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➔ **The housing sector and the EU's political and financial frameworks: the sustainability state of play**

➔ **Innovation in housing decarbonisation: Austria / Germany / Italy / Latvia / Netherlands / Spain**

Innovation in housing decarbonisation: Austria

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1. Structure of stock

There are some 4.9 million housing units in Austria, 3.95 million of which are main residences, the remainder are mainly second homes. Of the main residences 48.5% are owner-occupied, the rest are rental and other tenures (Statistik Austria, microcensus 2019). Consequently, with Germany and Switzerland, Austria has the lowest share of owner-occupied housing in Europe. There are, however, large regional differences across the nine Austrian regions (“Länder”): Vienna (one region or “Land”) is a rental city (only 19% owner-occupation), other regions have a higher ownership share (up to 70% in Burgenland).

The most common definition of social housing used in Austria for international comparisons is to include rental housing by Limited-Profit Housing Associations (LPHAs) and municipal rental housing in the term. A much larger proportion can be considered subsidized housing, because it also includes single-family housing that received regional housing subsidies in the self-built sector.

According to this definition, 23.6% of main residences in Austria are social housing, i.e., 7% municipal housing (i.e., 275,400 dwellings, 227,000 of which in Vienna), and 16.6% LPHA rental dwellings (i.e., 655,500 dwellings). In addition to the municipality of Vienna, the main providers of social housing in Austria are the LPHAs: From the 185 LPHAs active today, 98 are in the form of housing cooperatives, 77 are limited-liability companies, 10 are public limited companies (2020, GBV data). Altogether, the sector manages 950,000 housing units (in its own buildings and for others, e.g., municipalities, privatized units). Access to social housing is controlled by nine different regional housing laws that usually include requirements in respect of nationality (or similar), minimum age and (rather generous) income limits.

The importance of LPHAs as providers of social housing in Austria is a field that has received strong academic attention in recent decades (Matznetter, 2002; Ludl, 2003; Amann & Mundt, 2010; Amann et al., 2012; Reinprecht, 2014; Mundt, 2018) and has functioned as an inspiration to policy makers across the globe due to the sector’s long tradition and beneficial housing outcomes. Some cornerstones of the sector are the long-term obligation to reinvest profits in new construction; the calculation of cost-based rents based on historical land, finance and construction costs; the privileged access to regional subsidy schemes that safeguard affordable cost-based rents; the tight and detailed legal framework formed by the LPH Act; and the two-tier framework of audits and controls.

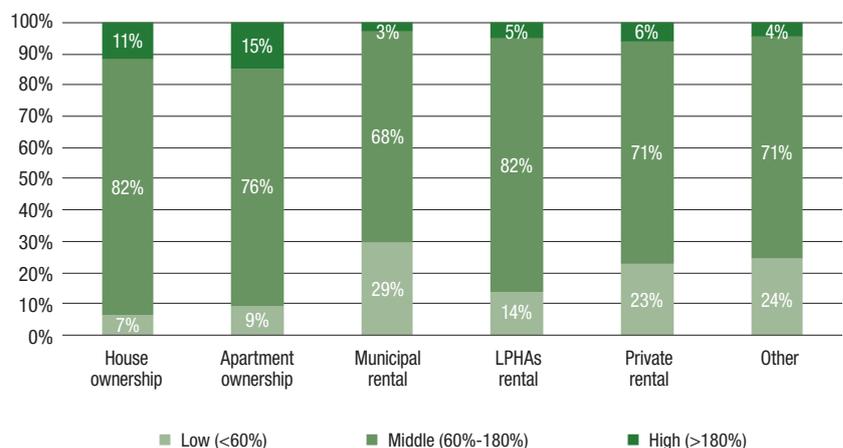
2. Socio-demographic issues

Austria has a very segmented market in terms of price segments, particularly due to regional differences. For Vienna, rental housing options in the market can be arranged from

the cheapest to the most expensive as follows: municipal rental housing (as part of social housing), old private rental stock with legal rental limits, LPHA rental housing with different forms of subsidies, private rental housing without legal rental limits, rental housing by LPHAs with market finance, new-built private rental housing with market finance. For other regions, the LPHA rental market segment takes over the function of municipal housing, i.e., it is the cheapest rental market segment and focusses on low-income households and vulnerable groups. In some regions, LPHA rental housing even dominates the rental market and there are few new private rental market projects.

For the owner-occupied market, the most expensive segments are new apartments by commercial providers in the main cities and the Western regions. In Vienna, second-hand apartments have also shown price surges in the last decades. The ownership market is strongly dominated by households investing in property, with bricks and mortar seen as a safe haven. With strongly rising prices in

FIGURE 1 Income groups across tenures



Source: Statistik Austria, microcensus 2019, Author's chart

and around the main cities, first-time buyers of detached single-family houses are confronted with affordability issues. As prices have increased markedly, young families struggle to buy apartments and increasingly depend on the rental market. The LPHA sector is directed at middle- and lower-income households, in Vienna especially towards the middle incomes, because municipal housing caters to lower income households and vulnerable groups.

Figure 1 gives an overview of the different income groups across tenures. By comparison with other segments, LPHA rental housing clearly caters more to middle-income groups, while lower-income households are clustered in the municipal stock and also in the cheap (because historic and rent-controlled) private rental stock.

3. Governmental targets on housing decarbonisation

The global challenge of housing decarbonisation has conquered the political agenda. The Programme of the current Federal Government, a coalition of the conservative People's Party (*ÖVP*) and the Green Party (since 1/2020), puts a focus on climate change mitigation. It is intended to stir all sectors of the economy to achieve net zero emissions by 2040 and thus to become frontrunner within the EU (Regierungsprogramm 2020). Decarbonisation of the building sector is a core element of this plan, even though emissions from this sector have already improved much more than other sectors over the past decades and have ceased to be one of the main pollutants today.

The main challenges are the ban on fossil energy in new construction, energy efficient deep renovation of the stock, fuel switching to renewable energy sources in the stock, decarbonisation of "grey energy", i.e., energy input to construction products, and reforms in regional planning to avoid car traffic and reduce land consumption.

Emissions in the sector "buildings" (sector CRF 1.A.4 of the emission inventory) started with around 14 million tons CO_{2eq} in 1990, with hardly any improvements until 2003, but there was a decrease of around 40% between 2003 and 2014. The economic boom in the following years created negative effects on emissions. Thus, they increased again until 2017 but returned to the lower level in 2018. The performance is particularly impressive, as since 1990 the population has increased by 16% and the total floor space by more than

50%. Simultaneously, between 1990 and 2018, CO_{2eq} emissions for heating of buildings decreased from around 1.9 tons to only 1.0 ton per capita,

A proportion of the reduced emissions is not due to real savings but originates from a switch to other areas of energy consumption, particularly towards district heating and heat pumps (both belong to the sector "energy generation"). Altogether, the sector "buildings" has always outperformed sector-specific targets, e.g., in the Climate Strategies 2002 and 2007 or in the Climate Protection Act 2011, in comparison to other sectors. The "traffic" sector has long performed poorly.

Reasons for the positive development in the sector "buildings" were much improved energy efficiency standards for new construction, a boom in housing refurbishment and the exchange of fossil heating systems with renewables. The system of housing subsidies proved extremely effective in all three aspects (Amann et al., 2012). Regulations (building codes) were only enacted later.

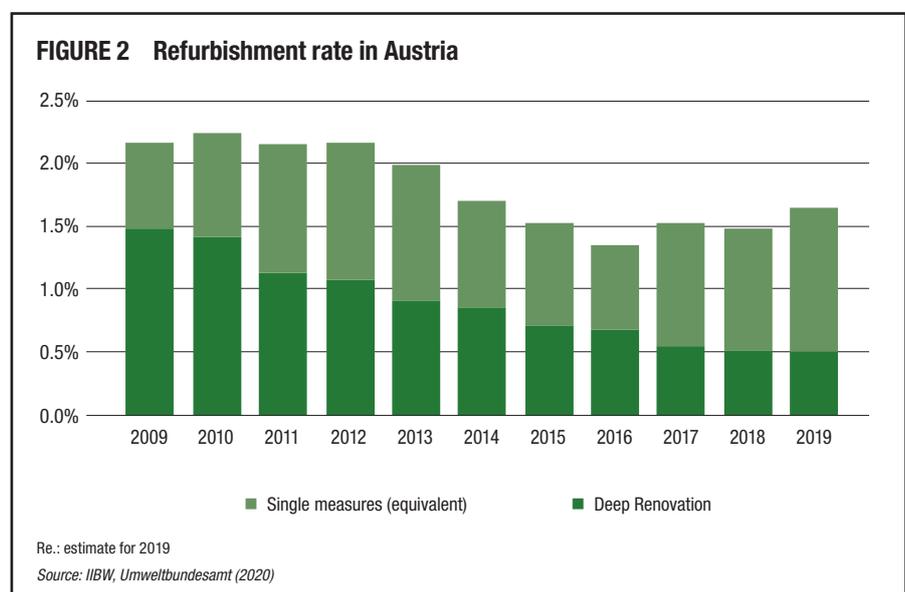
Reference to EU standards is of crucial importance, as the binding character of EU Directives helps to shorten the political process of finding consensus. Targeting net zero emissions by 2040 was a clear reference to the European Green Deal and strives to achieve this one decade earlier. A big challenge is the complicated division of authority between the Federal State and the *Länder*. Being responsible for building codes, the *Länder* claim authority e.g., for major aspects of the implementation of the EU Energy Performance of Buildings Directive (EPBD). In this context, they have submitted

the Austrian Long-term Renovation Strategy in early 2020, which appears to be inadequate in several respects.

4. Refurbishment rate

There has been a long lasting and broad discussion about the targeted refurbishment rate, with figures of 2% to 5% quoted in different policy documents. However, both a precise definition and reliable data sources for their measurement were lacking. As for decades no international definition had been available, a new methodology was recently developed (IIBW & Umweltbundesamt, 2020). It proposes for the numerator the number of dwellings undergoing deep renovation. For less ambitious refurbishment projects, each four single measures (e.g., new façade, windows, roof, regenerative heating) would equal to one deep renovation. In the denominator, the total housing stock is stipulated (and not e.g., only those units in need for renovation). This definition not only has the advantage of being simple, but it is also data driven and allows for measurement of policy action. The main data sources are a biannual microcensus special survey of household energy source (Statistik Austria) and data from the *Länder* on refurbishment subsidies, complemented with data from the construction product industry. In the future, the new database on energy performance certificates (linked with the address registry) may be tapped.

According to this definition, the refurbishment rate peaked in 2010 with around 2.2%, but dropped to only 1.6% in 2019. The Energy Strategy 2018 (#mission2030) has defined



a target of 2.0% on average until 2030. The Programme of the new Federal Government took over an earlier policy target with 3.0% until 2030. This is far more than 100,000 dwellings under deep renovation (or equivalent single measures) each year. Such an increase seems possible but requires bold action in several fields: subsidies, civil law, regulations, opinion building.

5. Energy efficiency standards

5.1. Current situation in the stock

Both the proportion of dwellings with insufficient thermal condition and refurbishment rates differ considerably over housing sectors (see chap. 1.1). The latter was as low as 1.2% (on average over the past decade) for private rental or owner-occupied apartments, but twice as high for LPHA rental apartments. It has been estimated that 1.9 million out of a total stock of 4.9 million dwellings are in need for thermal refurbishment (approx. 40%). A similar number (with a large overlap) requires replacement of fossil fuel with regenerative heating. With a refurbishment rate of 2.5%, this stock could be upgraded (or torn down) by 2040. The required refurbishment rate is lower for the LPHA sector, but higher for private rental and municipal housing. The biggest challenge arises from the rapidly expanding stock of dwellings which are not a main residence, i.e., second homes, which already represent 18% of the total housing stock.

5.2. Energy efficiency standards in subsidy schemes and building codes

As early as the 1980s, environmental policy targets entered the housing subsidy schemes of the *Länder*. From the 1990s onwards, energy efficiency measures, use of renewable sources and ecological measures were promoted by additional subsidies. From the early 2000s, ever stricter energy efficiency thresholds became a precondition for eligibility of projects for subsidies. In 2006 and 2009, treaties between the Federal State and the *Länder* pushed the subsidy systems very strongly towards becoming implementation tools for joint climate goals. At that time, energy efficiency standards of subsidized new housing construction were much more advanced than those in building regulations. In the early 2010s, almost one third of subsidized new construction conformed to the passive house standard. In 2012, a mandatory standard was introduced, similar to the almost zero energy standard required today by the Energy Performance of Buildings Directive (EPBD). With its housing subsidy scheme,

Austria has achieved a leading position internationally in the implementation of ecological and low energy new housing construction (Amann et al., 2012).

Since then, stakeholders from several industries, amongst them the LPHA sector, started to oppose what was perceived as overfulfilling of European requirements (Bauer, 2013). This was one reason for housing subsidy policies of the *Länder* that moderate their ambitions of being the frontrunner in energy efficiency.

The average heating demand of subsidized dwellings was around 200 kWh/m².a in the 1980s but has decreased by approx. 85% since then (Umweltbundesamt, 2020). In recent years this level has stagnated.

In contrast to new construction, the performance of thermal housing refurbishment has long been perceived as inadequate. The focus of refurbishment subsidies is on deep renovation. Despite rather generous subsidies, a strongly decreasing number of owners were willing to accept all these strict regulations linked to financial support.

Building codes followed with a lag of several years to require energy efficiency standards similar to the housing subsidy schemes. As building codes are under the authority of the *Länder*, and the *Länder* were not willing to entrust the Federal State with the authority to directly implement EU directives in national legislation, the in-between institution OIB – Austrian Institute of Construction Engineering (*Österreichisches Institut für Bautechnik*) was established in the legal form of an association, in order to harmonise building regulations all over the *Länder*. The OIB “Richtlinien” (directives) are based on EU regulations and international standards. Subsequently, the *Länder* proclaim these directives in their building codes as mandatory. National implementation of the EPBD is achieved primarily via the OIB directive 6 “Energy Saving and Thermal Protection”.

Consequently, the EPBD 2002 (2002/91/EG) was implemented within *Länder* legislation during the 2000s, using the short cut of OIB directives (*OIB-Richtlinien* 2007) and some civil law legislation. As for the OIB directives 2007, it lasted until 2011 until it took effect in all *Länder*. This long period from the EPBD 2002 to final implementation clearly shows how difficult and complex the coordination of all *Länder* interests is. For national implementation of the EPBD 2010 recast (2010/31/EU) with its definition of an almost zero energy standard it took almost one decade

(*OIB-Richtlinien* 2011 and 2015, coming into force in *Länder* building codes between 2012 and 2017). The EPBD 2018 (2018/844/EU) is still on the way to nationwide implementation (*OIB-Richtlinien* 2019, followed by adoption in *Länder* building codes).

The OIB directive 6 from 2015 defined the path to improve energy efficiency standards of all new construction to almost zero emissions by 2021. It was foreseeable that at around 2019/2020 these requirements would become stricter than the energy efficiency regulations within the housing subsidy schemes. The *Länder* and the Federal State in 2017 updated the treaty from 2009 on climate protection and cancelled almost all mandatory regulations on energy efficiency and passive house standards within the housing subsidy schemes. Since then, minimum standards of energy efficiency are defined only in the building codes. All subsidy schemes of the *Länder* continue to promote more ambitious standards, but only with incentives, not any longer on a mandatory basis.

Key figures to measure the energy efficiency of buildings grew more and more complicated over time. Until the early 2010s, the only indicator was “heating demand” (*HWB*), which, until recently, was also the only criterion for energy efficiency in housing subsidy schemes. The OIB directives 2015 brought a multiplication of indicators. Since then, the Energy Performance Certificate (*Energieausweis*) has to contain 4 key figures: besides “heating demand” (*HWB*) also “Ultimate Energy Demand”, CO₂ Emissions and the newly developed indicator “Total Energy Efficiency Factor”. The latter indicates the level of energy efficiency of a building compared to a building conforming to the law in force in 2007 (=1.0). Hence, a level of 0.9 (for 2014) means 10% better energy efficiency than the minimum standard of 2007. The directive offers two options to reach the almost zero energy standard in new construction. Either it is possible to reach it with a significantly improved heating demand compared to 2007 (which concerns only the surface of a building, but not the heating system), or this indicator remains at the level of 2014, but energy efficiency improves significantly due to renewable energy generation on site.

In addition to these efforts towards improved standards of new construction, the strategy of fuel switch came to the fore, not only in deep renovation, but also in new construction. By 2020, a new law entered into force which prohibits oil heating in new construction. The programme of the current Federal Government

has a priority to also ban oil from use in the housing stock and to fade out fossil gas for heating of buildings by 2040.

6. Financing tools

6.1. Obligatory reserves in housing regulations

Funding schemes for thermal refurbishment and fuel switch in housing regulations are scattered. The most effective scheme in place pertains to the LPHA sector. Within the structure of cost-based rents tenants have to contribute up to 2.1 €/m² per month to a refurbishment funds. This is the main reason why the LPHA building stock is in better shape than all other housing sectors (see below).

For owner-occupied multi-apartment housing, a voluntary contribution to a refurbishment fund is general practice. However, it usually does not exceed 0.5 €/m² per month. An ongoing reform of condominium law is in preparation, which establishes an obligatory refurbishment fee, more refurbishment-friendly quorum rules and a “right-to-plug” for e-cars.

For private rental dwellings, legal regulations hardly stimulate thermal refurbishments. Accordingly, investments must be funded by the owner, with no possibility to pass on costs to the tenants without lengthy court proceedings.

A major challenge to the decarbonisation of the housing stock is the replacement of fossil gas heating in the apartment stock (in Vienna almost half of the housing stock) with regenerative house central heating or district heating. For all rental apartments, this is only possible with the expressed consent of each tenant, even if no cost increase would occur. This major barrier seems to derive from a mistaken understanding of tenant protection which hinders political reform.

6.2. Subsidies

The main instruments for housing decarbonisation are the housing subsidy schemes of the Länder. Out of the regional housing subsidy budgets, they spent up to 800m EUR in the early 2010s on refurbishment subsidies, which has decreased to below 500m EUR in recent years. The subsidies take the form of low-interest loans, grants or interest subsidies. The main beneficiaries are the LPHAs, but also commercial real estate providers and private households. High-level energy-efficient retrofitting receives the highest subsidy level, but small-scale energy-efficient renovations are also considered.

Some ten years ago, the Federal Government introduced its own tool (*Sanierungsscheck*) to promote housing refurbishment in addition to the subsidy schemes of the Länder. This grant originally targeted owners of detached houses but was later expanded to multi-apartment housing. Recently, the focus has again changed to fuel switch (*Raus-aus-Öl-Bonus*, see below). The yearly budgets were up to 100m EUR in the mid-2010s, but then decreased to only some 40m EUR. For future years, an increase to 200m EUR per year was announced.

Former income tax subsidies for private refurbishment works have been abolished. There are some minor tax incentives for institutional real estate owners in place, e.g., increased deductions for refurbishment of buildings under monument protection.

Photovoltaics are subsidized both in construction (via the housing subsidy schemes of the Länder) and with feed-in-tariffs. The latter was strongly reduced over time, with a simultaneous drop in prices of PV panels. The decarbonisation roadmap provides for a massive expansion of PV in the years to come, also in the housing sector.

Formerly, the financing tools of contract savings (*Bausparen*) and Housing Bonds (*Wohnbauanleihen*) had high significance even for housing refurbishments (Mundt & Springler, 2916). This importance has strongly decreased because of the current extremely low capital market interest rates.

All of these measures considered, Austria is still lagging behind in utilising European funds for housing decarbonisation. This concerns both EU Structural Funds (for energy efficiency renovation and housing infrastructure) and EIB lending.

7. Policy tools

Over the past decades several highly efficient policy tools have been developed, which may qualify as international good practice. The following three should be emphasized:

7.1. Subsidized housing as frontrunner for ambitious energy standards

As described above, housing subsidy schemes played a major role in the implementation of ambitious energy efficiency standards in new construction and deep renovation. Subsidized housing showed that low-energy or even passive house standards were possible at viable construction costs. This experience opened

doors to bring those standards to the mainstream of new construction. As a result, there have been no complaints regarding the usefulness and feasibility of nearly zero energy construction standards.

Housing subsidy schemes promote both ambitious energy efficiency standards and ecological construction products (ban of PVC windows, promotion of timber and renewable insulation material, indicators applying to GHG emissions, acid impact, fossil primary energy etc.), greening of facades and rooftops, water saving valves, use of rainwater and grey water, percolation of rainwater etc. Recent key aspects are the reduction of building land use and compact buildings (sufficiency). As with energy efficiency standards, the practice of such green technologies in subsidized housing is substantially helping to bring them into the mainstream.

7.2. Refurbishment scheme in the LPHA sector

The LPHA sector is strongly committed to high standards in refurbishment (Amann et al., 2012). It has access to a number of financing sources that allow for regular and ambitious refurbishment measures.

The cost-based rent scheme allows for such low net rents that despite considerable contributions to a refurbishment fund long-run affordability is maintained. This maintenance and improvement contribution (*Erhaltungs- und Verbesserungsbeitrag, EVB*) is 0.50 €/m² in new buildings, but up to 2.1 €/m², according to the building's age. Strict regulations warrant that those quickly growing funds are managed safely, can be spent only for the respective building and are used only for defined measures, mainly for day-to-day repair works and for periodic deep renovation. LPHAs are allowed to spend future EVB incomes to finance renovation projects. If necessary and confirmed by a court decision, the EVB can even be increased for a limited period. LPHAs are allowed to spend savings for the heating bill for financing such measures. Finally, refurbishment subsidies of the Länder and the Federal State are tailored to this purpose.

Legal regulations concerning the operation of LPHAs (Limited-profit Housing Act) provide a basis for the practical needs of refurbishments, both in terms of asset management, funding and enforcement (Bauer, 2013). Within the legal framework, LPHAs are fully autonomous in the management of their assets and simultaneously act as investor, developer, and

housing manager. For this reason, they usually adopt a long-term perspective on asset management: Investment decisions in new construction and refurbishment are taken not only for reasons of short-term returns on investment, but also prioritise the retention of property values, smooth maintenance and – as a matter of course for social landlords – social sustainability (Amann et al., 2012).

7.3. Bonus for fuel switch (*Raus aus Öl Bonus*)

Linked to the refurbishment grant (*Sanierungsscheck*, see above), the Federal State has recently introduced a bonus for building owners who wish to replace their fossil heating with regenerative devices. The subsidy includes technical specifications regarding efficiency, fine dust pollution and other matters, but is nonetheless tailored to low-threshold utilization. Unlike social subsidies, this energy subsidy is applied without income limits. This bonus is intended to function as the main policy tool to promote fuel switch, especially regarding the large stock of detached houses.

8. Related measures

Other aspects of housing decarbonisation and climate change mitigation have come to the fore and are currently implemented both through subsidy schemes and buildings codes. Greening of roofs, terraces and facades is on the way to becoming common in new construction and in refurbishment. As an example, the City of Vienna has introduced a focus on this topic in current housing developers' competitions. Vienna and other cities and regions have introduced strategies to prevent heat islands, both with greenery and water in public space, lighter façade colouring, structural interventions to increase ventilation in neighbourhoods, and cooling facilities, such as foggy rain devices or cooling spots in public buildings or shops.

Another important initiative involves measures against energy poverty that are gaining political priority due to EU stimuli. Even though this is only a moderate problem in Austria, solutions to integrate low-income households seem crucial to achieve all climate goals.

9. Conclusions, challenges, limitations, realism of plans for decarbonisation

The performance of Austria in housing decarbonisation is adequate in the context of national targets as well as in terms of European comparison, but inadequate to reach the goal of net zero emissions by 2040.

Some measures currently in place have been shown to be beneficial in housing decarbonisation: Surprisingly, one of the most efficient measures is a legal stipulation in the LPH Act that makes sure LPHAs collect funds for refurbishments during the lifespan of buildings. It is a legal requirement that does not involve state subsidies but has contributed to the good performance of the sector. Additionally, regional housing subsidies in the *Länder* have helped to increase refurbishment rates in the multi-storey stock. However, refurbishment rates in the private stock, both multi-storey rental stock and owner-occupied houses, do not reach the necessary level of refurbishment activity.

We can learn from the Austrian experience that financial incentives are important but not sufficient. They must go hand in hand with an efficient legal framework. More attention should be paid to safeguard the costs of fuel switch to be distributed equally between owners and beneficiaries (tenants), but also targeted measures should be introduced to prevent energy poverty amongst low-income households that cannot cope with high investments or rapidly increasing energy costs.

References

- Amann, W. & Mundt, A.** (2010): Indicators of an Integrated Rental Market in Austria. In: Housing Finance International, Winter 2010, 35-44.
- Amann, W., Hüttler, W. & Mundt, A.** (2012): Austria: Social housing providers at the forefront of energy efficiency. In: Nieboer, N., Gruis, V., Tsenkova, S. & van Hal, A. (eds.)(2012): Energy Efficiency in Housing Management (London & New York: Routledge).
- Bauer, E.** (2013): Energieeffizienz und Wirtschaftlichkeit. Investitions- und Nutzungskosten in Wohngebäuden gemeinnütziger Bauvereinigungen unter besonderer Berücksichtigung energetischer Aspekte (Vienna: GBV).
- IIBW & Umweltbundesamt** (2020): Definition und Messung der thermisch-energetischen Sanierungsrate in Österreich (Vienna: IIBW).
- Ludl, H.** (2003): Limited-Profit Housing Co-operatives (Vienna: GBV).
- Matznetter, W.** (2002): Social Housing Policy in a Conservative Welfare State: Austria as an Example. In: Urban Studies Vol. 39 (2), 265-282.
- Mundt, A.** (2018): Privileged but Challenged: The State of Social Housing in Austria in 2018. In: Critical Housing Analysis, Vol. 5 (1), 12-25.
- Mundt, A. & Springler, E.** (2016): Milestones in Housing Finance in Austria over the Last 25 Years. In: Lunde, J. & Whitehead, C. (eds.): Milestones in European Housing Finance (Oxford: Wiley-Blackwell), 55-73.
- Reinprecht, C.** (2014): Social Housing in Austria. In: Scanlon, K.; Whitehead, C. & Fernández Arrigoitia, M. (eds.): Social Housing in Europe (Oxford: Wiley Blackwell), 61-73.
- Umweltbundesamt** (2020): Klimaschutzbericht 2020 (Vienna: Umweltbundesamt).