</b>		<b>Other legal entity</b>	
<b>2010</b>	19	2,70%	367	52,13%	3	0,43%	315	44,74%
<b>2011</b>	23	2,57%	498	55,58%	6	0,67%	369	41,18%
<b>2012</b>	30	3,74%	400	49,81%	9	1,12%	364	45,33%
<b>2013</b>	46	4,32%	577	54,18%	4	0,38%	438	41,13%
<b>2014</b>	42	3,81%	525	47,64%	9	0,82%	526	47,73%
<b>2015</b>	42	3,58%	472	40,24%	6	0,51%	653	55,67%

**Table 5 Construction permits for new multi-family buildings (Statistik Austria 2019g)**

Within the 246.850 residential multi-family buildings are 2.429.216 housing units located (Statistik Austria 2019i). Once again we have to fall back on EU-SILC data to estimate the number of owner-occupied flats. Given that 11,27% of Austrian households fall under this category and in 2016 Statistik Austria (2019j) reports 3,87 million households, around 430.000 flats in multi-family buildings are owned by their inhabitants. What makes matters complicated in this SHP is that owner-occupied flats are either based on the ownership of the building, or on the ownership of a dwelling within a building. Thus, in contrast to the previous SHP (Owner-Occupied Detached Houses), within owner-occupied flats the ownership of the building and of the dwelling are often separated. In addition, this SHP is partly also connected with the private rental housing SHP, as many dwellings are owned by private persons or legal entities that neither use them, nor sell them, but rent them out. Nevertheless this stock is still a potential supply for owner-occupied flats.

The main legal regulation within this SHP is the Residential Property Act (*Wohnungseigentumsgesetz* – WEG 2002), which governs the rights and duties of owners and regulates the relations amongst the different owners and against the administrator of the building. This includes the duties regarding the administration of the property (§28 WEG 2002), and regulations concerning useful improvements (§29 WEG 2002).

When the construction of owner-occupied flats received housing subsidies (*Wohnbauförderungsgesetz*), distribution is regulated accordingly. For Vienna this includes who is entitled (§11 and §29 WWFSG) and how ownership titles can be created (§77 WWFSG). Similarly, for flats purchased from LPHAs the WGG provides additional regulation. Firstly, the purchase price of a flat is determined by cost-covering principle (§13 WGG). Secondly, if a flat is purchased an embargo period of 10 years applies (§15g WGG), in which resale is restricted.

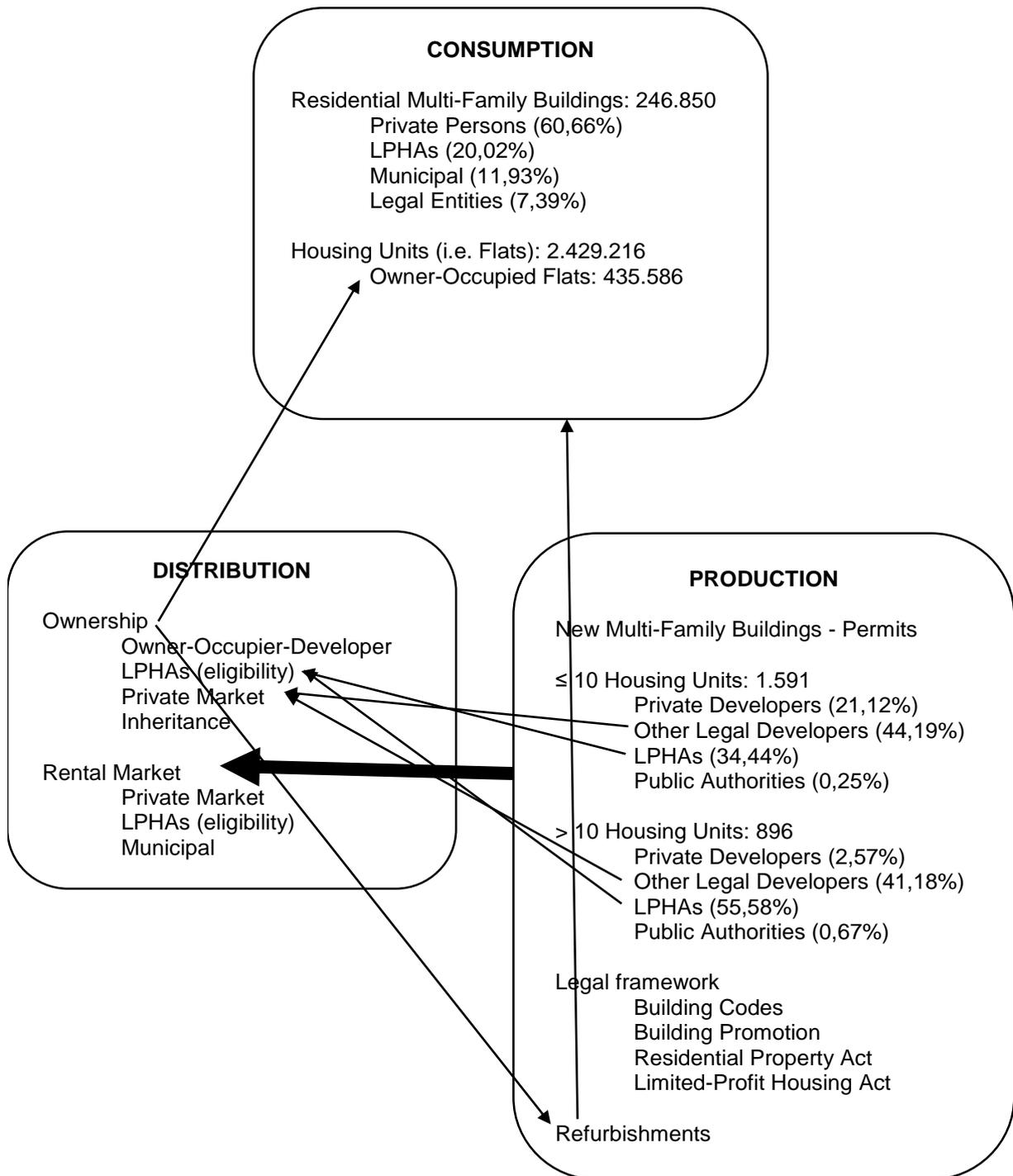
Owner-occupied flats provided by LPHAs tend to be cheaper than comparable ones available on the private market due to the cost-covering principle. However, the limited-profit sector does not serve as a policy instrument that exclusively targets lower income groups. Many LPHAs try explicitly to promote home ownership, hence targeting middle-income households. While it is true that the WGG restricts access to limited profit dwellings by defining income ceilings, the upper limits are extremely generous, excluding, in fact, only 10 to 20 percent of the population<sup>15</sup>.

Furthermore, concerning the transfer of ownership tax regulations have to be taken into account. This includes the real estate tax (*Grundsteuer*), the real estate transfer tax (*Grunderwerbsteuer*) and various fees, like the land registry fee (Schneider/Wagner 2015: 49f). The real estate transfer tax is 3,5% for paid transfers, and 0,5-3,5% (progressive tax) for free transfers (incl. donations and inheritance). In addition, a real estate profit tax (*Immobilienvertragssteuer*) of 30% on net profits may be applicable when selling a property, if the property was not the main residence for at least two years (5 years for inheritances).

With regard to the financing of dwelling-purchases, the source of funds (own financial resources, different types of debt financing, housing subsidies) is relevant as this implies different financing costs. In the wake of the Financial and Economic Crisis of 2008 financial assets were transferred into real-estate assets in the form of owner-occupied flats. For example, up to 70% of newly constructed housing units in Vienna have been purchased without credit financing (Lottes 2013: 16). The Raiffeisen Bausparkasse states regarding its own housing projects, that one third of dwellings is bought with building-society loans (*Bauspardarlehen*), one third with traditional bank financing and one third without credit financing (Lottes 2013: 16). However, it should be noted that this does not allow any conclusions with respect to owner-occupied flats. Some of these flats can function as rental units or as second-homes.

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<sup>15</sup> In addition, income ceilings for renters are only checked at the start of the rental contract. Subsequent increases in income are not taken into consideration. In general, LPHAs have to grant their renters a permanent right of residence.



**Figure 8 SHP – Owner-Occupied Flats**

The central agents of this SHP are the owner-occupants and other building owners. In contrast to detached and semi-detached houses, these home units form part of a larger structure, usually a multi-family building, with additional dwellings that are occupied either by other owner-occupants or by renters (cf. Figure 8). The presence of several parties within a single built structure has significant consequences for the inner workings of this SHP.

The implementation of refurbishment and renovation activities, especially with regards to energy-efficient insulation and heating systems, often faces major difficulties in this SHP due to divergent interests of owners. Most of our interview partners, which addressed the topic of

owner-occupied flats, argued that current requirements for decision-making inhibits investment in refurbishment. In addition, differences in costs and benefits between the different owners complicates matters. Whereas owner-occupiers could directly benefit from energy efficient investments depending on current arrangements, owners of secondary residencies or landlords would not directly benefit.

#### 4.4 Private Rental Housing

The structure of private rental housing provision differs substantially in terms of renters, the rent relation itself and its legal regulation as well as its existent stock. At the definitional core of this SHP lies eponymous private landlords – either in form of commercial enterprises or natural persons. While these landlords are characterized by heterogeneity, their behaviour is structured along a set of similar motives and along a common institutional framework given by the Tenancy Law (*Mietrechtsgesetz – MRG*).

According to Statistik Austria (2019i) 862.195 housing units are privately rented. The lion's share (82,09%) is privately owned, whereas the remainder is in the hands of legal entities. Based on EU-SILC data around 574.000 households rent their housing unit on the private market. The significant difference between the two numbers is explained by the use of different datasets and the slightly more than 200.000 privately rented housing units, which are not used as principal residence.

The construction of rental housing units mainly coincides with the construction of multi-family buildings. Only around 7% of households living in (semi-)detached houses rent, which roughly corresponds to 140.000 households. The main developers of multi-family buildings are, as previously discussed, private persons, LPHAs and other legal entities. For the private rental market, LPHAs can be neglected, since their housing units are subject to the Limited-Profit Housing Act. Moreover, it should be stressed that the involvement of legal entities as developers is a relative recent phenomenon (cf. Figure 6).

As previously discussed, Austrian tenancy law is a complex subject matter, not least due to differing regulations depending on a building's year of construction, public subsidies received for construction, and the date of the signing of the rental contract (Kunnert and Baumgartner 2012: 58). Depending on this set of criteria, the Tenancy Law is either fully applicable (rent level and evictions are regulated), partially (evictions are regulated), or not applicable (Hofmann 2014: 3). Moreover, in existing rental contracts, rents can be increased in order to "compensate for inflation or for the purpose of urgent maintenance works (cost-covering rents)" (Förster 1996: 114).

Whereas for 25 years Förster (1996: 114) stated that there rent restrictions apply to "nearly all rented flats in multi-storey buildings", it is not clear if this statement still holds today. In particular, the law applies fully to residential building constructed before 1945 (*Altbauten*) and subsidized buildings constructed after 1945. The law is only partially applicable to non-subsidized buildings (*freifinanziert*) constructed after 1945 and does in this case not restrict rents. In 1996 this last group of flats was according to Förster (1996) more or less negligible. Considering the increasing importance of private company developers since then (cf. Figure 6 and Table 5), it is doubtful if this still holds true.

Rent legislation represents one side of the coin, the other concerns its actual implementation. There exist a number of public mediation offices (*Schlichtungsstellen*) which offer to review rental contracts for possible violations. While these services are available for free, Förster (1996: 114) points out that the sheer complexity of the subject matter forms an obstacle – especially for vulnerable groups such as immigrants.

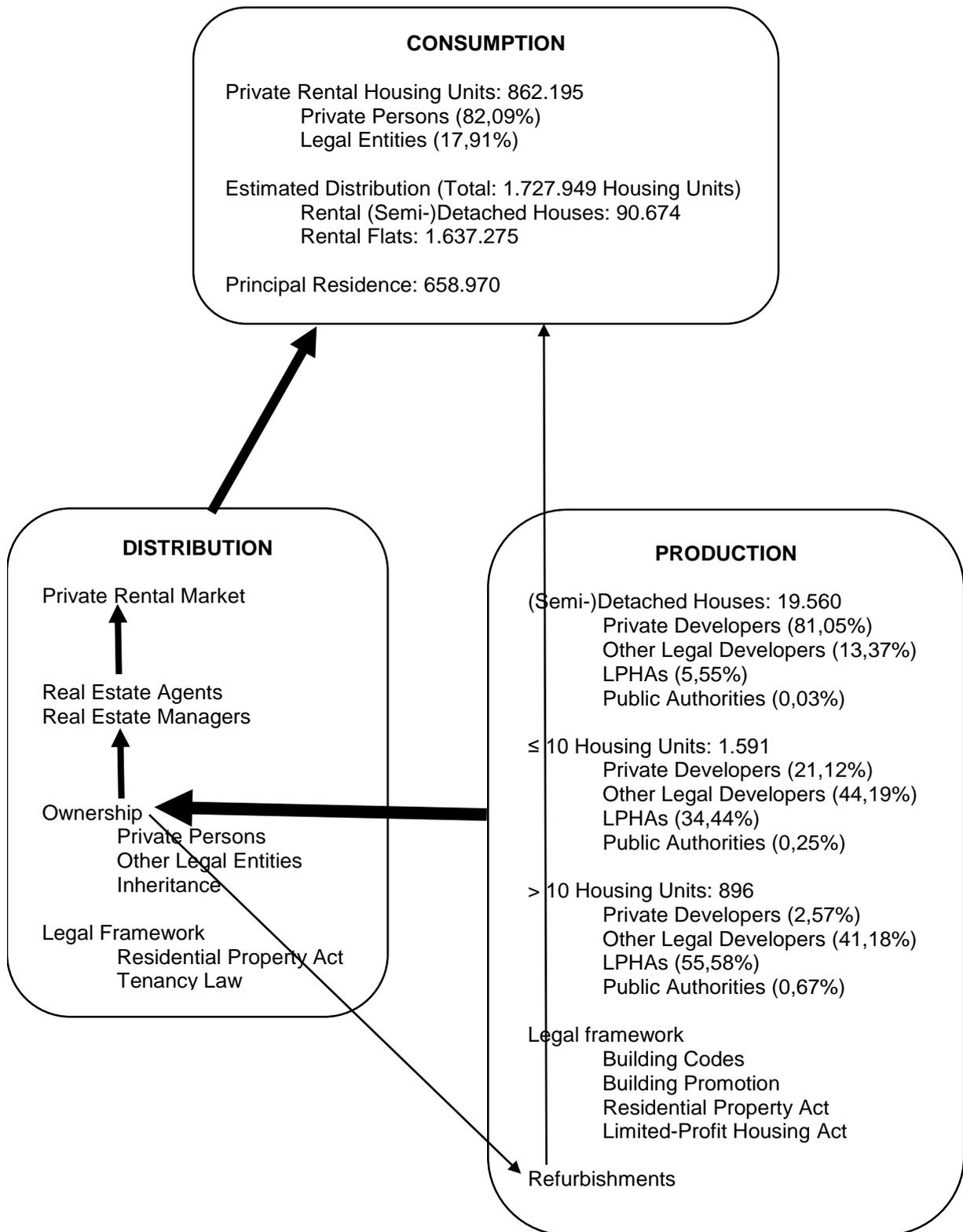
On average, rents in the private sector are more expensive compared to limited-profit and municipal housing. Another feature that set the private sector apart is the prevalence of fixed-term contracts, which comprise about 45% of all private rent agreements. Especially younger households are affected (Statistik Austria 2018d: 36).

While the Tenancy Law lays the common foundation for this SHP, there is considerable heterogeneity regarding landlords. In general, we may, however, differentiate two main agents: private sector enterprises and natural persons. In the first case, we may assume relatively unrestricted profit-seeking behaviour (cf. Theurillat et al. 2013; Heeg 2013). In contrast to LPHAs and municipalities (see further below), less restrictions apply to their profit-seeking behaviour. Thus, rent setting and investment decisions are taken with respect to expected rates on capital return. While profit maximization may also be an important or even primary aim of private persons, their behaviour and overall intentions seems less clear cut. This is due to individuals (a) being arguably more heterogeneous than firms, (b) being in some cases less capable to maximize profits due to lacking know-how or capacities, and (c) they may prioritize other motives (such as owning a relatively secure asset to mitigate uncertainty; using the dwelling in the future for oneself, relatives, etc.).

Within the rental market rent restrictions can take four forms, of which one applies to LPHAs and is thus not relevant for the present SHP. First, for some flats appropriate rent (*angemessener Mietzins*) has to be charged. This includes for example flats in buildings constructed after 1945 and certain flats in historic buildings. According to the Chamber of Labour (AK 2017: 62) these are the lowest rents. While the Tenancy Act does not specify any concrete amount that constitute an appropriate rent, it does specify that such a rent has to be locally customary. Second, benchmark rent (*Richtwertmieten*) are determined for each federal state by the Federal Ministry of Justice. In 2017, the value basically ranged between € 5 and € 8,57 per square meter. Landlords can adjust this base rent by non-regulated mark-ups<sup>16</sup> (or mark-downs) depending on factors such as furnishing, equipment and the location of the dwelling. Rents are also adjusted to inflation. Third, category rent (*Kategoriemietzins*) apply to sub-standard housing units and are becoming more or less negligible (Amann and Lugger 2016: 27). In the 1970s only 15% of flats fell into Category A (equipped with central heating system, a toilet and a bath), whereas currently this figure ranges around 93% (Amann and Lugger 2016: 9). Fourth, LPHAs charge a cost-based rent (*Kostenmietzins*), which does not apply to private rental contracts.

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<sup>16</sup> Landlords also need not reveal how they actually compute the rent.



**Figure 9 SHP – Private Rental Housing**

The stock of dwellings is not only linked to the landlords, but also tied to its tenants via rent. Rent is, on the one hand, influenced through the market mechanism. Dwellings that are high in demand, due to for example of their favourable location or other attractive features, may be rented out for higher amounts. Moreover, the interplay between private market rents and the regulated rents of Limited-Profit Rental Housing and Municipal housing could curtail price

pressure. On the other hand, some features of the housing unit (e.g. construction year) could also induce non-market mechanisms, as they form the basis for Tenancy Law. As previously discussed, stricter rent control applies to buildings erected before 1945 and building erected with the help of subsidies are subject to rent restrictions. This latent tension between market and non-market mechanisms can also induce some regulations avoiding behaviour, i.e. the prospect of higher rents has led in some cases to demolitions of older building stock. This could lead to substitution for potentially more energy-efficient buildings, but at the same time higher rents, i.e. less affordable with negative impact on social inclusion. With respect to renovations and refurbishments there is a clear discrepancy between ownership and user. Whereas owners decide what and how the renovate and refurbish, rental households are influenced by these decisions.

#### 4.5 Limited-Profit Rental Housing

As we previously discussed, limited profit housing associations (LPHAs) are the outcome of historical and legal developments and they do not fit neatly into a “simplified-bipolar model of market versus state” (Blaas and Brezina 1994: 166). LPHAs are legal entities engaged in developing, managing and refurbishing housing units. Currently there are a little bit less than 200 active LPHAs, managing a stock of about 900,000 flats (GBV 2016). About half of the LPHAs are organised as co-operatives that are owned by their members. The other half are organised as limited companies with differing ownership structures. Twelve, for example, are owned by regional political bodies, ten by religious organisations, trade unions, chambers, associations and parties. (GBV 2018c). All LPHAs are part of an umbrella organisation, the GBV<sup>17</sup>, which serves as both as a joint lobbying platform as well as an internal supervisory organisation (GBV 2018b). The latter element comes into play due to the special legal status LPHAs hold. In contrast to commercial real estate developers, LPHAs enjoy specified privileges, but are subject to strict regulation.

The significance of LPHAs for housing provision can be inferred from some cursory figures: Every year LPHAs construct about 15,000 new housing units which constitutes 28% of total home construction (GBV 2018a; Bauer 2019). According to Statistik Austria (2019a: 22) around 17% of main residences are subsidised rented flats provided by LPHAs. Unsurprisingly, they are mainly located in multi-storey buildings (GBV 2016:44). While 69% of LPHA housing units are rented flats, 31% are either condominiums or subject to a special rental contract, which includes a future purchase option (i.e. *Mietkauf*) (Oberhuber and Denk 2014: 19). This rather high rate of home ownership shows that the limited-profit construction sector does not serve as a policy instrument specifically targeting lower income groups. Instead, homes constructed by LPHAs prove to be attractive to – and sometimes only affordable by – a broader middle class audience. LPHAs are thus one element of the Austrian housing policy and are, of course, contingent on their historical circumstances.

Since these housing associations do not focus on profit maximisation but instead have to contribute to housing welfare, it is assumed that rent levels are lower than on the private rental market. These organisations are allowed to generate a limited amount of profit, which they have to reinvest in domestic housing projects. Moreover, rent levels are capped by economic rent following a cost-covering principle, i.e. rent revenues have to be in line with production costs. The regulation of limited-profit housing aims at securing the supply of affordable and qualitative housing. Since LPHAs offer a significant volume of total housing and are thus an

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<sup>17</sup> Österreichischer Verband gemeinnütziger Bauvereinigungen – Revisionsverband

alternative to private rental markets, they influence overall price level (Kunnert and Baumgartner 2012: 88; Wurm 2003; Bauer 2006; Streimelweger 2010).

On a more critical note, Bauer (2006) points out that from a historic perspective the price curbing effect of LPHAs emerged not before the 1980s, when municipal housing became less available. Whereas municipal housing could offer subsidised rental prices, rental prices of LPHAs are defined through economic rent, i.e. the costs of production. She concludes that the main difference between the limited-profit and private housing sector is their price dynamics. In the long run, the rents of the limited-profit sector are bound by economic rent and thus less subject to change. These economic rents are mainly defined by the costs of financing, although construction costs and land prices cannot be neglected. It was not always the case, but the LPHAs are important for social integration as they provide housing to a broad middle-class.

From the discussion it should be clear that the Limited Profit Housing Act in combination with the Austrian housing promotion system created a distinct SHP. Figure 10 gives a visual summary of this SHP. Central elements are, next to the Limited Profit Housing Act, the LPHAs and different state bodies. What essentially distinguishes the SHP of LPHAs from other SHPs, is an outer circuit that involves the enabling and constraining effects emanating from the state. This circuit also directly links to the Limited Profit Housing Act which acts as the underlying legal framework that quite literally influences production, distribution and consumption. However, while the Limited Profit Housing Act is determining to the outcomes of this particular SHP, it is not an exogenous institution. This act is to some extent the result of the forces operating within this very SHP. As indicated, there is formal and informal lobbying by the LPHAs and their umbrella organisation.

In addition to supervising functions of state authorities, the outer circuit sketches how subsidies provided by the state do not only play an enabling role in financing the production of dwellings, but also play a constraining role in dictating specific quality standards. This has a direct impact on the sphere of consumption: The stipulation of standards influence directly into production costs which inevitable – due to the cost-covering principle specified in the Limited Profit Housing Act – translate into rent levels and purchasing prices.

It should be clear that LPHAs are peculiar agents. Its peculiarity stems not least from the very tension inherent to them: LPHAs manage a substantial amount of real estate value, which is not fully integrated into a capitalist mode of production due to legal restriction. From the perspective of certain actors (among others potential investors or some owners), such an integration would be desirable. This fuels a constant tension and makes LPHAs subject to continuous societal renegotiations and lobbying.<sup>18</sup> This inherent contradiction, which is based on a political compromise, results in an institutional setting that provides both public housing<sup>19</sup> and private property. Although an initial strict regulation of this private property, after a certain time it cannot be distinguished from other forms of private property. Therefore, this report focuses on the public housing aspect of LPHAs' SHP.

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<sup>18</sup> To give just one recent example: In their election manifesto the social democratic party, for instance, proposes to “motivate” construction activities by LPHAs by “creating additional incentives” for the participation of institutional investors (SPÖ 2017:143).

<sup>19</sup> In this context we use the term „public housing“ to indicate all forms of housing with prices below full market prices. Due to the restrictions on rent LPHAs fall under this category.

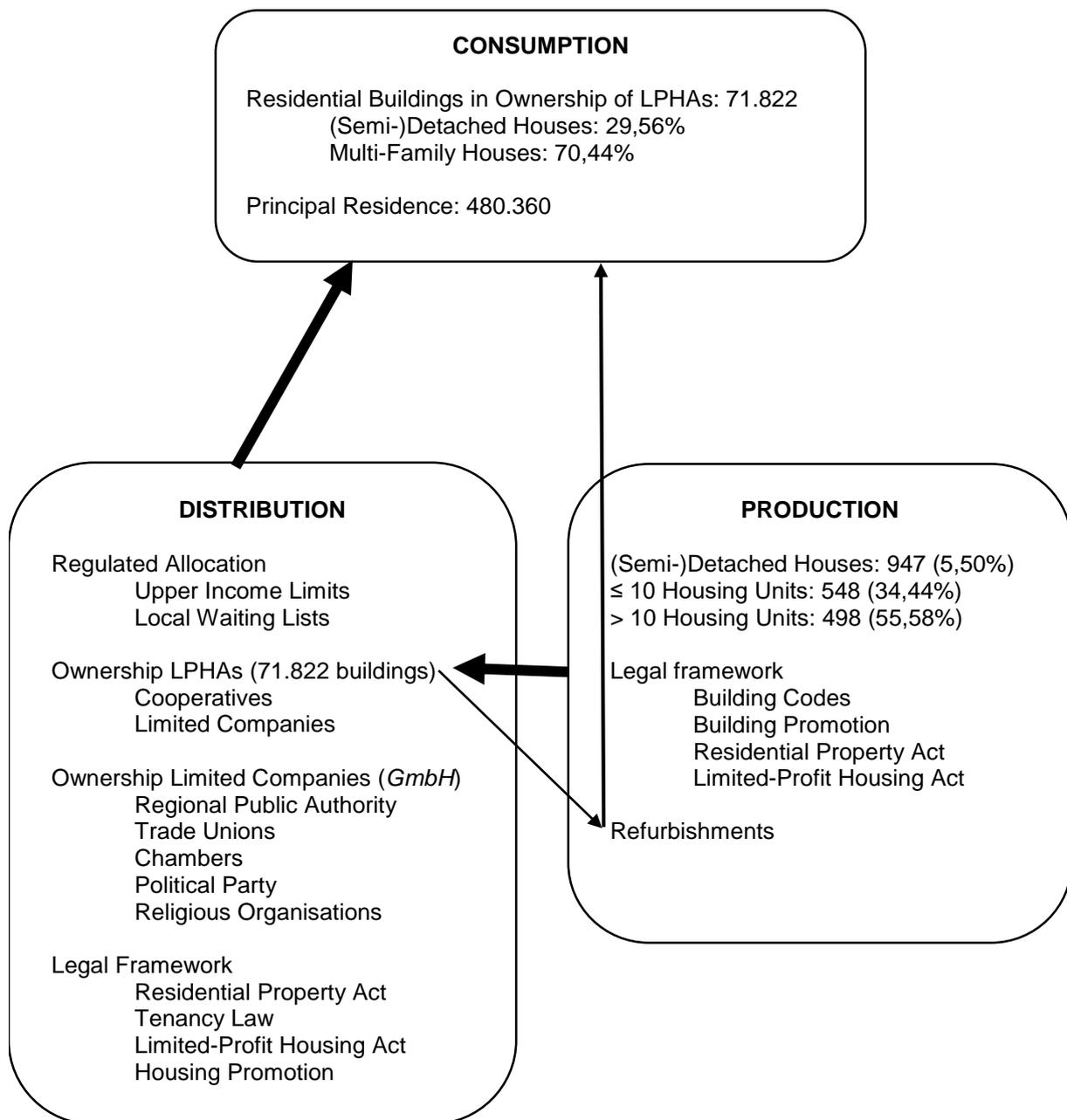


Figure 10 SHP – Limited Profit Rental Housing

#### 4.6 Municipal Housing

In 2011, almost 9% or 350.167 rental housing units are provided by public authorities<sup>20</sup> of which 318.288 units are used as principal residence. In total it concerns 49.107 residential buildings of which 29.438 (59,95%) are multi-family buildings. As previously already indicated, municipal housing is concentrated in Vienna. The capital accounts for 45,58% of municipal residential buildings (22.381) and 66,79% of municipal housing units (233.871). Unsurprisingly, 23,77% of all housing units in Vienna are municipal. The other provinces can basically be ignored with respect to municipal housing. The two provinces, which follow Vienna, are Styria and Lower-Austria, with respectively around 10% of the municipal housing stock, which represents 4% to 5% of housing units in these provinces (Statistik Austria 2019f; 2019i).

<sup>20</sup> Statistik Austria (2019i) defines public authorities as follows: local authorities, social insurance organisations, Chambers, accredited religious organisations.

As a result of the regionalisation of housing policy instruments, building promotion policies differ substantially between the Austrian provinces. Whereas most provinces fall back on LPHAs to provide affordable housing, Vienna still has a significant segment of municipal housing. Next to the Limited-Profit Housing Act, the legal framework in Vienna includes also the Viennese Building Promotion and Refurbishment Act (*Wiener Wohnbauförderungs- und Wohnhaussanierungsgesetz - WWFSG*) and province directives.

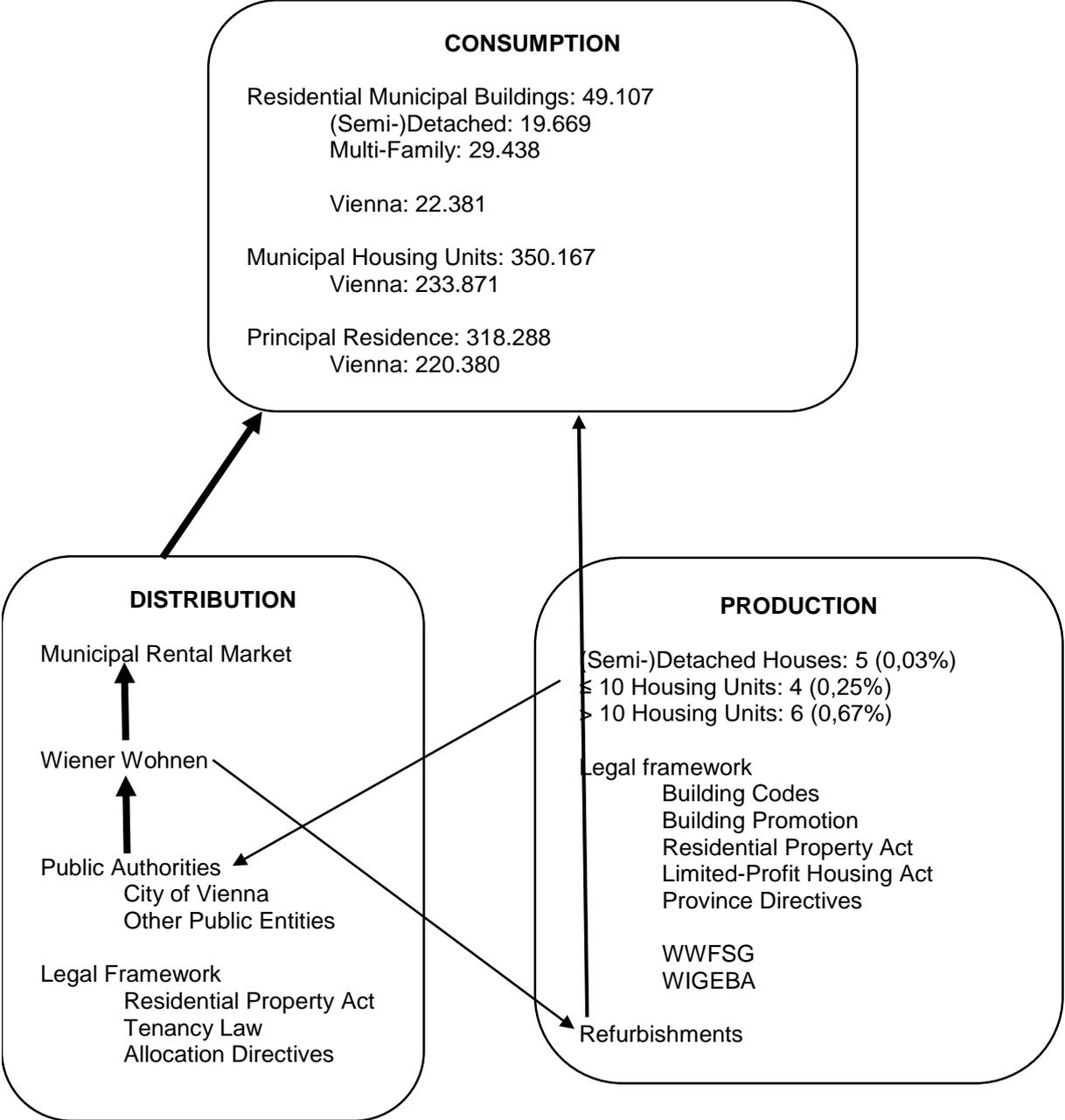


Figure 11 SHP – Municipal Housing (Vienna)

As displayed in Tables 4 and 5, the role of public authorities as developers of new residential buildings is negligible. In 2004 the City of Vienna withdrew from its role as developer and counted on open competitive bidding and the Viennese LPHA *Wohnfonds Wien* (Mundt and Amann 2019: 189). More recently the City of Vienna re-emerged as housing developer and by means of the WIGEBÄ (*Wiener Gemeindewohnungs-Bausgesellschaft*) new, state-owned housing projects are realised (Wiener Wohnen 2019).

*Wiener Wohnen* is responsible for the allocation of municipal housing units. In addition, it also manages these buildings and organises necessary renovations. A set of binding directives regulate allocation and rent is limited by Category or Benchmark Rents depending on the year of construction and housing quality.

### 4.7 Investors in Residential Buildings and its Refurbishment

The discussion of the five SHP makes it clear that the provision of housing is highly complex. Nonetheless, it is possible to pinpoint those agents, which are pivotal for investments in new residential buildings or its refurbishment. Table 6 displays our insights with respect to structural and household features, which guide these investments. The results are also used as input for the simulation model of Working Package 3.

	Owner-Occupied Detached Housing	Owner-Occupied Flats	Private Rental Housing	Limited-Profit Rental Housing	Municipal Housing
<b>Structural Features</b>					
General economic criteria	V	V	V	V	V
Use value of housing unit	V	V/O	X	X	X
Altruistic or common welfare criteria	V	O/X	O/X	V	V
Investor-user discrepancy	X	O/V	V	O/V	O/V
Multi-owner complexity	X	V	V	O/X	X
Regulatory incentive	X	X	X	V	X
<b>Household Features</b>					
Age of household	V	V	O	X	X
Household income/wealth	V	V	O	X	X

**Table 6 Features, which guide investment decisions.**  
**V – feature affects investments in SHP**  
**X – feature does not affect investments in SHP**  
**O – not clear-cut/situation dependent)**

Unsurprisingly, the main pivotal agents are either developers (new buildings) or owners (refurbishments). Whereas economic criteria are relevant to all five SPH, the specific interpretation of these criteria differs between them. For Owner-Occupied Detached Housing economic criteria mainly concern household income and wealth, as well as the access to housing promotion, credit and building plots (to a lesser extent used or prefabricated houses). These households evaluate their financial means with respect to the acquisition or refurbishment of (semi-)detached houses. As previously shown, the developers of Owner-Occupied Flats are either private persons, commercial entities or LPHAs. Except for LPHAs we can assume a financial investment motive, i.e. investment decisions are based on expected returns and profit rates. Similarly, maintenance costs and refurbishments are evaluated from the same financial logic, i.e. it has to pay. Due to their legal status and their reliance on housing promotion, LPHAs are subject to another economic logic. Since rent levels and housing prices are strictly regulated, LPHAs erect housing units, while minimizing construction costs. In some municipalities, they have preferential access to building plots, which helps them to attain this goal. A similar budgetary constraint also applies to municipal housing.

In those cases, where the consumer of the housing unit is also the owner and has influence on the developing process, investment decisions will also be guided by use-value contemplations. Whereas this mainly concerns owner-developer-occupier households of (semi-)detached houses, in some cases it also concerns owner-occupied flats. In addition, for refurbishment investments improvements in use value influence investment decisions within

both SHP. In the rental SHP, use value (i.e. living comfort) considerations do not directly influence investment decisions of owners or developers (neither with respect to construction nor refurbishment). This being said, it is clear that use value indirectly influences the competitiveness of housing units as it is linked to consumers' willingness to pay. For LPHAs and Municipal Housing investments in construction and refurbishments is supported by common welfare goals as it is these SHPs *raison-d'être*. In addition, altruistic considerations (e.g. ecological impact, political motives) can also play a role in Owner-Occupied Detached Housing. Within this SHP the owner can rather sovereignly make investment decisions, which have a direct impact. Whereas households in Owner-Occupier Flats have only a limited impact on the building, owners in the Private Rental Housing SHP are more tightly tied to profitability.

A next facet that has an impact on investment decisions is the investor-user discrepancy. Whereas developers decide on the initial physicality of residential buildings, building owners can initiate refurbishments. However, when investors do not coincide with consumers/users, a conflict of interest can emerge. For owner-occupied houses this discrepancy is, basically, not at hand since most (semi-)detached houses are developed by owner-occupier households. For all other forms of SHP, the investor-user discrepancy can be an important inhibition, which should be overcome. Note that in the Owner-Occupied Flats SHP, flat owners do not necessarily coincide with building owners. Consequently, these households can invest in their flat, but investments, which concern the building, have to be coordinated with the respective owner(s). This brings us also to the next structural feature, viz. multi-owner complexity. Especially within the Owner-Occupied Flats and Private Rental Housing SHP, multiple agents can share the right of ownership over residential buildings. In order to invest, first an agreement between these agents has to be reached. This complexity and potential diverting interests favour status quo or only minor changes.

Regulation can also incentivise or hamper investments. The Limited-Profit Housing Act clearly stipulates that LPHAs have to reinvest a significant share of their (limited) profits in housing. As a result, LPHAs have the financial means and willingness to invest. For Private Rental Housing, Tenancy Law can create barriers. Landowners have only limited possibilities to recuperate investment costs through increases in rent levels. Although they can resort to a legal procedure (§18 MRG), this laborious procedure stipulates high standards with respect to the criteria, which should be met. This holds especially for housing units fully subject to the Tenancy Law.

In addition to structural features, household characteristics influence investment decisions. Once again, these features are mainly relevant for those SHP, in which owner and occupier coincide. On the one hand, the household's age seems to be important. Especially, when old-age is reached, the willingness to invest decreases. On the other hand, the financial situation of households plays an important role. Financial capacity is a restriction to investments.

## 5 Decarbonisation of Residential Buildings

Housing provision is a dynamic process, which is always in the making. As a result, positive developments with respect to the decarbonisation of residential buildings can already be observed. Whereas demographic (population increase) and social developments (decrease in household size and increase in living space per capita) induced an increase in residential building space from 1990 to 2018 (Statistik Austria 2020b; 2020c; 2020d), this did not induce an increase in greenhouse gas emissions. According to the 2018 Austrian climate report in this period greenhouse gas emissions produced in the building sector, which includes residential as well as non-residential buildings, shrank by more than a third. As by 2016, buildings are responsible for 10% of total greenhouse gas emissions in Austria (Umweltbundesamt 2018: 59). The decrease in emission is due to considerable improvements in the building stock with respect to thermal insulation, more efficient heating components and heating system using renewable energy sources (Umweltbundesamt 2018: 132)<sup>21</sup>.

Theoretically, we can distinguish three reasons as to why changes in the stock come about. First, the Austrian housing stock is growing and newly built homes tend to be more energy efficient than older ones. Second, the demolition of older, less energy efficient housing units influences the overall energy efficiency of the total stock. Third, the existing stock may be subject to refurbishment and retrofitting, which increases energy efficiency.

New constructions, for example, not only offers the possibility to integrate newer energy technologies, but is also subject to policy-induced changes. Regarding the latter, in 1990 and 2000 building codes were adjusted to imply higher energy standards (Umweltbundesamt 2018: 133). Next to legal requirements, the system of building promotion incentivises the use of green technologies. Generally, housing subsidies take the form of a long-term, low-interest loan. With the current low-interest rate environment, the subsidy has become, however, less attractive to developers – especially to owner-occupied-developers. With respect to energy efficiency standards, the decrease in housing subsidy was somewhat offset by the stricter requirements set by the building codes.

It should be noted that the 60.000 residential units, which are currently completed each year, dwindle in comparison to the existing stock of 4,5 million home units (Statistik Austria 2020e). In a similar vein, the demolition of housing units plays a marginal role. About 0,4% of home units are lost due to demolishing, consolidation and conversion. With regards to housing decarbonisation Amann (2011) sees hidden potential in demolishing, in particular to housing units, for which energetic refurbishment is hardly feasible<sup>22</sup>. Consequently, the refurbishment of the existing stock remains the main leverage to decarbonise the housing sector.

From a theoretical standpoint, we argue that refurbishment<sup>23</sup> and retrofitting are key functions within structures of housing provision. Previous work applying the SHP framework, however,

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<sup>21</sup> While especially the substitution of coal- and oil-based system with gas and district heating have indeed led to an overall decline in energy use, there is also a rather arbitrary accounting convention at work here. Official emission reporting assign emissions resulting from district heating not to the housing sector, but to the energy and industry sector (see for instance Klimaschutzbericht 2018: 128). Hence some of the reported “savings” in the building sector are, in fact, transfers to other sectors.

<sup>22</sup> For a discussion of demolitions vis-à-vis refurbishment see Power (2008).

<sup>23</sup> We borrow Zavadskas et al. (1997: 62) definition of refurbishment as “construction activities with the purpose of essential rearrangement of existing building in order to eliminate its physical, economic, legal, architectural/aesthetic, functional, comfort, social and other kinds of deterioration, including maintenance imperfections and defects of engineering services.

paid little attention to these aspects<sup>24</sup>. This is partially because refurbishment is a broad term with no clear boundaries. It covers a variety of activities, such as disability-friendly, accessibility improvements, necessary maintenance or mere aesthetic improvements, such as the replacement of tiles in the bathroom. In addition, refurbishments are non-standardised processes. The heterogeneity of the Austrian building stock with respect to its physicality, spatial features, regulatory context and involved agents is immense. In praxis, retrofitting activities need to keep account for example with differences between single-family houses and multi-storey buildings, used construction techniques and materiel, access to infrastructure and relation to other parts of the built environment, and the relationship between owners and consumers. Undoubtedly, these matters not only complicate academic discourse, data availability and consistency, but also policy setting (cf. Vilches et al. 2017).

As discussed in Working Package 3, we focus on refurbishment activities that increase energy efficiency or eliminate CO<sub>2</sub> emission. In particular, this includes measures such as the installation of thermal insulation in wall and floor areas, installation of energy-efficient windows as well as the replacement of heating systems with green-energy alternatives. This kind of refurbishment activities often represent a quite heavy financial burden for investors. In the medium to long term, savings in energy costs may offset expenses, but there are still uncertainties involved with respect to fluctuation in resource and energy prices and rebound effects. Depending on the SHP, different sets of agents are involved in initiating, financing and implementing refurbishment. Added to the aforementioned general uncertainty, informational asymmetries and diverging interest come into play.

While these set of technical measures target, by definition, the issue of energy efficiency, they are accompanied by a variety of side-effects (Shrubsole et al. 2014; Collins and Dempsey 2018). Some, e.g. improved comfort, reduced noise and better indoor climate, can serve as additional incentives. Others such as overheating (Gupta et al. 2017), decreased air quality, and health hazards such as mould growth can form substantial obstacles leading to resistance against refurbishment. Independent from the achieved outcome, the process itself is time-consuming and potentially highly disruptive for residents.

	Housing Units	Oil Heating System	Coal Heating System
Before 1919	569.000	10%	3%
1919 – 1944	268.000	12%	3%
1945 – 1970	976.000	22%	3%
1971 – 1990	957.000	23%	2%
1991 – 2000	450.000	23%	0%
2001 – 2010	434.000	6%	0%
2011 – 2016	208.000	3%	0%
Total	3.862.000	17%	2%

**Table 7 Prevalence of oil and coal heating systems in housing units.**

With respect to improving energy efficiency, the 2018 Austrian climate report emphasizes the role of buildings constructed before 1970 which exhibit, on average, a larger energy use per square meter (Umweltbundesamt 2018: 133) and hence larger potential for refurbishment. This concerns about 46% of the stock (Statistik Austria 2020f). Nonetheless, also dwellings built in later years show large potentials as shown in Table 7. While coal was successfully phased out

<sup>24</sup> We do not want to be overly critical about this point, since previous application also had other research foci. This lack of attention for refurbishment in housing studies is not new, as Bryson (1997) already indicated.

for buildings constructed after 1990, oil played a significant role in buildings constructed until the turn of the millennium. After 2000 it did, however, not completely disappear as heating source.

Promoting refurbishment constitutes a recurring theme for different federal governments (*Regierungsprogramm 2004, 2006, 2008, 2013, 2017*) and earlier plans set quite ambitious targets with a yearly refurbishment rate of 3% for the period of 2008 to 2012, increasing to 5% in the medium term (Umweltbundesamt 2018: 135). While refurbishment is already subsidized through the aforementioned housing promotion (by about 500 to 850 million Euro per year), these plans were accompanied by the implementation of several support policies.

In 2009 the federal government, for example, introduced a yearly grant programme called *Sanierungsscheck* of about 100 million Euro to subsidize refurbishments. While the implementation of the *Sanierungsscheck* did coincide with an initial increase in thermal and energetic refurbishments, neither the targeted 3% threshold was met, nor could the refurbishment rate be substantially increased. In 2010 the rate of comprehensive thermal and energetic refurbishments in relation to living space was 1,2%. Since then it gradually declined and reached 0,4% in 2016 and 2017 (BMNT 2019: 35).

The recent climate report (Umweltbundesamt 2019: 131) identifies similar decarbonisation measures as Working Package 3, viz. the replacement of windows and doors, thermal refurbishments of facades, thermal insulation of roofs (or upper ceilings), thermal insulation of basements (or ground floors) and modernisation of heating system (e.g. central-heating boiler). Moreover, the Umweltbundesamt commissioned an extra statistical analysis to retrieve mean annual refurbishment rates<sup>25</sup> with respect to these measures for four periods. As shown in Table 8, recent thermal refurbishment rates are lower than in the 1996-2006 period, whereas energetic refurbishment remained more or less the same.

Single Measure		Principal Residences (in 1.000)			
		1991-2001	1996-2006	2002-2012	2008-2018
Thermal	Windows	741	895	844	744
		1,9 %	2,7 (± 0,1) %	2,4 (± 0,1) %	2,0 (± 0,1) %
Thermal	Facade	402	620	628	575
		1,0 %	1,9 (± 0,1) %	1,8 (± 0,1) %	1,5 (± 0,1) %
Thermal	Roof	n/a	560	558	521
			1,7 (± 0,1) %	1,6 (± 0,1) %	1,4 (± 0,1) %
Energetic	Central-Heating Boiler	n/a.	611	613	698
			1,8 (± 0,1) %	1,7 (± 0,1) %	1,9 (± 0,1) %

**Table 8 Single decarbonisation measures refurbishment rates<sup>26</sup> (Umweltbundesamt 2019: 133)**

The same report also took a closer look at combinations of decarbonisation measures (Table 9). Extensive thermal refurbishments combine all three thermal measures. In addition, the energetic measure can be combined with one or more thermal measures. The last case is defined as extensive refurbishment. Independent of the considered period, decarbonisation refurbishment rates are low.

Academic debates offer a variety of explanations as to why refurbishment and renovation with the aim of increasing energy efficiency may fail. Most studies follow a techno-economic perspective, but increasingly sociocultural aspects are investigated (Tjørring and Gausset 2019). There are considerable capital requirements for comprehensive renovations. While these expenses are counteracted by improvements in energy efficiency, such savings often

<sup>25</sup> Values in brackets correspond to confidence intervals (95% probability).

<sup>26</sup> Unfortunately, no data are available for this measure.

spread over 30 to 50 years (Jakob 2007: 5). Break-even times differ from project to project, but they may very well exceed the lifespan of (older) investors. In addition, banks may not provide suitable products for financing energy-saving refurbishment<sup>27</sup> (Tjørring and Gausset 2015: 97-98).

Combined Measures			Principal Residences (in 1.000)			
			1991-2001	1996-2006	2002-2012	2008-2018
Extensive Refurbishment	Thermal	n/a	239	238	272	
			0,7 (± 0,1) %	0,7 (± 0,1) %	0,7 (± 0,1) %	
Combined Thermal Measure	Energetic and	n/a	338	330	332	
			1,0 (± 0,1) %	0,9 (± 0,1) %	0,9 (± 0,1) %	
Extensive Refurbishment		n/a	328	328	351	
			1,0 (± 0,1) %	0,9 (± 0,1) %	0,9 (± 0,1) %	

**Table 9 Combined decarbonisation measures refurbishment rates (Umweltbundesamt 2019:134)**

Apart from financial reason, Mortensen et al. (2014) point out that homeowners may simply lack interest in change or possess insufficient knowledge about key aspects of renovations. Christie et al. (2011) further examine the role of risk perception with regard to investments in renovation. They distinguish between financial risk (“Will the investment pay off?”) and functional risk (“Will the technology work?”) and social risks (“Will it be perceived as a divergence from collective norms?”) as possible obstacles to renovation. Perception of uncertainty and risks may lead to “strategic delay” (Müller 2013: 87). That is, investors may prefer to wait until innovations are widely implemented and have proven to be feasible and cost-effective.

As has been pointed out in other studies, energy-efficient refurbishment may also be impeded by the insufficient technical knowledge and training of involved professionals (Killip 2013; Risholt and Berker 2013). Buser and Carlsson (2017: 283-284) point out that the fragmented views and diverging interpretation by the involved agents may impede to consistent renovations.

The literature on decarbonisation seems to focus almost exclusively on the SHP of Owner-Occupied Detached Housing, whereas other institutional arrangements remain rather underexposed. In addition, the statistical data used for Tables 8 and 9 (mainly sample census data) does not allow for a distinction between the previously defined SHP. Nonetheless, a recent study by IIBW (2019) suggests that significant differences exist between SHP with respect to decarbonisation refurbishment rates (cf. Table 10).

According to IIBW (2019) the main SHP with a relative low potential for decarbonisation are (semi-)detached houses and limited-profit rental housing. Whereas at first sight the relative low percentage figure for decarbonisation potential of (semi-)detached houses seems to be encouraging, it should be noted that due to the high volume-to-surface ratio of these building they still have a significant decarbonisation potential (IIBW 2019: 12). In all other SHP and other forms, which we did not consider, at least around half of all units should be refurbished. Considering our previous discussion of investment settings (cf. Table 6) this is not that

<sup>27</sup> Maneschi (2012) offers a case study of Danish banks which have emerged as intermediary in refurbishment activities.

surprising. SHP with a clear difference between non-altruistic owners and users display high decarbonisation potentials.

Tenure	Stock	Refurbishment Rates	Decarbonisation Potential	% of Total
<i>Primary Residence</i>				
(Semi-)Detached Houses	1.460.000	0,9% – 2,0%	400.000	27,40%
Owner-Occupied Flats	430.000	0,6% – 1,3%	200.000	46,51%
Limited-Profit Rental	650.000	1,2% – 2,7%	70.000	10,77%
Municipal Housing	280.000	0,6% – 1,3%	170.000	60,71%
Private Rent	710.000	0,6% – 1,3%	350.000	49,30%
Other	380.000	0,6% – 1,3%	260.000	68,42%
<i>Non-Primary</i>				
(Semi-)Detached Houses	650.000	0,4% – 1,0%	330.000	50,77%
Multi-Family Buildings	250.000	0,4% – 1,0%	140.000	56,00%

**Table 10 Decarbonisation Refurbishment Rates and Potential (IIBW 2019)<sup>28</sup>**

A common feature of the Owner-Occupied Flats and Private Rental Housing SHP is that their stock consist of housing units in multi-family buildings. The presence of several parties – in particular several owners – complicate the issue of refurbishment, since comprehensive refurbishments tend to be expensive and require majority decisions of the respective owner association. In addition, voting design often stacks the odds against conducting refurbishment by, for example, requiring unanimous decisions or by automatically considering abstention from voting as rejections of the respective proposal. This problem tends to be further amplified, when the respective property manager proposes or introduces refurbishment proposals. The owner association often does not perceive property managing firms as an “impartial” agent – or to be more precise: as an agent whose objectives properly align with goals of the owners. Consequently, plans for comprehensive refurbishments are interpreted as a tool for property managers to enrich themselves. This matter can be, and partly, is mitigated by bringing in outside experts (IIBW 2019: 11; Vlasova and Gram-Hanssen 2014; Tjørring and Gausset 2015; Mahapatra et al. 2011).

Provisioning through the private rental sector, in particular, suffers from a user-investor dilemma. Generally, landlords have to bear the expenses for refurbishment activities, while – from a financial standpoint – tenants enjoy the benefits of lower energy costs. Compared to, for example, the German tenancy law, the Austrian tenancy law only allows landlords to increase rent for existing contracts for the purpose of financing refurbishments in rather restricted circumstances. This is mitigated by the fact that a majority of private rental agreements are fixed-term in nature.

With respect to municipal housing, the situation can be regarded as a political neglect of this SHP. Whereas in general public bodies are under pressure to finance refurbishments and decarbonisation measures, the situation in Vienna could be slightly better. In Vienna, where most of municipal housing is concentrated, city support and specifically tailored subsidy schemes could force a relative prompt decarbonisation.

The LPH sector exhibits above-average rates of refurbishment. This can be attributed to the regulatory framework. LPHAs are required to build up reserves that can solely be used for

<sup>28</sup> Note that our figures do not exactly correspond with (IIBW 2019: 12, *Table 1*). Since IIBW (2019) uses partially different figures in the more detailed discussion than in *Table 1*, we opted to use the more detailed.

financing maintenance and refurbishment. However, regulation also used to impede the implementation of sustainable practices in the sector. For instance, the tight restriction to core business activities made it economically unfeasible for LPHAs to install photovoltaics systems and act as an energy supplier for their tenants. In 2017, an amendment to the electricity law alleviated the situation. However, there remain, as so often, uncertainties with respect to technology (energy storage), user behaviour (will tenants shift some of their energy consumption into daylight hours) and business model (in particular the billing model).

Overall, according to IIBW (2019) the largest potential for refurbishment can be found in the SHP of (semi-)detached housing with an estimated 400.000 dwellings. That this SHP offers the largest potential is also confirmed by the results from WP3. In addition, WP3 identifies a significant larger decarbonisation potential of this SHP, due to stricter criteria. While there is generally no user-investor dilemma present in this SHP and owner-occupiers directly benefit from the non-financial effects of refurbishment, such as higher thermal comfort, refurbishment rates remain average by comparison. The high expenses and the disruption caused by comprehensive refurbishment tend to outweigh the positive factors. Households in owner-occupied detached housing tend to have higher incomes, are more likely to receive a pension and are older than households in other SHPs.

## 6 Assessment of Affordability and Inclusion

Whereas it is clear that the suggested pathways to decarbonised housing in Austria come with financial costs, it is not at all clear how they affect housing affordability and social inclusion. To tackle this challenge this subsection offers a contextualisation of housing affordability. Subsequently it formulates for the different SHP policy recommendations, which address housing affordability and social inclusion.

In their introduction to their edited volume on affordable housing governance and finance, van Bortel et al. (2019: 2) situate the emergence of housing affordability as political and academic topic with the rise of neoliberalism. As part of its new neoliberal role the state substituted its direct involvement in public housing for policies of affordable housing. A quick query on Google Scholar and Google Books Ngram Viewer with the term “affordable housing” supports this view and shows that this term emerged since the late 1970s. There exists, however, no unique definition of housing affordability as Li (2014) displays in a review of articles on housing affordability from 1990 to 2013. Moreover, one study by Burke and Hulse (2010: 823), which also uses the institutionalist SHP approach to discuss housing affordability in Australia, distinguishes between housing affordability, affordable housing and affordable living. They argue that housing affordability can be measured by relating housing costs to household income. Affordable housing, however, is a social norm (and thus subject to change), which defines “affordable”. Is a condominium or single family house of 500.000 euro affordable? What about a monthly rent or mortgage payment of 1.000 euro? Affordable living in turn relates housing costs to other costs of living. The complexity of affordable housing is also underscored by Leishman and Rowley (2012). According to which affordable housing relates to housing, social and economic issues.

For the purpose at hand, we use the definition of van Bortel et al. (2019: 4), who define affordable housing as “housing that is adequate in standard and location for low- to middle-income households at fees that enable them to meet other basic needs on a sustainable basis”. Notwithstanding its simplicity, the used definition entails three main components, which are at the centre of the affordability debate. First, it links affordability to household income. Unsurprisingly, housing affordability hits low- and middle-income households. Second, while referring to “fees” this definition considers both housing prices and rent levels as relevant. Indirectly, this also implies the access to loans and mortgage rates. Third, this definition puts housing expenses into its broader social context, which includes other (necessary) household expenditures and considers sustainability (cf. affordable living). In what follows, we take a closer look at these components.

### 6.1 Household Income and Wealth

Our previous socio-economic analysis of households already showed that significant differences exist with respect to provinces, degree of urbanisation and SHP. These differences are the outcome of macroeconomic processes, which cannot be neglected. As pointed out by Anacker (2019: 7-8) households have only limited options to generate income. First, most people are dependent on labour market participation to earn a living. Second, their ability to earn an income is determined by their position within this labour market. For 2017 Statistik Austria (2020a) reports a gross yearly wage of 32.367 euro and a net yearly wage of 22.640 euro for employees. Overall nominal yearly gross and net wages increased respectively by 35,30% and 34,51% from 2000 to 2017. For the period 2010 to 2017 the respective figures are 12,37% and 12,71%. However, these facts should be contextualised within the political economy of Austria.

Pernicka and Stadler (2015: 260-261) attest Austria a conservative labour market policy, which is still informed by an antiquated, heteronormative household model with a male breadwinner. Labour market policy is embedded within corporatist institutional setting, which experienced a shift since the 1980s. The Austro-Keynesian characteristics, which flanked aggregate demand policy (e.g. the stabilisation of purchasing power and full-employment) were substituted for an aggregate supply policy, which emphasises labour market flexibility and wage restraint. The corporatist setting counteracted a potential labour market duality, i.e. a clear divergence between low- and high-wage jobs. Thanks to corporatism Austria has a relative low share of low-wage jobs. In 2010 the share of wage earners with a gross hourly wage below two-thirds of the median was 13,9%. Austrian unemployment rates are one of the lowest in the EU. Notwithstanding these positive elements, Pernicka and Stadler (2015) argue that the general position of Austrian wage earners deteriorated. Since the 1990s there was a redistribution of the national income in favour of capital. Whereas in 1994 the share of national income accounted for by wages accounted for 75,7%, this share dropped to 67,3% in 2011. Moreover, labour market figures also show a structural shift from secondary sector employment, i.e. industrial jobs, to tertiary sector employment. Jobs in the service sector are, however, characterised more by atypical jobs.

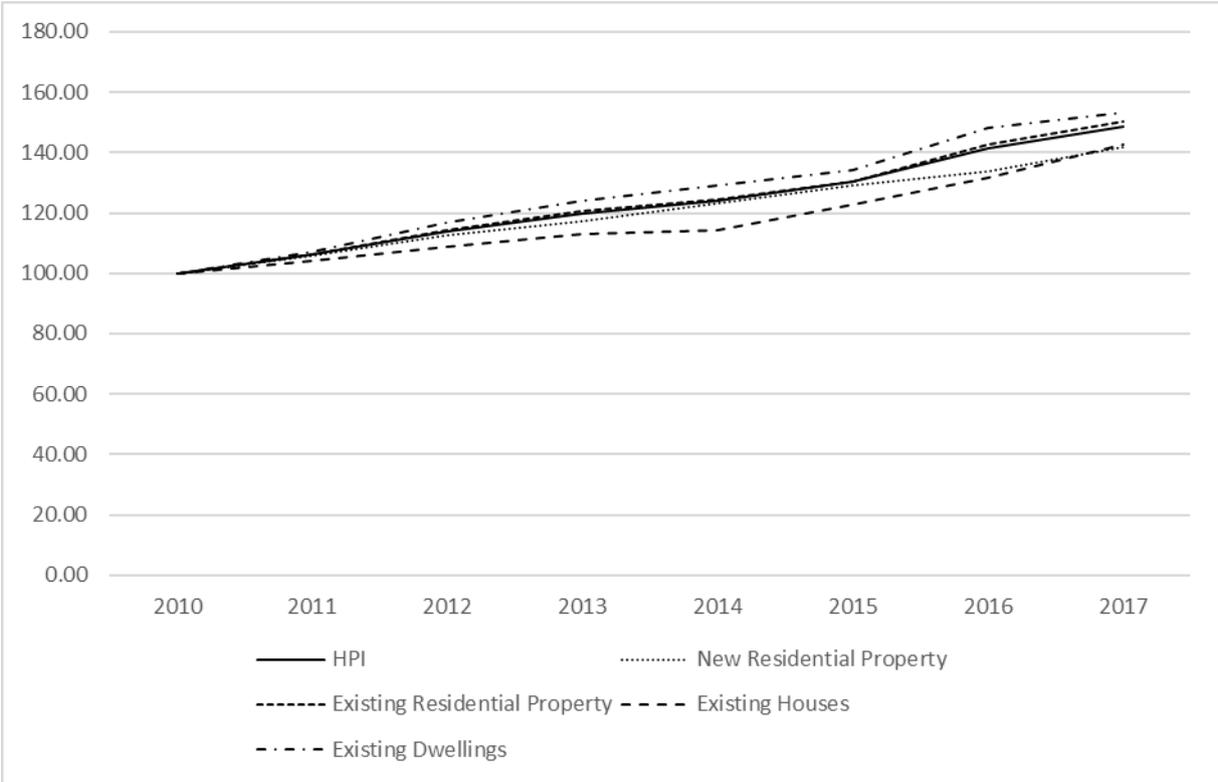
Altzinger et al. (2015: 351-356) provide a more detailed contextualisation of this change in the functional (i.e. factor share) distribution of income. They embed the evolution in Austria into a broader perspective and refer not only to economic trends such as financialisation (i.e. increased dominance of financial capital logics), but also neoliberal policy. These structural changes influence also Austrians personal income distribution. Between 1994 and 2012 income inequality increased. Whereas the bottom decile's income share remained stable, the increase in inequality was mainly driven by an increase at the top decile (Altzinger et al. 2015: 356-361). Even if one keeps structural differences into account, this increase in inequality can be observed: Inequality amongst male, full-time, all-year wage earners increased. In addition, the distribution of capital income is extremely unequal in Austria. With respect to capital income only the top 5% earners earn relevant income from interest, dividend or rent payments. The distribution of capital income mirrors the distribution of wealth, which is in Austria highly unequal. Wealth volume is conservatively estimated to be around 3 to 4 times Austria's yearly GDP. Wealth growth fuels inequality further (Altzinger et al. 2015: 361-362). The topic of income inequality is not only directly relevant with respect to the affordability of housing, but has an indirect impact on social inclusion. As discussed by Moser and Schnetzer (2017) income inequality has a clear spatial dimension. Their econometric model confirms for Austria that increases at the high-income spectrum induces regional clustering and subsequently social segregation.

In a recent working paper Fessler and Schürz (2018a) introduce a structural wealth distribution, which is linked to three social classes of households: renters, owners and capitalists. The social classes of households are based on asset ownership (with a special role for residential real estate) and broadly link our SHP to wealth distribution. Tenure status holds a pivotal role in their classification, because asset ownership is not only distributed very unequally, but the main asset form for the lower half of wealth owners is their main residence. In Austria the lowest three deciles in the wealth distribution are almost exclusively renters, i.e. households who have to rely on the labour market for their income and own little-to-none assets. Owner-occupier households dominate the 7<sup>th</sup> to 9<sup>th</sup> decile, whereas capitalist households can be found in the upper deciles. Owner-occupier households use their non-financial asset and generate a hypothetical, non-cash capital income, i.e. imputed rents. Capitalists, which can also be owner-

occupiers households, generate cash capital income from asset ownership in the form of rent payments or business profit.

### 6.2 Housing Prices and Rent Levels

The overall Residential Property Price Index (*Häuserpreisindex* – HPI) of Statistik Austria (2018a), which is shown in Figure 12, increased by 48,78% from 2010 to 2017. The lowest price increases can be observed within the subcategories New Residential Property (+41,86%)<sup>29</sup> and Existing Houses (+42,53%), whereas Existing Dwellings (+53,08%) witnessed the highest increase. The gap between Existing Houses and Existing Dwellings reflects regional differences in demand, i.e. more densely populated areas are characterised by dwellings and less densely populated areas are characterised by houses.



**Figure 12 Residential property price indices (2010 = 100, Statistik Austria 2018a)**

Whereas the overall OeNB index displays a very similar trend as the HPI, it covers the period 2000-2017 and has slightly different subcategories. Since 2000 the overall price of residential property increased by 87%. This increase was much higher in Vienna (120%) than in the rest of Austria (75%). This price increase in Vienna was mainly driven by the developments of used condominiums’ prices (+128%) and less by new condominiums (+90%) or single-family houses (+76%). A similar, but less pronounced development could be observed within the rest of Austria (single-family houses +54%, new condominiums +24% and used condominiums +92%). It is noteworthy, that the OeNB data do not indicate a price dip in the wake of the Financial and Economic Crisis (OeNB 2018).

Actual price levels for residential property are also provided by Statistik Austria (2018c), but these data cover only the years 2015-2017. In 2017 the Austrian median price was 1.458

<sup>29</sup> Note that during this period construction costs only increased by 14% (CITE).

euro/m<sup>2</sup> for houses, 2.812 euro/m<sup>2</sup> for dwellings and 86 euro/m<sup>2</sup> for building plots. Table 11 shows the spatial variance of these prices. An interesting aspect is that next to Vienna the western federal states have the highest prices. Only with respect to dwelling prices is the difference with the other federal states not that distinct.

	Houses	Dwellings	Building Plots
Burgenland	797	1.200	65
Carinthia	1.400	1.959	56
Lower Austria	1.265	2.250	83
Upper Austria	1.622	2.178	84
Salzburg	3.105	3.016	236
Styria	1.200	1.721	55
Tyrol	2.667	3.045	257
Vorarlberg	2.941	3.469	374
Vienna	3.750	3.598	676

Table 11: Median prices (€/m<sup>2</sup>) in 2017 (Statistik Austria 2018c)

Figure 13 displays the evolution of rents within Austria and four federal states. From 2005 the general level of rent prices did increase by 43,5%. This increase was the highest in Vienna (+49,5%), whereas in Upper Austria it was +38,9%. Vienna did not only experience the highest price increase, but has also the highest rent level (7,99 €/m<sup>2</sup>). Despite rent increases by around 43% rent levels in Lower Austria remain the lowest with 6,87 euro/m<sup>2</sup>. Considering the three distinct institutional settings of rental housing it is not surprising that these general figures hide some important information (cf. Statistik Austria 2019a: 35-41). In 2018 average rent payments for Municipal Housing was 6,6 euro/m<sup>2</sup>. Limited-Profit Rental Housing displayed average rent payments of 7,0 euro/m<sup>2</sup>, whereas other rent payments (i.e. mainly Private Rental Housing) reached 9,1 euro/m<sup>2</sup>. Within these SHP differences also exist due to for example provincial laws (e.g. prescribed rent levels), the signing date of the rent agreement<sup>30</sup> and a potential term-limitation of rent agreements<sup>31</sup>. This results in following spreads of rent payments: 4,4 – 9,0 euro/m<sup>2</sup> for Municipal Housing; 4,8 – 9,2 euro/m<sup>2</sup> for Limited-Profit Rental Housing; 4,4 – 13,7 euro/m<sup>2</sup> for other rental agreements/Private Rental Housing.

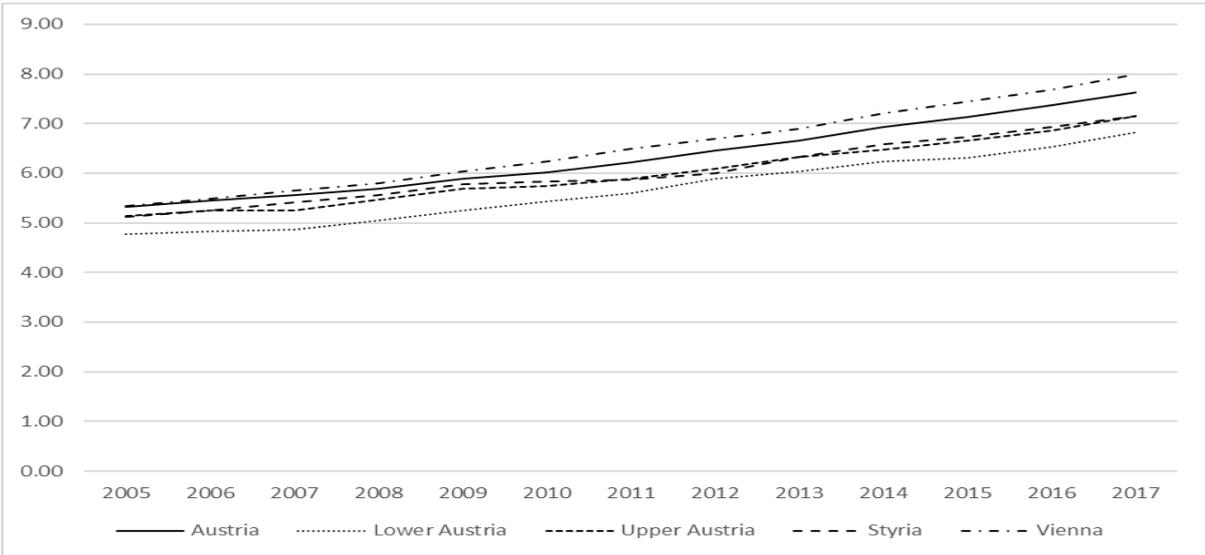


Figure 13 Rent prices (€/m<sup>2</sup>, incl. overhead) (Statistik Austria 2018b)

<sup>30</sup> Older rent agreements generally prescribed lower rent levels and are more likely to be subject to the stipulations of the Tenancy Law.

<sup>31</sup> Rent agreements with a term-limitation display higher rent levels. Which is also linked with the previous point, i.e. its signing date.

In addition, Statistik Austria (2019a: 41-53) provides information about housing costs not only for rental households, but also for owner-occupier households. Important to note is that for owner-occupier households interest payments are considered as housing costs, whereas the amortisation amount is not included. The average housing costs for households is 477 euro/month, but differs amongst the SHP. On average households pay in Owner-Occupied Detached Housing 452 euro/month, in Owner Occupied Flats 497 euro/month, in Private Rental Housing 735 euro/month (of which 600,8 euro as rent payments), in Limited-Profit Rental Housing 643 euro/month (of which 479,2 euro as rent payments) and in Municipal Housing 536 euro/month (of which 395,2 as rent payments). Another important element of housing costs, which is also highly relevant for the project, are energy costs. On average, they account for around 29% of housing costs. Due to the big volume and energy needs of (semi-) detached houses, energy costs account for around 41% of housing costs in Owner-Occupied Detached Housing. For the other SHP energy costs range from around 20% for Municipal Housing and Owner-Occupied Flats to around 15% for Limited-Profit Rental Housing and Private Rental Housing. Interestingly, Statistik Austria (2019a) puts housing costs also into perspective with respect to household incomes. Within the current distributional context of housing units, it shows that households with relative low incomes tend to end up in the more expensive SHP, i.e. they face a high financial burden to cover their housing costs.

### 6.3 The Political Economy of Housing Affordability

Notwithstanding data availability on housing prices and rent levels, it remains still unclear what determines them. In his article dealing with the uneven development of housing prices and speculative bubbles, which eventually led to the outburst of the Financial and Economic crisis in 2008, Ron Martin (2011: 613) notes in his conclusion that

“[...] within financial economics, housing economics and cognate fields, there is a new pressure to devise analytical frameworks that provide better insight into the origins and determinants of price and speculative bubbles, especially within housing but also more generally, with a view to explaining why some countries seem far less prone to such bubbles than others.”

Housing prices are a complex phenomenon as the discussion in the journal *Housing, Theory and Society* (2011, Vol. 28, No.3) clearly shows. Susan Smith (2011) for example delivers a thorough critique of the mainstream economics approach and suggests five interdisciplinary alliances to overcome its shortcomings. With respect to home prices she states that

“Few other critical concepts in housing studies are so widely aired, so assiduously analysed, and – still – so little understood.” (Smith 2011: 236)

This insight, however, implies also that there is no clear-cut answer to the impact of the decarbonisation pathways on housing prices and thus affordability. However, through combining our institutionalist approach (cf. SHP) with rent theory in the tradition of critical political economy<sup>32</sup>, we can gain some important insights. Moreover, this approach is complementary to the work of Van-Hammetner and Zeller (2018), which discusses amongst others recent housing price developments in Austria.

Based on rent theory housing prices can be regarded as consisting of two components (cf. Smith 1979; Smet 2016). First, there is the price component, which covers the costs of the physical entity. Differences in the cost of the used materials and in construction methods have

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<sup>32</sup> Appendix C provides a thorough theoretical discussion of the political economy of rent. This manuscript was also submitted to an international, peer-reviewed journal.

direct influence on housing prices. A second component, which is eponymous to rent theory, covers the price of property rights, i.e. rent<sup>33</sup> in political economy. The rent component is a valuation of the expected future revenues, which can be appropriated through the respective right of ownership. This conceptualisation of housing prices does not only allow considering economic fundamentals (e.g. economic growth, interest rates, household incomes, construction costs), but also includes other aspects such as institutional settings, behaviour and psychology.

In a recent contribution Van-Hametner and Zeller (2018) discuss the development of residential real estate prices in Austria. Whereas they acknowledge that socioeconomic fundamentals such as demographic changes (e.g. urbanisation), the accessibility to building plots, rent levels (i.e. expected revenues), economic growth, income growth and interest rates partially explain price increases, they emphasise the relevance of institutional contextualisation. A similar, more theoretical and general argumentation is put forward by Marsh and Gibb (2011b). Their comment mainly focusses on the scientific tension between (mainstream) economics and other social sciences with respect to explaining housing prices.

For the purpose of this paper we summarise the key facts. Housing prices in Austria did increase substantially: between 2000-2017 by around 87% (2010-2017: close to 49%) for prices and from 2005-2017 by 43,5% for rents. As shown in Table 12, construction costs (+55%) and construction prices (+45%) did not increase in the same magnitude. Both increases were also clearly above the evolution of the consumer price index (+38%). The divergence between these indices happened mainly after the outbreak of the 2009 financial and economic crisis. Up to this point in time, construction indices were close to (or even below) the consumer price index. Experts interviewed for this study pointed out that construction prices and costs also react to higher housing prices. Providers of building materials, independent contractors as well as construction firms benefit from a construction boom by increasing their prices (and thus profits). This development puts especially LPHAs under pressure as increasing construction prices and costs potentially push costs for new developments above the upper-limits stipulated by building promotion.

	1995	1997	1999	2000	2001	2003	2005	2007	2009	2011	2013	2015	2017
Construction prices	94	98	99	100	101	103	107	114	123	132	137	140	145
Construction cost	90	94	98	100	102	106	114	125	132	139	145	149	155
Consumer Price Index	-	96	98	100	103	106	111	115	119	125	131	134	138

**Table 12 Trends in construction costs and prices (2000 = 100), Statistik Austria (2018c; 2018e)**

One of the other so-called fundamental drivers of housing prices are income increases. However, as we previously discussed, especially wage increases (2000-2017: +35%; 2010-2017: +12,5%) were well below increases in housing prices and rents. In fact, this shows that in the last two decades Austria is being increasingly confronted with housing affordability issues. Not only did housing price levels increases dwarf income increases, but changes in incomes were also very unevenly divided. Mainly high-wage earners experienced wage increases. At the same time, wealth is highly unequally divided in Austria. This does, however, not imply that income developments had no impact on residential real estate prices, on the

<sup>33</sup> Whereas in Anglophone countries there exists no clear distinction between “rent” in its ordinary use and in its political economy sense, in German-speaking countries the ordinary use of rent equates *Miete* and rent in political economy is *Rente*.

contrary. As Van-Hametner and Zeller (2018) argue, Austria was not spared by the global trend in residential real estate financialisation<sup>34</sup> (cf. Aalbers 2016). In the aftermath of the 2009 crisis high-income or wealthy households started treating residential real estate more and more as a financial asset. As a result, expectations and investment motives in housing shifted markedly. Similar as Burke and Hulse (2010) observed for Australia, the institutional setting of Austrian housing is unintentionally vulnerable to the financial interest of high-income and wealthy households and organisations. Without political counteraction this could result in a long-term and structural problem of housing affordability.

Since 2009 Austria experiences a remarkable increase in housing prices and unregulated rent prices. This is mainly the outcome of a structural shift in investments. Financially scorched by the global effects of the sub-prime crisis, wealthy households (and investment organisations) discovered amongst others residential real estate as safe investment harbour. This change in demand was significant enough to induce price increases, consequently residential real estate investments did not only secure the value of capital, but became also lucrative. Especially some urban centres (e.g. Vienna and Salzburg) and leisure regions (e.g. Vorarlberg and Tyrol) offered attractive investment opportunities (cf. Smet 2016 for a discussion of the role of the built environment in such places). Whereas this first wave affected mainly existing stock, in the following years, private project developers catered increasingly for the more prosperous middle- and upper-classes (cf. *Vorsorgewohnung* – housing units as financial security) and kicked off a construction boom. This resulted in increases in construction costs and prices, which put less affluent households (e.g. potential first-time house or flat owners) and LPHAs (due to the binding upper-limits of prices) under pressure. This trend is insofar sustainable as its main demand is not credit-led, but wealth-led.

Simultaneously, it is unsustainable with respect to affordability and social inclusion. When we talk about housing, we do not talk about a common commodity, but about a basic necessity. Societies are built on housing, since housing is its cornerstone, which directly effects different aspects of live such as “health, wealth, lifestyle, social networks and job opportunities” (Marsh and Gibb 2011a: 215). Housing units “are the centre-piece of a geography of connectedness, variously anchoring and energising the myriad threads of economy, environment, culture and society that infuse the domestic sphere” (Smith 2015: 61). Given its importance governments have always engaged with housing policies such as public housing and housing promotion schemes, because market allocation would not meet societal housing needs on an adequate standard (cf. van Bortel et al. 2019). In the current situation, in which a financial logic pushes public housing alternatives at its limits, involuntary effects such as social segregation are likely to happen (cf. Moser and Schnetzer 2017).

With this background knowledge it is now possible to address the main issues with respect to the decarbonisation of Austrian housing. First, who is responsible for decarbonisation? It is rather straightforward that the owners of residential real estate should be hold responsible with respect to implementing and financing decarbonisation measures. On the one hand, decarbonisation investments have a direct impact on the physicality of residential real estate. Therefore, it would be preposterous for those SHP where users do not equal owners to make

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<sup>34</sup> Critical social scientists use ‘financialisation’ as an umbrella term to describe an economic trend, which set in after the globalisation of capital and was fuelled by the deregulation, privatisation and liberalisation of multiple economic spheres (e.g. financial industry, trade, FDI). We follow a French regulation reading of this term (cf. Becker 2007, 2013; Chesnais 2004; Serfati 2012). According to Becker (2013: 37) financialised accumulation, i.e. financialisation, is at hand when financial capital assets become increasingly important, i.e. the logic of fictitious capital accumulation becomes the dominant social/economic form.

the former responsible. Users should not be forced to make investments, which alters somebody else's property title. Only for the SHP of Owner-Occupied (semi-)Detached Housing there is no conflict of interest. Moreover, as refurbishment rates show, the Limited-Profit Rent Housing SHP have owners, which adhere to their social responsibility and implement decarbonisation measures. With respect to the Owner-Occupied Flats SHP and the Private Rental Housing SHP complexity arises from the ownership structure and the divergence between owners and users within multi-family residential real estate. Nonetheless, a concentrated action of owners is more likely to generate efficient and effective outcomes vis-à-vis a responsabilisation of users.

On the other hand, the division of wealth in Austria (cf. Fessler and Schürz 2018a), which is highly uneven, suggest by itself that owners should carry the financial burden of decarbonisation measures. Whereas some owner-occupier households could be financially supported by promotion programmes (e.g. younger households, single-parent households, poorer households in remote areas), owners, which generate cash-income from residential real estate, should not be supported. It would be a waste of public funds to subsidise on a large scale the residential real estate ownership of Austria's wealthiest households.

Furthermore, an all-encompassing decarbonisation obligation would prevent discriminatory price policies<sup>35</sup>. Non-obligatory decarbonisation policies, which do not induce an almost complete decarbonisation of housing within a relative short time period (e.g. 15-20 years), run the risk of further fragmenting Austrian housing markets. The political economy framework of rent suggests that starting from the current, non-climate neutral housing stock a partial decarbonisation would result in higher prices for decarbonised housing units. The decarbonised, energy efficient housing units would be offering above-average housing qualities vis-à-vis the standard, non-climate neutral housing units. In contrast, a compulsory decarbonisation of Austria's housing stock would induce a qualitative improvement of housing standards, i.e. climate-neutral housing units would become standard and not be considered above-standard. By this means processes of social exclusion could be prevented.

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<sup>35</sup> This argument is based on the interaction between Differential Rent 1 and Differential Rent 2, which is discussed in Appendix C.

## 7 Na-Wo Award Laureates

Within the context of the present project, the research consortium launched the Na-Wo Award<sup>36</sup> with the aim to engage transdisciplinary with active and strongly involved stakeholders. After a tendering process four housing projects with a focus on decarbonisation, affordability and social inclusion were awarded by an external expert jury (cf. Working Package 6). For our current purpose, we discuss these four projects by means of the here developed framework. For this discussion we draw on the laureates' application dossiers, our focus group meeting and semi-structured interviews with representatives from the project when available.

### 7.1 Modellvorhaben KliNaWo – Feldkirch, Vorarlberg

The *Modellvorhaben KliNaWo* project was initiated by Vorarlberg's Chamber of Labour (*Arbeiterkammer Vorarlberg*) in 2012 with the explicit aim to address head-on the relationship between energy efficient housing and housing affordability. From the initiator's perspective the political discussion on the supposedly trade-off between energy-efficiency and affordability lacked real data on economic feasibility, the extra-costs of energy-efficient housing projects and real-life energy consumption in these housing units. This initiative resulted in the construction of 18 housing units in a multi-family, LPHA building, which renters could buy after a 10-year period. The outcomes of this project are politically relevant as they (could) have consequences for the regulation of building technique, as well as the subsidy systems for residential real estate construction and renovation (incl. energy systems).

From the outset it was, however, clear that this project needed broad support from different agents within the Vorarlberg institutional setting of housing provision. The project was realised on the municipal territory of the City of Feldkirch. Since the 2000s Feldkirch is committed to energy efficiency and propagates this policy on multiple levels such as urban planning, its Spatial Development Programme (*REK- Räumliches Entwicklungskonzept*), an Energy Masterplan and binding criteria for new housing projects. Scientific and technical support was provided by the Energy Institute Vorarlberg (e.g. construction specification and coordination, energy and economic optimisation, dynamic modelling, public relations and scientific reports), the Comet-Zentrum alpS (e.g. basic research subsidies), the University of Innsbruck (e.g. technical expertise with respect to timber construction and energy efficiency), Walser + Werle (architects), e plus (building equipment and appliances expert) and Spektrum Bauphysik & Bauökologie GmbH. In addition, the Vorarlberg Chamber of Labour approached the housing promotion department of the Vorarlberg Province government not only for subsidies, but also for as potential stakeholder. The LPHAs VOGEWOSI was approached as potential promotor. This holistic approach was necessary as inter-organisational cooperation could create the necessary knowledge<sup>37</sup> to generate ecological sustainable, affordable and social inclusive housing. However, as the different representatives of the consortium acknowledged, it should not be taken for granted that such knowledge is created.

Due to the close cooperation with the provincial department of building promotion the consortium could secure construction subsidies based on a life-cycle cost approach instead of a cost of construction approach. Whereas in the latter only costs to construct the respective

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<sup>36</sup> Na-Wo stands for *Nachhaltiges Wohnen*, i.e. sustainable housing.

<sup>37</sup> In accordance to Nelson and Winter (1986) we take an institutional approach to knowledge. Knowledge is created within an institutional context (e.g. organisations) by creating routines, i.e. an implicit or explicit way how information is processed and acted upon. During our focus group meeting it became clear that the involved persons had to develop a common language and specify their respective aims. Consequently they could develop the necessary knowledge, which is applied and further developed through follow-up projects such as *Modellvorhaben Lerchenstraße* in Wolfurt.

residential real estate are taken into account, the life-cycle cost approach includes also follow-up costs ranging from energy consumption to maintenance. In this case a 50-year time frame was used, although a reduction to 35-year, which corresponds to the contract period of Vorarlberg's building subsidies, does not significantly change the outcome. The life-cycle cost approach is completely sensible from an ecological sustainability (e.g. energy efficiency and energy consumption) and an affordability (e.g. cost of living in lieu of cost of housing) perspective. The physicality of the residential building also implies specific energy needs, energy drains as well as energy sources, which all have an influence on household budgets.

The main findings of the *Modellvorhaben KliNaWo* with respect to the affordability of ecological sustainable housing fits well within our political economy framework. None of the participants would dispute that more energy efficient buildings and CO<sub>2</sub>-neutral energy sources come with higher construction costs. As the results of the call for tenders show that the extra costs for the realised project are only 3% to 5% higher than comparable, but less-energy-efficient buildings (i.e. with "normal" energetic standards). This difference can be observed in all of Austria, notwithstanding regional differences in price levels. This difference, however, is dwarfed by general price dynamics in building plots, construction and housing. As shown in Table 12 from 2011 to 2017 construction prices increased by 9% and construction costs by 11%. Prices for residential property (cf. Figure 12) increased almost by 50% from 2010 to 2017. One of the reasons to include a LPHA in the consortium was its cost transparency. Whereas pricing policies are in general opaque and private developers cannot be obliged to open their books, the regulatory framework in which LPHA operate made this for VOGEWOSI less problematic. The experts' opinion is that the experienced hikes in residential real estate prices in Vorarlberg is caused by the investment shift of wealthy households (cf. financialisation of housing) and its aftermath. The competition for building plots, i.e. a non-reproducible property right, is fuelled by financial potent demand and pushes prices up. At the same time, the induced construction boom in developments for this demand encroaches on the construction sector. This results in partial supply shortfalls, increased construction prices (e.g. materials) and costs (e.g. contract work). Not only is Vorarlberg's construction sector characterised by relative small and medium enterprises, but also relative low levels of competition due to its location, i.e. border region with a mountain area towards Tyrol.

Although the consortium is aware of potential conflicts with private, for-profit developers, it is hopeful that some best-practice results of the project will be applied on a broader scale. As an outcome of the project, the consortium advocates for a reduction of the life-cycle costs, i.e. initial investment costs and the costs of subsequent use. With respect to the renovations of multi-family buildings the participants acknowledge that this will be more challenging, since ownership relations are more complex and mistrust issues between agents exist. Implicitly they indicated that in addition currently broad knowledge with respect to ecological sustainable renovations exists.

From our institutionalist perspective the outcome of the *Modellvorhaben KliNaWo* fits at first glance within the Limited-Profit Rental Housing SHP. However, VOGEWOSI offers rent households a future purchasing option. Since it is likely that some households will buy their housing unit after the 10-year period, this project covers the Owner-Occupied Flats SHP as well. Moreover, this project differs from the 'classical' Limited-Profit Rental Housing SHP, because it was initiated by a non-developer (Vorarlberg's Chamber of Labour) and is the result of inter-organisational collaboration. From our project's perspective we highly value the life-cycle cost approach and the knowledge creation aspect. The life-cycle cost approach shows that due to a change in the regulation of building promotion, aspects of energy consumption

and energy sources can and should be integrated at the developer's level. Knowledge creation is pivotal for new technologies to spread and for non-fossil energy standards to emerge. Especially the experiences gathered by those agents, which are closely tied to the construction sector (e.g. architects, LPHAs, professional experts), can induce such a shift. At the same time, regulatory agents such as the department of housing promotion, city governments and research organisations can apply this experience to adjust regulatory procedures and within future cooperation with housing provision agents.

On a more critical note, the *Modellvorhaben KliNaWo* is confined by the regulatory framework of the Vorarlberg province. Due to the specific local regulation of building promotion, LPHAs have to offer residents after a 10-year period a purchasing option. Notwithstanding the fact that the provision of housing units with a future purchasing option makes sense in the concrete housing context in Vorarlberg, which is characterised by relative high ownership levels, we regard the province's policy problematic from an overall societal perspective. Whereas the project offers currently possibilities to provide socially inclusive housing, after the sale of some housing units, it partially loses its steering ability. Moreover, this policy adheres to a narrative, which is centred on private property and indirectly devalues other housing provisions. With regard to the other NaWo-laureates it should also be noted that future residents were neither actively involved nor explicitly considered beyond the day-to-day praxis of VOGEWOSI to provide affordable housing.

To conclude, we would like to stress the importance of the coordinated approach taken by the project consortium to gather insights in pricing processes of housing units. In the wake of the project's aim it was pivotal to gather minute data on relevant prices for different components and works. The factual erection cost (ÖNORM B 1801-1 *Errichtungskosten*) per square meter floor space (*Wohnnutzfläche*) was 2.400,00 €/m<sup>2</sup> (Ploss et al. 2019: 37-41). This amount lies 130,00 €/m<sup>2</sup> below the project initial prognosis (Ploss et al. 2017: 16-25), 230,00 €/m<sup>2</sup> below the average cost of all LPHAs housing projects in Vorarlberg with a similar time frame and 238,00 €/m<sup>2</sup> below the cost limited set in the Vorarlberg building promotion. This shows that energy-efficient housing does not necessarily imply higher erection costs. Moreover, tenants benefited from both lower actual erection costs and lower than estimated energy costs through a reduction of rent prices from 9,45 €/m<sup>2</sup> to 9,20 €/m<sup>2</sup> within the first year.

The erection costs of 2.400,00 €/m<sup>2</sup> can be roughly divided into construction costs (ÖNORM B 1801-1 *Bauwerkskosten*) and additional erection costs such as fees, furnishings and overhead, of which the former accounts for roughly four fifths of total erection costs. In turn, the costs for building equipment (*Haustechnik*) accounts for 23% of construction costs (or 19% of erection costs). Baffled by the observation that the energy-efficient building of *Modellvorhaben KliNaWo* was actually not substantially more expensive (3% to 5%), the consortium also addresses other aspects of housing prices head-on. First they discuss the impact of land price developments. Average land prices in Feldkirch increased from 345,00 €/m<sup>2</sup> in 2015 to 575,00 €/m<sup>2</sup> in 2019. To cover one square meter of floor space *Modellvorhaben KliNaWo* needed 1,53 square meter of land. To put this into perspective: fictive land prices, which are not part of the erection costs, for a project similar to *Modellvorhaben KliNaWo* would have increased from 527,85 €/m<sup>2</sup> (floor space) in 2015 to 879,75 €/m<sup>2</sup> (floor space) in 2019. Total costs per square meter floor space would have increased by around 12 % from 2.927,85 €/m<sup>2</sup> (2.400,00 + 527,85) to 3.279,75 €/m<sup>2</sup> (2.400,00 + 879,75). This fictitious example assumes no changes in erection costs. However, and that is the second issue raised by the consortium, the construction boom did not only increase land prices, but also construction costs. This is supported by our previous analysis of the political economy of housing

affordability (e.g. Table 12). Generally speaking, the construction activity caters mainly for wealthy households, but contributes little to current housing needs of Vorarlberg's broader society. Simultaneously, the financially potent demand pushes both land and construction prices, which puts LPHAs under financial duress. Unsurprisingly, these specific results fuelled a heated political and social debate in Vorarlberg, of which the outcome is still unclear. The adaptation of the life cycle cost approach in housing promotion would be a first step to attain ecologically sustainable, affordable and socially inclusive housing.

## 7.2 Haus of Commons – Innsbruck, Tirol

The *Haus of Commons* is a private renovation initiative of a multi-family house with 12 housing units, which managed to achieve an extensive decarbonisation since 1991. In a first wave (1996-1997) the building was not only overhauled (e.g. thermal insulation, closing of balconies, solar collectors), but also substantially enhanced (e.g. installation of elevator, construction of two new housing units in the former attic). In a second wave, the existing energy systems were gradually substituted for a heat pump system. Notwithstanding the fact that renovation rates are relatively low, the project consortium was still surprised to receive only one bid for the NaWo-Award, which concerned a renovation project. It is even more surprising that this renovation project concerned a privately owned multi-family building, which have, in general, the lowest renovation rates (cf. Table 10). A discussion of this projects peculiarities is highly informative with respect to potential difficulties encountered within this SHP.

The story of the *Haus of Commons* starts when Heinz Fuchsig was gifted the house by his mother as an early inheritance. Confronted with a time-worn real estate and considering his own family's housing needs, he decided to invest in a general overhaul and expansion. In the former attic two housing units were constructed, of which one was sold to partially finance the investment costs. Other financial resources were provided by his own savings, relatives and building subsidies from Tyrol's Province and Innsbruck's city council. In addition to two new housing units, of which one is used by the Fuchsig household, thermal collectors were installed on the roof to provide warm water, previous garden-sided balconies were integrated into the respective housing units and thermal insulation was applied. Around 16 years after these initial investments, a second big investment was made to introduce a heat-pump based heating system. These investments resulted in an almost complete decarbonisation<sup>38</sup> of the residential real estate since 1996. This is not only the result of the new heating system, but also through a significant reduction in energy consumption due to thermal insulation.

The issues with which the investor was confronted during the decarbonisation of his house were both of organisational and technical nature. Given the pioneering aspect of the *Haus of Commons*, this is, however, not that surprising. On the one hand, official bodies were partially unable to cope with implications of new technology. At the same time, it was difficult to find relevant, up-to-date information from experts for the planned investments. This lies, however, in the nature of the respective organisations, which first have to collect and process information to generate knowledge. This results in a certain time-lag. Moreover, it is understandable that official bodies support and promote technologies and renovation measures, which are tried and tested. On the other hand, knowledge with respect to these new technologies was absent within the construction industry, since it lacked hands-on experience. Consequently, the implementation of decarbonisation measures is not only a technical challenge, but is also based on trust. One needs the commitment of construction partners to tackle the challenges

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<sup>38</sup> Of the 12 housing units only one relies on gas heating. It is planned to connect this unit to the heat-pump system in April 2020.

of decarbonisation and to react on unforeseeable problems along the way together. Given this initial uncertainty it is highly valuable that within the context of the *Haus of Commons* information and knowledge were disseminated through data gathering and information sharing (e.g. handbook). Ergo, the implementation of new decarbonisation measures can be a laborious process since knowledge on different levels has to be created. Nonetheless, this is unavoidably part of dynamic processes of innovation, which is overcome by time.

Especially with respect to the private rental housing SHP this laureate project clearly shows that personal and social aspects are pivotal to the “success” of decarbonisation processes. The Fuchsig household owns residential real estate through gift<sup>39</sup>. Since they did not have to finance the purchase of a multi-family house, they had the financial means for renovations. Although this is a necessary condition, it is not sufficient. Especially the personal traits of Heinz Fuchsig are essential to understand the decarbonisation process. First, he is interested in the topics of health, climate and technology (e.g. he is an occupational health practitioner and has training in construction biology) and is knowledgeable in these areas. Second, he is aware that his actions as owner also have political and social impact. He does not only regard the use of fossil fuel as ecological unsustainable (e.g. climate change and health implication of pollution), but also as unsustainable from a political economy perspective. The current state of his real estate makes him more or less independent from large companies and fossil fuel exporting countries to meet its energy needs. Third, he is an idealist with altruistic behaviour. He has a clear long-term perspective with respect to the multi-family house and invest correspondingly in the housing quality of his tenants. Although he advocates a clear vision, he does not push tenants to follow and is committed to an open dialogue. This also explains his enthusiasm for the commons idea. In this case, he actively seeks to create and maintain an active community. Next to explaining and discussing decarbonisation measures with his tenants, he created in its wake common spaces and sharing opportunities. Currently, tenants share the use of the garden, a small tool shed, sporting equipment, kitchen appliances and a hybrid car. In addition, the fact that he lives in the same building as his tenants allows informal communication and guarantees a shared interest between owners and tenants.

Applying our institutional framework to the *Haus of Commons* project, we argue that it is embedded both in the private rental housing SHP and the owner-occupied flats SHP (cf. two rooftop flats). Potential conflicts of interests between the owner-occupiers and building owner are minimal, because one owner-occupier is a majority owner. At the same time, the other owner-occupier household acquired its flat in the wake of the first wave of decarbonisation, i.e. it was aware (and probably supportive) of the engagement of the original owner. Potential conflicts between owners and tenants are mediated through the pragmatic and idealistic behaviour of the majority owner. The building owning household lives in the same building and share a common interest, which is further strengthened through sharing and cooperation initiatives (i.e. the establishment of a house community). The two decarbonisation initiatives, carried out by the majority owner, span in total a period of around 20 to 25 years. Since these decarbonisation measures had in the context of Innsbruck a clear pioneering character, it was essential to create relevant knowledge about their implementation (e.g. installation) and their use (e.g. energy supply and demand, day-to-day performance). This knowledge is made the broader community available through PR and handbooks. With respect to affordability, the rental prices are relatively affordable within the high price levels in Innsbruck. Whereas the

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<sup>39</sup> Note with respect to the previous discussion of wealth distribution that inheritances and gifts are major contributors to wealth (Fessler and Schürz 2018b; Leitner 2016). This also explains the intergenerational persistence of wealth inequality.

rent for flats exclusive of heating and other additional costs are a bit higher than similar flats, these additional costs are due to the decarbonisation measures lower. Current rent prices are a bit above 1.000,00 euro/month.

Notwithstanding its relevance for the decarb project, the *Haus of Commons* initiative indirectly uncovers the broader complex of problems of unregulated decarbonisation within the private rental housing SHP. First, notwithstanding building owner's position within the wealth distribution, an investment in exhaustive decarbonisation measures poses a relevant financial burden. Therefore, it is necessary to plan the overhaul of existing multi-family buildings in different phases (as was done in the *Haus of Commons* project). At the same time, it should be pointed out that not all residential real estate owners are private households. In the case of companies, which own buildings within the private rental housing SHP, the financial burden can be much less outspoken. Second, without the passionate engagement of Heinz Fuchsig, the *Haus of Commons* would neither be decarbonised nor would it constitute a relatively affordable housing community. At the same time, this example also shows that a paternalistic approach, i.e. building owners are at the controls of decarbonised and socially inclusive housing and rental households are dependent on their goodwill, does not offer a general solution. Third, the complexity of multiple-ownership is not covered by this example. Although two owners were involved, there was a clear majority owner, which could push his agenda. In other cases the process of achieving consensus with respect to decarbonisation measures, rental prices and social inclusion can be highly troublesome. Fourth, especially with respect to the implementation of new technologies the legal framework is not always up to date, which could hamper or impede sustainable solutions. Especially with respect to private rental housing SHP the state should assume the responsibility to define clear standards with respect to decarbonisation (e.g. energy efficiency, energy sources), affordability (e.g. make the tenancy law fully applicable to all rental contracts) and social inclusion (e.g. creation of shared spaces). The *Haus of Commons* project is a positive example that clearly displays that all these aspects can be attained within this SHP.

### **7.3 Sonnengarten Limberg – Zell am See, Salzburg**

The *Sonnengarten Limberg* project originated in 2014, when a larger building plot became available for housing construction. Whereas a private developer had a preferential purchasing option on this plot, the city government of Zell am See wanted to guarantee a sustainable housing project. This resulted in an interesting cooperation between both parties and the construction of 77 subsidised rental housing units and 102 privately owned housing units, of which 61 are subsidised if buyers meet the respective criteria. But the *Sonnengarten Limberg* project is more than the construction of housing units, it is a well thought holistic approach to sustainable housing, social inclusion and spatial planning as we will discuss.

The local context of Zell am See is important to understand the significance of this project. First, the city government is committed to sustainability, especially to implement energy efficiency. In 2015 this resulted in a guideline for sustainable housing, which provides a comprehensive approach to sustainability. Based on different insights with respect to housing, this guideline develops an understanding of sustainability, which covers ecological, social, economic and mobility aspects and which aims at providing a high quality of life for local residents. Second, Zell am See and other popular vacation destinations in Salzburg's province, face a similar problem as the communalities in Vorarlberg (cf. *Modellvorhaben KliNawo*). Local residents compete with more affluent, non-resident households for limited building plots. In addition, housing and tourism imply different uses of land, but have direct influence on housing

prices. Correspondingly, the city government develops housing policies, which aims at securing housing affordability for local residents, i.e. principal residences.

The core consortium for this project consists of the private developer Habitat Wohnbau GmbH, the City Government of Zell am See, Salzburg's independent research institute specialised in land use and housing SIR (*Salzburger Institut für Raumordnung & Wohnen*) and the architects of Architekturbüro Ludwig Kofler. At the beginning of the project they signed a quality agreement, which stipulated in detail the shared goals and the respective responsibilities. In addition, they engaged Sarah Untner, a social scientist, as independent consultant with the task to develop a social neighbourhood concept and an inclusive plan for semi-public and public spaces. Since this project encompassed more than the mere developing of residential real estate, public funding was acquired to partially cover research costs.

Since the city government of Zell am See wanted to be actively involved, two joint ventures with the Hillebrand Group were established. Whereas HLZ GmbH is the promotor of the building, which contains service providers (e.g. medical practice) and a supermarket, Limberggarten GmbH promotes the construction of three residential buildings for subsidised rental housing. In one of these buildings a kindergarten is located and in another building the communal room, a semi-public space for residents, is located. The allocation of these rental housing units is organised through the city government and the final decision is taken jointly by the city government and the Limberggarten GmbH. For the buildings for owner-occupiers (both private and subsidised) Habitat GmbH (a company of the Hillebrand Group) acts as promotor. The spaces between these buildings are developed as public space for a broader community (e.g. playground and bench areas). In addition, along the noise protection wall, which reduces sound pollution from the bordering state road, semi-public buildings were constructed (e.g. shared workspace, radio station and music room). Another aspect worth mentioning is the inclusion of a guest flat within the subsidised rental building. This allows residents hosting guests without the necessity of a guest room in their own flat. With respect to the energy system, the consortium organised a tender process according to clear criteria concerning sustainability and regionalism. This resulted in different viable alternatives at hand. The final decision, however, was not only based on investment costs in the energy system, but a life-cycle approach was adopted. For the consortium it is clear that the residents should have benefits in the use of sustainable energy systems. The company *engie* now supplies, as a contractor, the whole project with energy for heating and hot water directly in the housing units by means of a localised district heating installation. Energy is provided through wood pellets, exhaust gas condensation and heat recovery from the air ventilation systems. In addition, a pilot scheme with the provincial energy company, Salzburg AG, was initiated with respect to photovoltaic electricity.

Given the holistic character of the *Sonnengarten Limberg* project it is not surprising that it covers two institutional settings of housing provision. On the one hand, it covers a rather rare case of the Municipal Housing SHP. Whereas Limberggarten GmbH, of which the city government of Zell am See is a minority shareholder (25%), is the owner of the subsidised rental housing units, it is the city government, which allocates these housing units in cooperation with Limberggarten GmbH. On the other hand, it is embedded in the Owner-Occupied Flat SHP. The fact that Habitat GmbH, as a private company, could erect next to 41 free-market owner-occupied housing units 61 subsidised owner-occupied housing units is due to a change in the Housing Promotion Act of Salzburg. Otherwise, a LPHA should have been involved. Similarly, the pilot scheme with Salzburg AG was made possible through changes in energy law. This enables the residents to be the direct beneficiaries of the electricity produced

by their energy system. At the same time, this project goes beyond these institutional contexts as it covers aspects of urban planning and development. Thanks to the engagement of the city government, social aspects with respect to semi-public and public spaces were integral parts of the project. The project covers not only housing, but also local service providers, public playgrounds and relax areas. In addition, with the provision of a radio and rehearsal studio it extends its scope to a broader community. Given the peculiar character of this project it is also meritorious that from an early stage in the project the consortium actively tried to involve and engaged with potential residents (e.g. informative meetings, get together). Due to the active role of the city government it incorporates gathered knowledge in different bodies of urban planning and organises future projects accordingly (e.g. the construction of school buildings). Moreover, through different channels (e.g. Smart Services, SMART CITY Salzburg, e5 programme) experiences and know-how is made available to civil society.

Given the tight housing market in Zell am See the *Sonnengarten Limberg* is a very interesting and promising project. Nonetheless, some critical remarks have to be made. The project is biased towards private-property (102 owner-occupied units vs 77 rental units), which can be counterproductive from an overall societal perspective. After purchasing their flats owner-occupier households have a vested interest in maintaining the monetary value of their real estate, which does not equal an interest in socially inclusive and affordable housing. In a high-price environment for building plots and housing the city government of Zell am See could consider more progressive approaches to landownership and land use planning. Moreover, and this is directly connected to the specific promotion of the different buildings, notwithstanding an holistic approach a clear spatial distinction is retained between subsidised rental housing, subsidised owner-occupied housing and free-market owner-occupied housing. From an inclusive perspective it would have been interesting to spatially mix the respective buildings or even create mixtures of these tenure forms within the same building (cf. *Modellvorhaben Lerchenstrasse Wolfurt* in Vorarlberg, which mixes three tenure forms in two buildings).

#### **7.4 Bikes and Rails - Vienna**

The *Bikes and Rails* project in Vienna emerged in the wake of a request for residential real estate proposals of the Austrian Federal Railways (ÖBB). In the aftermath of the construction of the Vienna Main Station (*Wien Hauptbahnhof*) the City of Vienna rededicated ÖBB owned land previously earmarked for industrial purposes. One of the conditions was that the ÖBB would offer selected subsidised building plots to innovative, socially inclusive building projects. This approach fits within the city's approach and commitment since 2009 to socially sustainable housing in subsidised real estate projects. The tender procedure was administered by an urban planning board, which included different city bodies next to ÖBB representatives. After an initial concept presentation, selected projects had around one year time to flesh out their initial proposal in order to obtain the respective building plot.

Initiated by the architect's office Reinberg, which specialises in sustainable housing, a project consortium was put together. The other members are Bikes and Rails (self-organised housing association)<sup>40</sup>, wohnbund:consult (social consultancy provider), Familienwohnbau (LPHA, building promotor) and Firma Strobl (general contractor). After the start in 2014, the consortium was awarded a building plot in 2015. In 2017 the association Bikes and Rails became member of the umbrella organisation HabiTAT and in cooperation with them it launched in May 2018

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<sup>40</sup> Originally United in Cycling was involved, but due to delays and an offer in another building project (Seestadt) they opted out.

its direct credit campaign. This was also the reason it established as joint-venture a limited liability company Bikes and Rails GmbH. With the start of the construction in September 2018 Bikes and Rails GmbH signed a purchasing deal with the promotor Familienwohnbau.

With its identification with and focus on cycling as alternative urban means of transport, this project goes beyond affordable and sustainable housing. In total 18 housing units are constructed, of which one is a guest flat and another is a shared flat for refugees or students. The construction conforms passive house standards, uses regional wood construction and includes a PV-system on the roof. During planning the interaction with semi-public and public spaces are included. Future residents share semi-public space on the communal roof, in the garden, in half-open hallways, in a community room, and a music room. Its mobility concept implies a shared bicycle basement and a bicycle café, the latter should also serve non-residents and caters for public space. A distinct characteristic of this project is also the involvement of its future residents. The spill of this project is the Bikes and Rails association, which is the majority shareholder of Bikes and Rails GmbH<sup>41</sup>. The members of the association are the future residents and are involved in every aspect of the construction process. To organise this they participate every second week in a plenum to discuss relevant issues. These issues are prepared by eight task groups organised according to different topics. Next to their engagement in these task groups and plena, members also participate to a monthly workshop. The realisation of *Bikes and Rails* is a collective effort. In addition, the commitment of the architect's office Reinberg cannot be underrated. In a first round of the project's tender process in order to find a general contractor, no viable offers were received. In a booming construction environment the costs limits of a passive, wood construction house deemed unrealistic. In a response to this, the architect's office Reinberg did the cumbersome work to collect for all the different works individual tender offers, collected these offers and presented them potential general contractors. In the end, Firma Strobl agreed to function as general contractor for this project.

The peculiarity of the *Bikes and Rails* project is without doubt its financial model. Construction costs of the project are covered by official subsidies, a loan granted to the Bikes and Rails GmbH by an established financial organisation and a plethora of small loans provided by private persons. Little has to be said about the commercial loan, except that its term is 35 years. Official subsidies extend from a preferential land price for the building plot, which reduces financial needs, to building promotion, which takes the form of a low interest rate, 25-year loan. The project's consortium also stressed their close cooperation with official bodies to realise the building. During these consultation processes the residential real estate was classified as a home institution (*Heim*). This status implies a different legal framework (e.g. building code), which is especially relevant, since the Tenancy Law does not apply for the tenants. Simultaneously, the City of Vienna cannot allocate a share of the new-build housing units. The Bikes and Rails GmbH is the owner of the building and provides housing units to the members of the association Bikes and Rails, and to their partner NGO Flüchtlinge Willkommen. The third financial pillar of the project is embedded in a critical social movement, which focusses on self-organised housing. One of the core concerns of the *Bikes and Rails* project is to create housing units as use values (i.e. qualitative, sustainable and affordable housing) and at the same time shield the project from a financial logic, which is centred on the exchange value of housing units. Consequently a cooperation with and membership to

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<sup>41</sup> HabiTAT is the minority shareholder.

HabiTAT<sup>42</sup> is self-evident. This collective has the knowledge to organise crowd-funding schemes, which support self-organised, socially inclusive housing projects. The *Bikes and Rails* project relies on this crowd-funded, direct credit model to cover its initial construction costs. In order to repay all these different financial commitments the association generates revenues through rents. The calculation of these rents is based on a lifecycle approach. The cost of living is calculated at around 9 euro/m<sup>2</sup>. This includes working expenses (*Betriebskosten*), internet access and a telecom-fee, but does not cover electricity or heating. The basic idea is that this rent price is not increased and that every generation of tenants pays its share of the construction costs. In the case that the project is debt free and self-sufficient excess financial means are made available to HabiTAT to support other self-organised housing projects.

Notwithstanding the major contributions of the *Bikes and Rails* project, especially within a genuine dense urban context, two critical remarks should be made. First, and this is something the Bikes and Rail members are well aware of, this specific approach is based on the active involvement and commitment of future residents, i.e. as a collective they build their home. Considering the high complexity of housing projects this implies that they commit a lot of their time resources (cf. meetings). This raises the question, how such an approach can be applied on a larger scale. Note that scale refers either to a project with more housing units (e.g. 50 units instead of 18) or to the overall potential within our current society to implement successfully self-organised housing projects. Second, with the legal status of home institution, which is more commonly used for hall of residence (students) or special-care homes, the *Bikes and Rails* project does not fit within one of the previously identified institutional structures. This is not problematic by itself, but it can create from a societal perspective an insider-outsider problem. If this self-organised approach would become widely spread, government agencies would lose their steering capacities. On the one hand, they cannot allocate housing units to households in need. On the other hand, regulations for subsidised housing (e.g. tenancy law) can be circumvented due to the specific status of home institution. In the end, this would lead to a system in which access to housing depends on the benevolence of self-organised associations, which can be paternalistic or lead to favouritism. However, this being said, the *Bikes and Rails* project displays how sustainable and affordable housing can be realised in a socially innovative way by thinking out-of-the-box.

## 7.5 Summary

To wrap up the discussion of the NaWo-Laureates, we reflect on three common traits, which are intertwined. First, the four projects use a multi-faceted understanding of sustainability, which reflects also the UNO's SDG approach. None of the projects focusses exclusively on the environmental impact of housing, housing affordability or social embeddedness, but they cover all three aspects. Considering the fact that housing determines social relations and economic opportunities, and vice versa, it is a necessity to adopt such a holistic housing approach. The decarbonisation of housing cannot take place without keeping account of the economic and social aspects of the respective built environment. Moreover, as these projects show, if these different aspects are an integral part from the onset they are not mutually exclusive, but manageable and even reinforcing. Second, the four projects clearly emphasise the use value of housing units. The main objective in these projects is not to optimise exchange values nor profits, but to provide the Austrian society with qualitative, liveable housing units. This includes next to mere living space also used building materials, (energy) infrastructure

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<sup>42</sup> <https://habitat.servus.at/>, HabiTAT is an umbrella organisation of self-organised, socially inclusive housing projects. It is similar to the German Mietshäuser Syndikat (<https://www.syndikat.org/de/>).

and a sense of community. The projects incorporate explicitly the social embeddedness of its residents and experiment with concepts such as shared spaces. Third, the projects share a long-term perspective. Decisions with respect to financial investments, infrastructure, energy needs and energy use are based on a time frame covering more than two decades. Residential real estate is a durable good, which makes such an approach worthwhile. Since housing is characterised by high complexity, which touches on different aspects of our lives, applying such a long time frame should be self-evident. It is exactly this complexity that makes these traits interdependent. Adopting a long term perspective implies a closer look at energy topics, the longevity of the used materials and broader socio-economic developments. This is also contradictory a short-term perspective, which favours exchange value, and puts the use value of housing more in the foreground.

## 8 Conclusion

From the outset, the present working package's aim was twofold: deliver necessary parameters as input for the techno-economic model, which provides potential decarbonisation pathways, and address the impact of these decarbonisation pathways on housing affordability. The approaches used in this working package are informed by a political economy perspective advocated by e.g. Martins (2013), Lawson (2006, 500 footnote 1) and Power (2004). From this perspective production, distribution and consumption are intertwined processes with a specific temporal, spatial and social context. This implies that housing should be considered accordingly as the outcome of specific social processes. Therefore we opted to use the framework of Structures of Housing Provision, since it covers these aspects.

The societal importance of housing is not only given by its capacity to cover the basic need for environmental and social protection, but also its ramifications on factually all aspects of our daily life such as health, education, employment, transport, leisure, consumption, social network, ... Any society, which values some degree of social inclusion, therefore develops housing policies to secure adequate qualitative housing. Simultaneously, it is noteworthy to draw our attention to the work of Henri Lefebvre. In his seminal book *The Production of Space* Lefebvre (2015: 321-340) shows that the existence of landed property creates a first form of exclusion. Whereas distribution processes per definition imply both inclusion and exclusion, our attention should not be focused on the fact that landed property exists, but on the distribution processes of landed property. Within this setup of private and public interests in housing it is unsurprising that frictions exist.

Within the Austrian context these frictions are institutionally mediated along five broad Structures of Housing Provision, *viz.* owner-occupied detached housing, owner-occupied flats, private rental housing, limited-profit rental housing and municipal housing. While not negating the underlying dynamic processes, our research attests these structures a more or less stable character. This implies also that policy recommendations should consider the differences between these structures. Nonetheless, and also supported by our discussion of the NaWo-Laureates, some general guidelines can be formulated.

First, as we learned through this project, a holistic approach with an equivalent treatment of sustainable energy use, housing affordability and social inclusion is indispensable. It does not suffice to pursue a policy that does not include these three perspectives at its genesis. A reformulation of existing policies, which is extended by the other themes, would fall short as a comprehensive solution. Therefore we advocate a collective effort by the responsible political bodies (e.g. ministries, provinces), which draws on respective expertise at hand and includes relevant civil society organisations.

Second, the political measures to implement sustainable, socially inclusive and affordable housing should have as clear focus the use value of housing units. Considering current climatological developments it is unavoidable that a decarbonisation of our housing stock occurs. The concrete transformation, however, can have different outcomes. From our perspective it is important that sustainable housing can be established as a standard practice, which makes non-sustainable housing be perceived as sub-standard. This would have the potential to avoid a price mark-up for sustainable housing units. Moreover, this would also alleviate the financial burden for less-fortunate households, which could benefit from lower energy costs. This would also be accompanied by a responsabilisation of real estate owners, which is derived from the societal importance of housing and their private control over a collective good, *i.e.* space (cf. Lefebvre 2009: 214-215).

Third, any policy recommendation should keep account with the longevity of residential real estate. This does not mean that decarbonisation measures should be planned long-term, but that the decarbonisation of residential real estate will have a long lasting effect on energy use, affordability and social inclusion. This actually reinforces our claim that a coherent, interdisciplinary policy approach should be adopted.

With respect to the five identified Structures of Housing Provision, more concrete policy considerations can be formulated. All in all, we are sceptical that without a general obligation an overall decarbonisation can be attained. Both owner-occupier households of detached houses and flats have a direct interest in decarbonisation measures as they are also their beneficiaries. Through a well-thought-out decarbonisation plan they could benefit from lower energy costs and increased living comfort. At the same time they have the possibility to make an active contribution to achieve Austria's climate goals. Additionally these households have the highest incomes in Austria and are also owners of wealth. Therefore, a subsidy system to financially support this transformation should be kept minimal. On the one hand, it would be possible to introduce for detached houses a preservation and refurbishment contribution (*Erhaltungs- und Verbesserungsbeitrag*), which would be saved by the household on a separate account. Owner-occupier households would subsequently build up the means to finance the decarbonisation of their property. As incentive these savings could be taxed at a lower rate. Moreover, they could develop an overall decarbonisation plan, which can be executed in different phases. With respect to owner-occupiers of flats, it would be necessary to overhaul the voting procedure. Considering the heterogeneity of these households and the necessity to reach agreement, it could make sense to differentiate between owner-occupiers and mere owners, with a preferential treatment of the former group as the former are directly impacted from this transformation. On the other hand, we have a non-negligible incidence of poor households in both SHP. Whereas in those cases, which involve older households, it would be possible to initially abstain from the implementation of decarbonisation measures. The decarbonisation of these housing units would become an obligation for their inheritors. For the remaining poor households a flanking subsidy system could be put in place.

The limited-profit rental housing units currently display a relative high degree of refurbishment activities. Therefore, a minor overhaul of the existing system could be fruitful. One possibility would be to increase minimal standards, which should be met through refurbishments. Whereas the execution of decarbonisation measures would be relative easy for municipal housing, the major challenge is to finance this transformation in existing financial constraints of the state imposed by EU and national law. In addition, since these decarbonisation measures affect inhabitants, we advocate for social mediation with the aim of strengthening social inclusion.

Currently the private rental housing units display the lowest level of refurbishment rates. This is given the different interests of owners and users not that surprising. Keeping account with the fact that households in this SHP have a high poverty incidence and that owners are among the wealthiest deciles in Austria, the decarbonisation of this housing stock should be carried by its owners. Moreover, since in the last decade housing became increasingly less affordable, a stricter rent regulation should be implemented, which prohibits to pass on investments costs to renter households.

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## 10 Appendix A – Methodology

From the outset of this project it was clear that the goals of Working Package 4 could only be achieved by means of a mixed method approach, i.e. the collecting, analysing and integrating of quantitative and qualitative data. Whereas quantitative data provide facts and snap-shots with respect to multiple relevant aspects of housing, qualitative data enables us to understand these facts and their interrelatedness within their socio-economic-temporal-spatial context.

In a first step we developed our understanding of the institutional concept of Structures of Housing Provision (cf. Section 2). Based on an elaborate literature review of mainly Michael Ball's work our institutional framework puts housing within its historical and social context. Moreover, it explicitly conceptualises production, distribution and consumption as its intertwined, core processes. The main agents of these processes are developers, land- and building owners, landlords, households and regulatory bodies. Notwithstanding the SHP concept's structured approach to frame housing, it does not provide specific information about housing characteristics in Austria. Therefore, we were obliged to collect and to combine necessary data to sketch a comprehensive picture.

Consequently, in our second step we gathered relevant specialist literature which covered the production, distribution and consumption of housing (cf. Section 2). We tested and combined this general information with quantitative data on Austria's construction and real estate sectors as well as with specific literature on housing in Austria. In accordance to general characteristics, we found a low degree of concentration of the main sectors. Simultaneously, the data point out that the Austrian state, under different legal entities, is a relevant agent.

In the third step, we conducted a literature review of different aspects of housing's regulatory context (cf. Section 3). This analysis identified the legal context of Housing Promotion, the Limited-Profit Housing Act, the Tenancy Law and the Residential Property Act as significant shaping elements of Austria's SHP.

Our fourth step was the descriptive analysis of Austrian households by means of EU-SILC data (cf. Section 4). This analysis, which focused on household income, showed significant differences between households depending on their spatial location (i.e. Province level or degree of urbanisation) and SHP.

Whereas these literature reviews and data analyses helped to develop a clearer picture and better understanding of Austrian SHP, they provided, however, not sufficient information. What still lacked was a qualitative analysis, which shed light on the concrete social configuration of housing in Austria (i.e. SHP), on the feasibility of decarbonisation measures and subsequently on housing affordability. In order to get this information, we planned to conduct 25 semi-structured qualitative interviews. The execution of these interviews was informed by the insights provided by Helfferich (2005), and Meuser and Nagel (2009).

The problem we faced at the outset concerns sampling was following: What information do we need and who can provide such information? With respect to the social configuration of SHP, we needed persons with specific knowledge about at least one SHP and its relation to other SHP. This also includes that the person is familiar with different agents involved in the provision of housing. Moreover, the persons should also have experience with questions relating to sustainable housing or energy efficiency. In addition, we preferred interviewees with general knowledge of housing markets and the housing situation in their respective region. By means of our sample we wanted to cover the core functions of SHP (i.e. production, distribution and consumption) and main agents. With respect to the latter, we faced the challenge that agents such as households, construction firms, commercial developers and real estate agents

constitute diverse heterogeneous groups. Other agents, such as LPHAs, regulatory bodies and municipal housing (mainly in Vienna), are more concentrated.

Considering our information requirements and the guideline to define our sample both as narrow and as diverse as possible we opted for semi-structured, expert interviews. Experts are defined as persons, which act and are knowledgeable about housing in Austria on a professional base. As gatekeepers to our field of experts we used contact persons from NaWo-dossiers, government officials and research institutes. Moreover, we applied the saturation principle, i.e. we opted to stop looking for new interview partners when we encountered the situation in which new interviews provided relative little new information. This resulted in a total of sixteen one to one-and-a-half hour expert interviews, which were conducted in the first quarter of 2019. Table A.1 provides a descriptive list of our interviewees. It should be noted that none of the interviews took place at the WU Vienna, but at a location of our interviewees' choosing.

Date	Type of Agent	# Experts	Province <sup>43</sup>
23.01.2019	Private Landlord	1	Vienna
24.01.2019	Parastatal	2	Vienna
01.02.2019	Construction Company	1	Lower Austria
01.02.2019	Housing Collective	1	Vienna
05.02.2019	LPHA	1	Vienna
05.02.2019	Association of Owners	1	Vienna
06.02.2019	LPHA	1	Styria
12.02.2019	Research Institute	1	Salzburg
12.02.2019	City Government	1	Salzburg
20.02.2019	Research Institute	1	Vienna
21.02.2019	Regulatory Body	1	Lower Austria
21.02.2019	LPHA	1	Lower Austria
28.02.2019	Private Developer	1	Salzburg
28.02.2019	LPHA	1	Salzburg
13.03.2019	LPHA	2	Styria
25.03.2019	Construction Company	1	Lower Austria

**Table A.1 List of Conducted Expert Interviews**

In preparation to each expert interview two members of our research team composed a semi-structured interview manual specifically for the respective expert(s) for an estimated interview time of one hour. Notwithstanding this customised approach, each interview manual covered the three broad themes defined by our research question: SHP in Austria; decarbonisation measures; housing affordability and the implications of decarbonisation. After transcribing the audio recorded interviews, we used the three main themes and subsections to code text paragraphs. In the following steps, we clustered and compared text fragments from all interviews according to these codes. This was followed by a conceptualisation of this information in line with our developed framework of SHP. In a final step, we generalised this information to identify the main five SHP in Austria (cf. Section 4).

<sup>43</sup> This column indicates where the interview took place and does not necessarily indicate the action radius of the respective agent.

## 11 Appendix B – EU-SILC Data

For our analysis of households, we use the 2016 EU-SILC data for Austria. Our main focus are significant differences between households based on their legal relationship to their housing unit and the geographic location of housing units. In this appendix we provide a detailed description of the used data and calculation methods.

### 11.1 Weighted Arithmetic Mean

To calculate the weighted arithmetic mean of households income, we used following variables: weight of household ( $hgew$ ), total disposable household income ( $hy020$ ) and the number of observations ( $n$ ). The used formulas for the mean, standard deviation and the 95%-confidence interval are:

The mean 
$$\frac{\sum(hgew*hy020)}{\sum hgew}$$

The standard deviation 
$$\frac{\sum(\frac{hgew}{\sum hgew})*(hy020-mean)^2}{\sqrt{\frac{\sum hgew}{\sum hgew} - \frac{\sum(hgew/\sum hgew)^2}{\sum hgew/\sum hgew}}}$$

The 95%-confidence interval 
$$1,96*\frac{mean}{\sqrt{n}}$$

Tables B.1 and B.2 offer a general analysis of differences with respect to the weighted arithmetic mean of Austrian households. Following the suggestion of Statistik Austria (2017: 5) to avoid calculations for the five smaller provinces, *viz.* Burgenland, Salzburg, Tyrol, Carinthia and Vorarlberg, we only consider Lower Austria, Upper Austria, Styria and Vienna. With respect to tenants of limited-profit rental housing units we differentiate between Vienna and the non-Viennese provinces. For the test of differences we analyse if the weighted mean average of one sample  $i$  differs significantly from another sample  $j$ . For this procedure we calculate the variable of difference.

The variable of difference 
$$\sqrt{\frac{Std.Dev._i^2}{n_i} + \frac{Std.Dev._j^2}{n_j}}$$

If the absolute value of the respective difference is bigger than the variable of difference, both samples differ with 95% certainty.

Disposable Household Income	Mean	Std.Dev.	Conf.Int.	n	Diff.Test	Diff.Test	Diff.Test	Diff.Test	Diff.Test			
<b>Austria</b>	40.751,76	30.551,56	773,06	6.000								
					<i>Austria</i>							
<b>Lower Austria</b>	44.089,39	27.485,86	1.553,22	1.203	<b>3.337,62</b>	1.734,97	<i>LA</i>					
<b>Upper Austria</b>	41.474,13	26.077,78	1.601,96	1.018	722,36	1.778,74	<b>-2.615,26</b>	2.231,32	<i>UA</i>			
<b>Styria</b>	38.477,14	24.051,05	1.649,22	817	<b>-2.274,62</b>	1.821,42	<b>-5.612,24</b>	2.265,48	<b>-2.996,98</b>	2.299,18	<i>ST</i>	
<b>Vienna</b>	38.201,85	36.278,51	1.971,36	1.301	<b>-2.549,92</b>	2.117,52	<b>-5.887,54</b>	2.509,73	<b>-3.272,28</b>	2.540,19	-275,29	2.540,19
					<i>Austria</i>							
<b>Densely populated</b>	38.068,31	33.212,38	1.506,15	1.868	<b>-2.683,46</b>	1.692,96	<i>Densely pop.</i>					
<b>Intermediate populated</b>	40.975,11	26.955,10	1.254,35	1.774	223,34	1.473,44	<b>2.906,80</b>	1.960,07	<i>Intermediate pop.</i>			
<b>Thinly populated</b>	43.069,83	30.542,77	1.232,80	2.358	<b>2.318,06</b>	1.455,14	<b>5.001,52</b>	1.946,35	<b>2.094,72</b>	<i>1.758,75</i>		

Table B.1 EU-SILC 2016 Income data (weighted) (Bold elements indicate statistically significant differences – 95%)

Disposable Household Income	Mean	Std.Dev.	Conf. Int.	n	Diff. Test	Diff. Test	Diff. Test
<b>Austria</b>	40.751,76	30.551,56	773,06	6.000			
					<i>Austria</i>		
<b>House Owner</b>	51.804,09	30.947,02	1.234,54	2.414	<b>11.052,33</b>	1.456,61	<i>House Owner</i>
<b>Flat Owner</b>	43.086,03	30.357,59	2.288,49	676	2.334,27	2.415,54	<b>-8.718,06</b> 2.600,25 <i>Flat Owner</i>
<b>Municipal Rental</b>	27.870,19	15.665,15	1.509,00	414	<b>-12.881,57</b>	1.695,50	<b>-23.933,90</b> 1.949,66 <b>-15.215,84</b> 2.741,22
<b>Limited-Profit Rental</b>	34.154,72	18.554,23	1.206,19	909	<b>-6.597,05</b>	1.432,66	<b>-17.649,38</b> 1.725,98 <b>-8.931,32</b> 2.586,91
<b>Vienna</b>	37.406,98	21.248,77	2.488,92	280	<b>-3.344,78</b>	2.606,21	<b>-14.397,11</b> 2.778,28 <b>-5.679,05</b> 3.381,11
<b>Non-Vienna</b>	32.711,24	17.047,73	1.332,29	629	<b>-8.040,52</b>	1.540,33	<b>-19.092,85</b> 1.816,34 <b>-10.374,79</b> 2.648,05
<b>Private Rental</b>	34.691,35	38.771,08	2.473,31	944	<b>-6.060,42</b>	2.591,31	<b>-17.112,75</b> 2.764,30 <b>-8.394,69</b> 3.369,64
<b>Other</b>	28.463,14	20.886,68	1.614,43	643	<b>-12.288,63</b>	1.789,98	<b>-23.340,96</b> 2.032,36 <b>-14.622,90</b> 2.800,64

Disposable Household Income	Diff.Test	Diff.Test	Diff.Test	Diff.Test
<b>House Owner</b>				
<b>Flat Owner</b>				
<b>Municipal Rental</b>	<i>Municipal</i>			
<b>Limited-Profit Rental</b>	<b>6.284,53</b>	1.931,84	<i>Limited-Profit (1)</i>	
<b>Vienna</b>	<b>9.536,79</b>	2.910,64	3.252,27	2.765,80 2.715,64 3.508,84 <i>Limited-Profit (2)</i>
<b>Non-Vienna</b>	<b>4.841,05</b>	2.012,98	-1.443,47	1.797,19 -1.980,10 2.809,31 <b>-4.695,74</b> 2.823,07
<b>Private Rental</b>	<b>6.821,15</b>	2.897,30	536,63	2.751,75 <i>Private Rental</i>
<b>Other</b>	592,94	2.209,86	<b>-5.691,58</b>	2.015,27 <b>-6.228,21</b> 2.953,58

Table B.2 EU-SILC 2016 Income data (weighted) (Bold elements indicate statistically significant differences – 95%)

## 11.2 Weighted Median

The weighted median income is found using following procedure. All 6000 observations are ordered according to descending income. The observation for which the sum of all preceding weights is less than half the total weight-sum and for which the sum of all subsequent weights is less than half the total weight-sum defines the weighted median income. Within the EU-SILC data the weighted median household income is 34.910,78 euro p.a.<sup>44</sup> Based on this income we can calculate the EU-poverty level, which corresponds to 60% of the median income, i.e. 20.946,47 euro p.a.

	<b>n</b>	<b>Below Median</b>		<b>Below Poverty</b>	
<b>Austria</b>	6000	2910	48,50%	1274	21,23%
<b>Lower Austria</b>	1203	506	42,06%	196	16,29%
<b>Upper Austria</b>	1018	463	45,48%	189	18,57%
<b>Styria</b>	817	402	49,20%	191	23,38%
<b>Vienna</b>	1301	733	56,34%	351	26,98%
<b>Densely populated</b>	1868	1027	54,98%	490	26,23%
<b>Intermediate populated</b>	1774	839	47,29%	349	19,67%
<b>Thinly populated</b>	2358	1044	44,27%	435	18,45%
<b>House Owner</b>	2414	736	30,49%	238	9,86%
<b>Flat Owner</b>	676	300	44,38%	112	16,57%
<b>Municipal Rental</b>	414	308	74,40%	164	39,61%
<b>Limited-Profit Rental</b>	909	515	56,66%	223	24,53%
<b>Vienna</b>	280	141	50,36%	55	19,64%
<b>Non-Vienna</b>	629	374	59,46%	168	26,71%
<b>Private Rental</b>	944	596	63,14%	303	32,10%
<b>Other</b>	643	455	70,76%	234	36,39%

**Table B.3 Weighted Median Disposable Household Income – General Distribution**

<b>Below Median</b>	<b>Densely populated</b>	<b>Intermediate populated</b>	<b>Thinly populated</b>	
<b>House Owner</b>	50	208	478	736
<b>Flat Owner</b>	120	117	63	300
<b>Municipal Rental</b>	244	45	19	308
<b>Limited-Profit Rental</b>	201	224	90	515
<b>Private Rental</b>	339	142	115	596
<b>Other</b>	73	103	279	455
	1027	839	1044	2910

**Table B.4 Weighted Median Household Income – Below Median Distribution**

<sup>44</sup> In a recent publication based on EU-SILC 2018 data Statistik Austria (2019c) reports an Austrian median household income of 36.322 euro p.a.

<b>Below Poverty</b>	<b>Densely populated</b>	<b>Intermediate populated</b>	<b>Thinly populated</b>	
<b>House Owner</b>	13	71	154	238
<b>Flat Owner</b>	43	40	29	112
<b>Municipal Rental</b>	129	24	11	164
<b>Limited-Profit Rental</b>	79	105	39	223
<b>Private Rental</b>	181	64	58	303
<b>Other</b>	45	45	144	234
	490	349	435	1274

**Table B.4 Weighted Median Household Income – Below Poverty Distribution**

## 12 Appendix C – The Political Economy of Rent (Working Paper)

### 12.1 Introduction

Currently, rent theory experiences a significant revival both in geography and in economics. Scholars rediscover rent as a useful concept to analyse ongoing reconfigurations in capitalism and to push issues of distribution and inequality back on research agendas. Notwithstanding this increased interest, a general rent concept is missing. This is partially explained by their narrow focus on specific subjects (e.g. housing, patents, emission rights). To counteract this, the paper considers innovative insights from these discussions and builds on them in order to formulate a more general notion of rent. Such analytical clarity serves as a promising point of departure for investigating contemporary phenomena of rent and rentiership in their historical specificity.

Recently, rent theory has been reintroduced within economics to explain economic stagnation<sup>1</sup>. Stiglitz (2016; 2017), for example, relates the market power of monopolistic corporations such as Equifax, Microsoft, Apple, Google, Cisco and Oracle to rent-seeking behaviour and rising inequality. Rent seeking is also pivotal to Ngo and McCann (2019), who argue that rent seeking can play a positive role in the development processes of “developing countries” [*sic.*]. Heterodox economic contributions introduce rent theory to the financialisation debate. Collins (2017), for example, advocates the use of a “socially significant” rent theory to address pressing issues of extractive industry activities and financialisation in Africa. In a similar vein, Smet (2019) combines rent theory with financialisation literature to discuss recent developments within primary sector multinational enterprises.

Recent contributions to the history of economic thought have focused explicitly on the issue of rent. Bruni (2019) draws attention to the work of the Italian (political) economist Achille Loria (1857-1973), which puts the rent-profit conflict at the centre of capitalism. Subsequently, Bruni concludes that Loria’s work could contribute to the analysis of financial capital and rent. Takenaga (2018) delivers a critical assessment of the origins and genesis of Marx’s rent theory. Fratini (2018) takes a closer look at the debate concerning the upper limit of absolute rent and the difference between absolute and monopoly rent.

Since the rent debate in geography is traditionally closely linked to questions of urbanisation and natural resources, it is not surprising to find novel contributions within this field. Slater (2017) reflects on Neil Smith’s rent gap (Smith 1979) and argues that this concept remains highly relevant to understand (and resist) current (global) processes of gentrification. Smet (2016) develops a concept, which links rent theory with different capital accumulation strategies, to analyse uneven housing price developments in cities. Recent work by Haila (2016) discusses the role of Singapore’s state as landowner in urbanisation processes. Purcell et al. (2019) develop a conceptual framework, which discusses the links between value, finance and rent. In addition, they use this framework to analyse the financialisation of nature (in their case study: water). In their study on oceanic fishing grounds Campling and Havisce (2014) bring to the foreground the historical emergence and continuous (re-) negotiation of property rights in oceans.

The constitutive role of states in establishing the basis for rent is also stressed by Felli (2014) and Jones (2009) in their studies on carbon emission trading. Another line of research applies Marxian rent theory to intellectual property. Zeller (2008), for example, is quite clear by using the term of intellectual property monopolies. In a similar vein, Birch (2017a, 2017b) examines rentiership in knowledge-based economies. In describing the rent yielding asset Andreucci et

al. (2017) build on Felli's (2014) "pseudo-commodity". They stress the importance to distinguish between accumulation and rent-seeking by introducing the term "value grabbing".

Although they come from different disciplines and follow different research agendas, critical geographers and economists alike embrace the rent concept to analyse capitalism. While we support the broader application of rent as an analytical concept and acknowledge the importance of these contributions, we feel that they do not address the essential features of rent and the rent relation. They agree on the important analytical role of the concept of rent, however, rent and rentiership are defined differently and sometimes rather vaguely. We believe a reformulation of rent is necessary, that allows an understanding of the general role of rent relations within capitalist accumulation, as well as analysing particular manifestations of the rent relation in contemporary capitalism. For this Marxian political economy offers the theoretical understanding of rent as a social relation, while an institutional approach allows to investigate this relation in historically specific social conditions. As a result, our proposed approach mediates the balancing act between the general and the particular in social sciences.

In a first step, the paper introduces a reformulated concept of rent. For this purpose, we draw on insightful debates from the past, especially with respect to urban rent, and combine them with recent academic developments. This addresses the challenge Ward and Aalbers (2016: 1780) identified "to take the categories of rent beyond land in the analysis of a capitalism increasingly reliant on flows of rentier income [...]." Notwithstanding the richness of recent literature, we feel that too often authors use an implicit concept of rent. Without an explicit specification of rent, we are at risk to not fully benefit from its analytical potential.

Second, the paper clarifies the connection of rent to surplus value and capital, and considers other revenues, which can be appropriated. In addition, it is essential to keep a clear distinction between rent appropriation and fictitious capital. A conflation of these distinct processes would render the theoretical conceptualisations of rent and fictitious capital obsolete. Drawing on four types of rent we further discuss rent as a social relation, and consider the appropriation of revenue in more detail.

Third, we advocate for an institutional approach to analyse rent relations in contemporary capitalism. Given the fact that we centre our rent concept on an understanding of rent as a social relation, we focus on two social processes embedded in the rent relation: The process of establishing property titles on pseudo-commodities, and the process of appropriating revenue. Any institutional discussion of rent has to address two main concerns. On the one hand, we emphasise the importance to take a closer look at the role of the state. Rent debates have always recognised the pivotal importance of the state in creating property rights, since (pseudo-)commodification is impossible without the state. This also calls for a clear identification of any pseudo-commodity. On the other hand, an institutional analysis has to address this pseudo-commodity's potential to appropriate a revenue and the source of its revenue.

## 12.2 Rent

What are we talking about when we talk about rent and rentiership? This question appears rather straightforward, but is not that easy to answer. Different economic traditions provided multiple answers, which are also reflected in recent literature. In this section, we provide an overview of this literature and subsequently suggest a comprehensive definition of rent based on these insights.

Looking at the more progressive discussions going on in economics, one notices that rent and rent-seeking<sup>ii</sup> is regarded as an “unearned income” based on the redistribution of wealth and not on its creation. The discussion is often framed with respect to increasing income inequality addressed by Thomas Pitketty in *Capital in the Twenty-First Century*. Stiglitz (2016; 2017) states that income from ownership over land and intellectual property as well as monopoly profits are rent. Whereas Mazzucato (2018) frames two rent concepts within the history of economic thought and the differing value theories of classical economics and neo-classical economics, she does not provide an explicit definition of rent. Nonetheless, she applies a rent concept to discuss how the financial industry and the innovation economy appropriate unearned incomes. Ngo and McCann (2019) combine rent and rent-seeking with economic development. They use a technical definition of rent “as income higher than the next-best payment under an alternative structure of rights” (Ngo and McCann 2019: 722) and explicitly regard rent as an integral part of economic evolution (cf. innovation). As a result, they develop a positive narrative in which governments can stimulate economic growth by means of rent management and rent policies. In general, these debates remain rather vague with respect to the rent concept. There is a variegated use of the rent concept, which is neither uniform nor conceptually precise. Whereas it is interchangeably used to identify income from private property relations (e.g. landed property, intellectual property) as well as producer rent accruing to oligopolistic or monopolistic market conditions, rent loses its substantive meaning, i.e. it loses its meaning as analytical tool.

These economic debates differ substantially from current debates within critical geography, which explicitly refer to a Marxian tradition. Haila (1990), Kerr (1996) as well as Ward and Aalbers (2016) offer comprehensive overviews of and contributions to these debates. As rightly pointed out by Ward and Aalbers (2016: 1780) the current challenge is “to take the categories of rent beyond land in the analysis of a capitalism increasingly reliant on flows of rentier income”. From this perspective it is interesting to analyse how this literature defines “rent”. Ward and Aalbers (2016: 1761) distinguish between land rent and ground rent, but admit to use them interchangeably. They justify this by regarding buildings (and their returns, which are part of land rent) as straightforward returns on capital invested. Whereas some regard this as an insignificant detail, it is worth mentioning that was at the core of a heated debate in the past about the treatment of buildings on land. On the one hand, Harvey (1984: 330) regards rent as “simply a payment made to landlords for the right to use land and its appurtenances (the resources embedded within it, the buildings placed upon it and so on).” Kerr (1996) and Slater (2017) also share this stance. Kerr (1996: 68, footnote 5) explicitly and consequently uses the term “landed property” and “property price” to stress the unity between land and building. Nonetheless, he does not offer an explicit definition of rent. Slater (2017: 118) defines ground rent in a practical way as “simply the charge that landlords are able to demand (via private property rights) for the right to use land and its appurtenances (the buildings placed on it and the resources embedded within it), [...]”. Michael Ball, however, vehemently contests this position. Ball (1984: 503) is perfectly clear, when he states that “[l]and rent, above all, embodies a social relation: the payment to someone for the right to use a piece of land. [...] The payment is for the use of the land only, so strictly we are only considering ground rent, not rent in its more common usage which includes payments to the capital advanced in the built structures sitting on the land as well.” Essentially, this discussion centres on the relationship between capital and rent. From our perspective, we advocate for a distinct use of land rent and ground rent. As will become later on clear in our discussion of differential rents, a treatment of capital independent of rent neglects relevant social relations.

While economic debates have highlighted the relevance of rent with regards to capital accumulation and stressed the aspect of an income or revenue, the imprecise use of the rent concept risks blurring the analytical difference between rent and (fictitious) capital. Critical geographers, on the other hand, have emphasized the role of private property as the basis of rent. Summarising these various insights, two central aspects regarding rent can be identified. First, the peculiarity of the property title and how it differs from other commodities. Second, the peculiarity of the “unearned income” or appropriated revenue and how it differs from capital. Regarding rent as a social relation offers a starting point to develop a reformulation of rent as an analytical category.

It is a pity that Ward and Aalbers (2016) do not provide a general definition of rent, although they strongly advocate a general use of rent. However, the work of Zeller (2008), Purcell et al. (2019) and Andreucci et al. (2017) can help us out to formulate a general rent definition. They all agree that rent is the income, which accrues to the owner(s) of a specific property. Whereas Zeller (2008) strongly focusses on intellectual property monopolies (i.e. patents), Purcell et al. (2019) and Andreucci et al. (2017) try to provide a more general formulation. Purcell et al (2019: 5) remain, however, vague by referring to “a variety of material and immaterial ‘commodity forms’”, i.e. they have a price but no value according to Marxian labour theory of value. Thankfully, Felli (2014) introduces the term “pseudo-commodity”, which Andreucci et al. (2017: 30) picked up, to describe such commodities. The main characteristics of these pseudo-commodities is that they have value in use and value in exchange, but at the same time they have no value<sup>iii</sup>, i.e. they are not (or only partially) “produced through a process of productive consumption of labour power.” (Felli 2014: 268) According to Takenega (2018: 932) this also corresponds to Marx’s view on these “exceptional commodities”. Acknowledging this peculiarity is critical to differentiate rent from capital, as will be outlined. In general, the income generated by rent is regarded as appropriated surplus profit (Smith 1979: 543; Zeller 2008: 95, 99; Felli 2014: 266; Andreucci et al. 2017; Purcell et al. 2019: 5). Since property over “conditions or elements of production” or “instrument or means of production” (Harvey 1984:334) create monopolised obstacles to the free movement of capital, producers could claim a profit above average. Pseudo-commodity owners skim this surplus profit as rent. However, we feel this interpretation is too narrow, as hinted by some scholars (Harvey 1989: 98-103; Jäger 2003: 241; Smet 2016: 498; Andreucci et al. 2017: 35-36). Andreucci et al. (2017: 35-36) indicate that consumers also pay rents and explicitly list housing, intellectual property and water<sup>iv</sup> as cases in point. This partially contradicts existing literature<sup>v</sup> and raises some questions, thus the relation between pseudo-commodity owners and labour has to be elaborated.

Considering the insights of these debates, this paper places the concept of rent on the analytical level of the circulation of revenues and considers pseudo-commodity owners explicitly as a distinct class with class relations to both capital and labour. Consequently, we define rent as revenue appropriation based on the ownership of a pseudo-commodity. Despite this rather simple definition, some important aspects are implied. First, without the institution of ownership rent cannot exist. The right of ownership enables the exclusion of others from the pseudo-commodity’s use value. Or to put it in the words of Collins (2017:154) “[...] the generation and distribution of rents presupposes a system of property rights.” This highlights the social embeddedness of rent relations and stresses the role of the state to establish such property rights (Zeller 2008: 108-110; Felli 2014: 254; Andreucci et al. 2017: 31; Purcell et al. 2019: 5).

Second, the term pseudo-commodity is used in an analogous manner as Felli (2014) and Adreucci et al. (2017) to point out that what is covered by the right of ownership is not (or only partly) the result of a production process, i.e. it has no value according to the labour theory of value. Some examples of potential pseudo-commodities are land, minerals, oil reserves, water, air, intellectual property and pieces of art. It should be stressed that we regard rent explicitly as a social relation that is based on an exclusion from use value due to a property title.

Third, this implies that the pseudo-commodity has an exchange value. Gaining access to the pseudo-commodities use value requires a monetary transfer. The appropriated revenue is based on the ownership of a pseudo-commodity and can be appropriated from different social classes. Whereas Marx (2008: 772) regarded only rents appropriating (agricultural) extra profits as normal, we need, in accordance to our definition of rent, also to include incomes from consumers as potential source of revenues.

### 12.3 Rent and Capital

After reformulating the category of rent, it is necessary to explore its analytical value and its limitation in more detail. So far, we have abstracted from the concrete form of rent and the role of rent in capitalism in order to not confuse rent with wage or with (fictitious) capital. As stated above, our understanding of rent as a social relation encompasses that the owner of a pseudo-commodity appropriates a revenue, implying that others are excluded via a property title, and transfer a revenue in order to use the pseudo-commodity. Therefore, rent would be impossible without private property, general commodity exchange and monetization, and in this sense is a specific historic form of social relations of distribution which presuppose expropriation<sup>vi</sup>. This does not yet say anything about which class is excluded or from which class (capital or labour) revenue is transferred to the “rentier”. However, we are interested in the relevance of the rent relation for phenomena in contemporary capitalism. This calls for analysing the rent relation within the circuit of capital and analysing the role of rent within the spheres of production and circulation.

Marx differentiated between money capital and productive capital to indicate that capital takes on different forms and fulfils different functions during the overall circuit of capital. On this level of abstraction, we are concerned with the general condition of capital accumulation. We approach rent in a similar vein as the notion of interest-bearing capital and fictitious capital are introduced, i.e. to analyse the concrete relations of different forms of capital within the circulation of capital. As a result, the concept of rent allows us to better understand the relations of distribution.

On the analytical level of the general conditions the property title on pseudo-commodities implies on the one hand a (new) barrier, as people are excluded from its use value, and on the other hand a new investment opportunity for capital, as the process of pseudo-commodification suggests. While the appropriation of revenue implies that (potentially) less capital is consumed productively (viz. expanded production), “rentiers” have this revenue at their disposal and can use it as capital.<sup>vii</sup> Hence, the rent relation entails contradictory processes that have the *potential* to disrupt or to boost capital accumulation. On the level of concrete rent relations we can investigate the specific distributional conflict involved in the establishment of a property title (i.e. expropriation) and the appropriation of revenue. Here the concrete manifestation of the inherent distributional conflict comes to light, i.e. revenue is appropriated from capital or labour. Only a dialectical understanding of these different levels of abstraction allows to analyse concrete manifestations with regards to general conditions; and at the same time

understand how these concrete manifestations result from the general conditions as an intrinsic potential without being determined by them.

While the concept of rent allows us to understand the process of establishing property titles on pseudo-commodities, and the subsequent process of appropriating revenue, the concepts of interest-bearing capital and fictitious capital allow us to comprehend the role of appropriated revenue within capital accumulation. Interest is appropriated through the ownership of money used as capital. Appropriated rent is the claim on revenue that is appropriated through ownership of a pseudo-commodity<sup>viii</sup>. We would claim that the fact that pseudo-commodities have a use value is critical to differentiate them from financial titles. Fictitious capital has, in contrast to pseudo-commodities, no use value; it is the independent circulation of interest-bearing capital in the form of (paper) claims. Hence, it surpasses the barriers of interest-bearing capital by not being attached to any use values (Harvey 1984). On the contrary, rent is based on an ownership over a use value, which forms a systematic barrier to the free flow of capital. Rent and the accumulation of fictitious capital can, however, be seen as mutually reinforcing. The appropriated revenue carries the potential to form fictitious capital (Kerr 1996: 76; Purcell et al. 2019; Smet 2019).

With regards to the relation of rent and capital accumulation, we would like to emphasise an important aspect, which Jäger (2003: 241) also points out. Since we regard rent as a social relation between property rights owners on the one hand and capitalists and labour/consumers on the other hand, the rent relation can also imply distributional conflicts between labour and capital. Here, the main point is the impact of rent on real wages. If rent does decrease real wages, distributional conflicts between labour and capital could arise. The concrete manifestation of these distributional conflicts begs, however, for an institutional analysis. Similarly, rent appropriation can cut into surplus value appropriation and profits, thereby influencing capital accumulation.

To conclude this section we would like to draw the attention to the problematic use of “rentier”. Whereas this term is often used, it is seldom defined. One exception is Zeller (2008: 96), who resorts to the work of Joan Robinson (1965). Similar to Keynes (1973: 92, 376), Robinson (1965: 247) uses the term rentier to differentiate between owners of wealth and entrepreneurs. Similarly, we interpret the equation by Purcell et al. (2019: 7) of rentier class as asset-owning class and the discussion of rentier capital by Andreucci et al. (2017: 31). The broad use of rentier in this sense is helpful within the post-Keynesian debate, but becomes questionable in a Marxian discourse. Marx (2008: 484-485) and the subsequent Marxian debate (cf. Becker 2007:74-76; Chesnais 2004) developed explicitly the term fictitious capital, which is based on interest-bearing capital and has no use value on its own. Therefore, we advocate an orthodox use of this term to avoid the conflation of rent with fictitious capital accumulation. In this sense, a rentier is the owner of pseudo-commodities and rentier capital is restricted to capital invested in rights of ownership over pseudo-commodities. This corresponds to the claim made by Kerr (1996: 76, original cursive) “*It is not fictitious capital that creates rent, but the existence of rent that can become the object of fictitious capital; [...]*” Purcell et al. (2019: 9) are more explicit, when they state: “When finance mediates the buying and selling of assets in (temporal and spatial) separation from physical ownership, then interest bearing capital assumes the form of what Marx termed ‘fictitious capital’.” In this sense, the accumulation of fictitious capital can be based on rentier capitalism, but it does not appropriate rent. This is something we should keep in mind, while doing empirical research. Especially, if we extend Serfati’s (2012) argumentation that companies developed corporate structures, which envelop the accumulation logic of both productive and fictitious capital, to include rentier capital, research on rent and rentiership

should be careful to distinguish between these different types of capital. If not, the concept of rent loses its substantive meaning, i.e. everything becomes rent. Through this distinction, a more thorough discussion of the interaction between rentier capital and interest-bearing capital can be gained.

## 12.4 Rent Types

After specifying our understanding of rent we address factors that further develop the understanding of rent as a social relation. In accordance to Jäger (2003: 238) and Andreucci et al. (2017: 31) we acknowledge that rent implies conflicts and struggles, since it is a social relation. The existing literature represents the different logics of revenue appropriation by means of four rent types, which are ideal types *à la* Weber, *viz.* extensive differential rent (DR1), intensive differential rent (DR2), absolute rent (AR) and monopoly rent (MR). Consequently, whereas these ideal types help us to understand, how struggles over rent are mediated, it is neither sensible nor realistic to break down actual rent payments into these ideal-types. Moreover, within Marx's theory of political economy, the level of abstraction of rent lies below the level on which he discusses surplus value, but above the level of market functioning (Kerr 1996: 61; Jäger 2003: 241). This explains the complexity not only of the factors influencing rent, but also of the respective academic debate. Building on Marx's understanding, we take the concept of rent beyond land rent. We start with a discussion of monopoly and absolute rent and follow up with the two types of differential rent.

The concept of AR is a genuine discovery of Marx (Takenaga 2018: 936-7) and has been the topic of a heated debate ever since (cf. Fratini 2018). A well-established way to define absolute rent refers to the relative lower organic composition of capital within a specific sector (e.g. agriculture). Within Marx' labour theory of value this implies that the value of production (i.e. the sum of constant capital, variable capital and surplus value) exceeds the prices of production (i.e. the sum of constant capital, variable capital and average profit). Thus creating the possibility to realise extra-profit. Under "normal" conditions, competition between capitals would level this difference out. However, landed property owners erect a "[s]ystematic barrier to the free flow of capital" (Harvey 1984: 351) and appropriate the extra-profit in the form of AR (cf. Murray 1977: 107-12; Harvey 1984: 350-3; Fratini 2018). This interpretation of AR, however, is limited to production (i.e. productive capital) and involves the transformation problem, i.e. the transformation of values into prices. As a result, consensus emerged to tread AR as the result of monopoly pricing (Fratini 2018: 969-72). This interpretation can be found in the work of Harvey (1984: 351): "To be sure, the commodity sells at a monopoly price" as well as in a recent survey article by Ward and Aalbers (2016), who classify AR as a Monopoly Form of rent<sup>ix</sup>. Another approach was followed by Jäger (2003: 240), who argued that the Marxian concept of AR, due to its assumed lower organic composition of capital, "is not very useful in the urban context." After discussing AR as a form of reservation prices, Jäger (2003: 241) concludes to drop the notion of AR. We, however, would like to keep the concept of AR and distinguish it from monopoly rent. We interpret AR as a concept to characterize the general conditions of rent, or the inherent potential for appropriating revenue; namely the establishment of ownership over a pseudo-commodity that allows the appropriation of revenue. In contrast, MR can be understood as a concept to analyse the concrete appropriation of revenue thanks to a property title on a specific pseudo-commodity. Here we focus on the relational aspects of different pseudo-commodities rather than on the general conditions. Differentiating the two concepts of rent is necessary, as the potential (AR) does not explain the particular manifestation (MR) of the rent relation.

Drawing on Fratini (2018: 977-9) MR can be interpreted as the outcome of a monopoly price, which has four fundamental characteristics. First, the supplied quantity does not meet effectual demand. Even at a monopoly price, other buyers would be willing to pay this price to obtain the pseudo-commodity. Nonetheless, only one person acquires the monopoly good, the others go away empty-handed. Second, the monopoly price is not determined by value of production or prices of production. Third, customers compete for the respective product solely through their eagerness to obtain the product and their solvency. Fourth, the monopoly price absorbs surplus values from other sectors. This highlights the central characteristics of the pseudo-commodity and shows how the concept of rent can be applied to empirical studies. With respect to housing the difference between MR and AR can be displayed as follows. In the case of Graceland, the famous mansion of Elvis Presley, if this property right is put on the market, the price will be determined by the willingness and ability to pay of the potential buyers. The concrete revenue appropriated (MR) cannot be explained by the overall existence of real estate (AR), while only MR allows to analyse the manifestation of the rent relation. Similarly, music companies in general pay copyright owners AR, while particular owners are able to appropriate higher revenues with their copyrights.

Moving on to differential rent, it should be highlighted that Marx's rent theory is the result of his preoccupation with Ricardo's writings on this subject. Actually, it is by referring to Ricardo that he introduces the term differential rent (cf. Takenaga 2018: 936). Marx criticized that Ricardo assumed a fixed, positive relation between rent and the price of agricultural commodities. Whereas in Ricardo's theory rent increases where only possible if commodity prices increased, Marx's theory of differential rent did not need this strict correlation (Takenaga 2018: 938-42). By disentangling prices from rent, Marx showed that prices could decrease through productivity gains and that simultaneously differential rent could increase, because the differences between soils increased. This distinction between Marx and Ricardo is well established within existing literature, e.g. Murray (1977: 104), Harvey (1984: 353) and Takenaga (2018). Moreover, Marx did not assume fertility as given by nature, but regarded it as the outcome of physical and mechanical conditions. This makes fertility a term, which is relative and temporary (Takenaga 2018: 952). This is also the reason of the complex interaction between DR1 and DR2. We claim that differential rent is a useful concept to clarify the relation between particular pseudo-commodities or rather the respective appropriated revenues.

In its original form, DR1 appropriates differences in produced surplus value by farmers, because agricultural land differs in fertility. This means that when farmers cultivate land by applying prevalent production methods (i.e. capital investments), productivity will differ due to the variety in soil. So how can this concept of DR1 be translated to reflect a broader range of pseudo-commodities? We would suggest that within a specific group of pseudo-commodities (e.g. housing units, copyrights and brands) a wide variety of characteristics exists, which influence the manifestation of specific social relations.

For example, it is well known that housing units cover housing need, but that they substantially vary according to location, which directly effects different aspects of our lives such as "health, wealth, lifestyle, social networks and job opportunities" (Marsh and Gibb, 2011: 215). As a result average housing units on different locations, allows appropriating DR1 on more beneficial locations. With respect to cultural products such as books and music, differences are due to the popularity of authors or interpreters, cultural standing of the work, limited editions, etc. "Exceptional" works appropriate DR1. What is perceived as "exceptional" depends on the social conditions. Similar to fertility, the differing characteristic is socially mediated and can alter over time and space. For example, the 2012 documentary "Searching

for Sugar Man” induced the comeback of the US American musician Sixto Rodriguez, who was until then mainly a South African cultural reference person. Overnight his music (and its copyright), which was released in 1970 and 1971, experienced a significant revaluation.

Whereas DR1 originates due to differences within a pseudo-commodity, DR2 stems from additional capital investments within the respective pseudo-commodity. As discussed by Takenaga (2018: 953-6) and Harvey (1984: 353-8) DR2 actually captures a complex interaction between the pseudo-commodity property rights owner and the user of this pseudo-commodity (i.e. the lessee). As such, they actually show that with respect to DR2 the context or condition of the rent relation is actively altered. Within the agricultural context, more capital than generally prevalent in agriculture could be invested to increase fertility and appropriate more rent (or an extra-profit). Moreover, if other farmers imitate the production method (with additional capital investments), it will become the prevalent production method, or generalized as new social conditions, and DR2 will cease to exist. Within the broader conceptualisation of rent, DR2 implies changes in the prevalent use value of a specific pseudo-commodity, which owners pocket.

Housing units can become more attractive due to public spending (e.g. public transport, neighbourhood refurbishment, city regeneration processes, etc.) and potentially allow the appropriation of DR2, as social conditions are changed. Price discrimination of software companies with respect to customers (e.g. students, private households and professionals/commercial) could also be interpreted as dealing actively with different uses of the software by lessees and appropriating DR2. The prevalent use of software differs significantly between customer types. Students use software in the context of their education, households have a recreational use for software and professionals use software in the context of their capital accumulation strategy. Under the assumption that household use is the prevalent use, the more expensive professional licences are a technique to appropriate DR2.

Although in practice these four types of rent co-exist within each process of rent appropriation, they nevertheless highlight specific mechanisms and characteristics of the social relation. To conclude, our understanding of rent as a social relation focuses on the underlying distributional conflict. In addition, the four types of rent help to clarify different aspects and logics of appropriating revenue by elaborating the relation between the general conditions of the rent relation and the specific manifestations of concrete pseudo-commodities. Hence, these concepts help to move from a high level of abstraction to an empirical analysis of rent.

## 12.5 Great Rift?

Our suggested reformulation of the rent concept to include a broader range of pseudo-commodities establishes the analytical category of rent and rent types on a relatively high level of abstraction. As previously indicated, this corresponds with the treatment of rent within a Marxian political economic framework, outlining the general conditions, inherent potentials and contradictions of the rent relation. We agree with Jäger (2003: 238) and Andreucci et al. (2017: 31-2) that the creation of rights of ownership and the appropriation of rent involves class struggle within a specific institutional setting. Therefore, we advocate for an institutional approach to analyse how the inherent potentials play out, or manifest themselves, in concrete distributional conflicts. This approach avoids some pitfalls, which hampered the rent debate in the past. Since we apply a heterodox understanding of institutions as “systems of established and prevalent social rules that structure social interactions” (Hodgson 2006: 2), this approach does not contradict our Marxian concept of rent theory<sup>x</sup>.

Therefore, we regard the rent discussion in the 1980s not as “a phase of rupture” (Haila 1990: 278), but as the manifestation of a conflict inherent to social sciences. In an important contribution, Haila (1990) distinguishes between a nomothetic and an idiographic approach while giving a chronological overview of the rent debate since the 1970s<sup>xi</sup>. This distinction is, however, unfortunate, because it communicates the impression of an irreconcilable rift between two positions. The work of Harvey (1984) is used as representing the nomothetic tradition, which looks for the general laws of rent theory. This supposedly contradicts the idiographic position, represented by the work of Ball (e.g. 1985), which emphasises the uniqueness of concrete situations. Unfortunately, Haila (1990) did not explain nor contextualise her wording. Pirker (2004: 82-89) points out that the nomothetic-idiographic distinction was used at the end of the 19<sup>th</sup> century in Germany to classify sciences. He continues that a general classification of sciences with respect to historical specificity is misleading (Pirker 2004: 83-4). The central contradiction of social sciences is the relation between the *general* and the *particular*. “Every attempt to get a grip on the problem of historical specificity needs to deal with the relation between a claim’s degree of universality and the specific, empirical details.” (Pirker 2004: 85, our translation<sup>xii</sup>) According to our understanding, the rent debate centres exactly on this problem of historical specificity, traces of which can also be discovered in a recent discussion between Aalbers and Haila (2018).

The concrete manifestation of the rent relation is an empirical question. Hence, this general concept of rent has to be accompanied by an institutional understanding that acknowledges the social embedding of the rent relation and specifies empirically how the establishment of property titles and the appropriation of revenues play out in actual situations. For example, water as such is not a pseudo-commodity, but can become one if a well is expropriated by the (legal) establishment of a title. While the process of establishing property can only be understood in its spatial-temporal peculiarity, the concept of rent allows grasping the logic of the appropriation of revenue due to this title. We advocate an institutional analysis of rent, which addresses the basic elements of our rent definition. As outlined, the analytical concept of rent encompasses a revenue based on the right of ownership over a pseudo-commodity. By precisely defining rent, the concept can be applied to a variety of empirical phenomena. It becomes obvious that specific questions regarding the pseudo-commodities characteristics and the appropriated revenue, have to be addressed to make use of the concept. Therefore, the establishing of rights of ownership as well as the process of rent appropriation needs to be analysed in its particular manifestation.

One main aspect, which is fundamental to rent, is the role of the state. As discussed by for example Zeller (2008), Felli (2014) and Andreucci et al. (2017), the state is pivotal to create property rights as a social form. Moreover, the state creates the conditions to appropriate rent by not only establishing rights of ownership, but also by enforcing them. This also implies that the state cannot be regarded as a passive element within the rent relation. Especially the French regulation approach offers promising conceptualisations of the state in conjunction with political economy, which build on the work of Gramsci and Poulantzas (cf. Jessop 1997: 297-306; Becker 2007: 127-150).

Whereas rent appropriation can tightly be linked to processes of accumulation by dispossession, it is necessary to regard the creation and regulation of rights of ownership as a process of pseudo-commodification (Andreucci et al. 2017: 33-4). Otherwise, we run the risk to blur the line between capital and property rights owners as distinct classes. Hence, the application of rent theory to new fields of research should address the respective pseudo-commodity and how it generates revenues. Whereas this is probably straightforward for the

more classical sectors (e.g. agriculture, mining, water), this can turn into a heated debate concerning newer fields such as “intellectual property monopolies” (Zeller 2008: 87) or platform capitalism. With respect to Facebook, Tinder, YouTube, Google, Twitter, WhatsApp, Uber, Amazon, etc. we will have to discuss – if at all – the pseudo-commodity they produce. Is it an algorithm or is it the generated user-data or the platform’s members? How is a right of ownership established? From whom do they appropriate revenue?

How is a right of ownership established? Are these platforms productive in a Marxian sense? Do they produce surplus-value, are they a form of mercantile capital or are they mere rentiers? What is their respective pseudo-commodity? Depending on how we answer these questions, the appropriation of rent, i.e. the claim on (future) revenues, takes different forms. These discussions cannot take place on an abstract level, but have to reflect the relevant and particular historical specificities, while acknowledging the peculiarity of rent.

## 12.6 Conclusion

Currently, we are witnessing a revival of rent as theoretical concept to analyse contemporary capitalism. Most observers raise concern that the significance of unearned incomes increases and that this trend creates undesirable social outcome, e.g. increased inequality, economic instability. An overview of recent contributions to this topic shows that rent is used as theoretical concept to discuss these topics, but that “rent” remains, however, unclear. Whereas we welcome the revived interest in rent theory, we advocate a clear definition of rent as we believe it allows to better understand contemporary phenomena.

Based on our interpretation of the debate, rent is defined as a revenue appropriated through the right of ownership over a pseudo-commodity. This reformulation disentangles rent from its close tie to goods of nature, while specifying the characteristics of the underlying pseudo-commodity. Hereby, the scope of the rent concept can be broadened to include next to tangible (e.g. landed property, paintings) also intangible (e.g. intellectual property, customer bases, brands) pseudo-commodities. Moreover, we deliberately choose to remain vague with respect to “revenues”. Whereas these revenues can originate in the productive sphere, i.e. surplus value, we do not want to exclude other forms of revenue. As a result, pseudo-commodity owners can be treated as a distinct class with class relations to capital and labour (as customers). Contradictory to the prevalent use of rentiers (cf. Post-Keynesian debate), we advocate for a stricter use to describe the rent appropriators, i.e. the owners of pseudo-commodities. This helps especially to avoid conflation between rent and fictitious capital.

The four ideal-types of rent help to understand the dynamics, which underpin rent appropriation, although they are empirically not identifiable. However, it stresses the social embeddedness of rent. Pseudo-commodities of one specific form are heterogeneous and as a result, their potential to claim revenues differs.

Since rent is a social relation, empirical research should address its main elements, viz. property rights and the form of the pseudo-commodity. Whereas this paper offers a broader reformulation of the rent concept, it does not make statements with respect to the rent relation. An institutional analysis of legal frameworks, which establish property rights, is indispensable. Research cannot neglect the role of the state. Moreover, these legal frameworks could also indicate elements of the pseudo-commodity’s “normal use” (e.g. zoning regulation). In addition, the mechanisms on which pseudo-commodities generate revenues should be thoroughly analysed. Here, attention should be paid to not conflate the distinct social relations of rent and (fictitious) capital. By guarding a strict division between these concepts potential interactions

between these elements can be identified. If we want to discuss rentier capitalism a form of contemporary capitalism, we need an analytical useful rent concept.

Note that this interpretation of rent and rentiership complements critical readings of space within geography, which centre on social relations (e.g. Lefebvre 1991; Smith 2010; Massey 1994). Massey (1994: 1-16) formulates space in terms of changing social relations and concludes that space is dynamic. Consequently places are 'particular articulations' of 'open and porous networks of social relations' (Massey 1994: 5, 121). It is exactly the benefit of an institutional rent analysis to make these social relations visible and to display how rent appropriation creates spaces.

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<sup>i</sup> Probably without knowing this debate mirrors insights provided by Steindl (1976 [1952]), who discussed the causes of the Great Depression in *Maturity and Stagnation in American Capitalism*.

<sup>ii</sup> Haila (2016: 121-123) offers a critical assessment of rent-seeking and the historical context of its genesis.

<sup>iii</sup> Note that this raises the question of productive vs unproductive labour. A discussion of this topic goes beyond the aim of this paper. We refer interested readers to Walker (1985), Savran and Tonak (1999) as well as Smet (2016: 499, 502).

<sup>iv</sup> We are very cautious to include water and intellectual property, since this begs for a thorough analysis of the process of pseudo-commodification and a pseudo-commodity’s position within accumulation strategies (e.g. Zeller 2008; Birch 2017b), which we cannot offer due to limited space.

<sup>v</sup> One example would be Kerr (1996: 85), who states that “rent is a contradictory social form; a necessary barrier posited by capital and internal to the capital relation and hence determined by the movement of that relation.”

<sup>vi</sup> It should be noted that so-called relations of distribution “correspond to and arise from historically particular and specific social forms of the production process” (Marx 2008: 890). Although production and circulation have their internal logics, they have to be seen as inseparably combined.

<sup>vii</sup> In capitalism money has the use value to function as capital, and hence appropriated rent in the form of money can take on the form of productive capital, interest-bearing capital or fictitious capital.

<sup>viii</sup> While money has the use value to function as capital (or as general equivalent in commodity exchange), a pseudo-commodity has a specific use value.

<sup>ix</sup> It should be noted that Marx (2008: 783) could be interpreted in this way.

<sup>x</sup> Whereas Lawson (2006) offers a general discussion of heterodox economics and its different traditions, Lee and Jo (2011) as well as Martins (2013) display how Marxian political economy and „old“ institutionalism complement each other with respect to the social surplus debate.

<sup>xi</sup> Cf. Kerr (1996) for a thorough discussion of Harvey’s, Ball’s and Haila’s work on rent theory as well as a critique of Haila’s classification. Unfortunately, this paper did not receive the attention it deserves.

<sup>xii</sup> Original quote: „Jeder Versuch, das Problem der historischen Besonderheit in den Griff zu kriegen, muss sich mit dem Verhältnis des Grades der Allgemeinheit der Aussage und den vorfindbaren speziellen Details befassen“