

# The nearly-Zero Energy Challenge for Housing Providers and Cities – a contribution to energy security?

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Experiences, key findings, point of view of Austrian Limited Profit Housing providers

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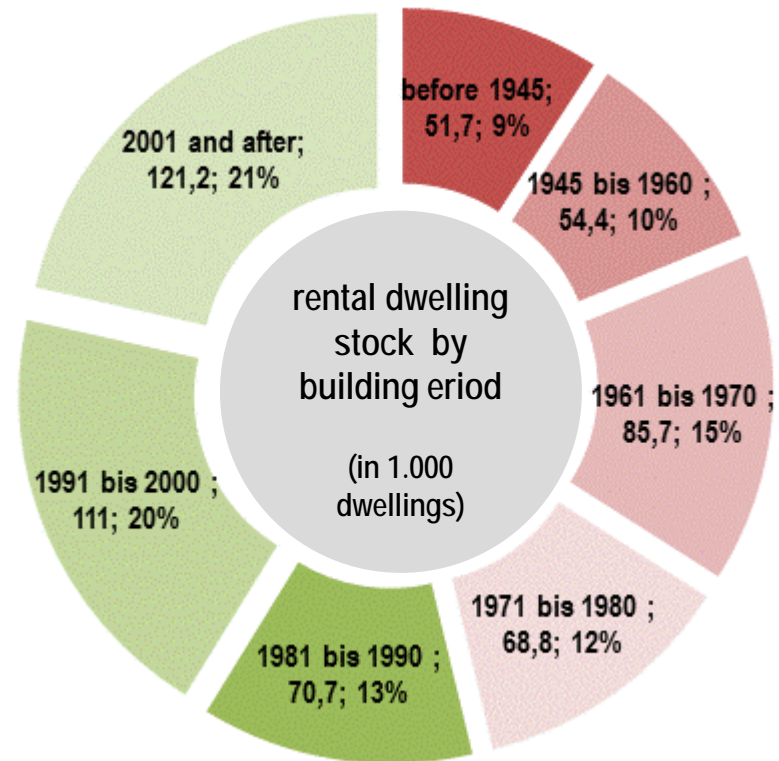
# Austrian Federation of Limited-Profit Housing Associations

**191 members:**

**99 co-operatives / 92 capital societies**

**Managing 810.000 dwellings  
(of which are 561.000 rental dwellings) =  
22 % of total housing stock in Austria**

**New Construction: 15.000 dwellings per  
year, which is 20 - 30% of total new  
construction**



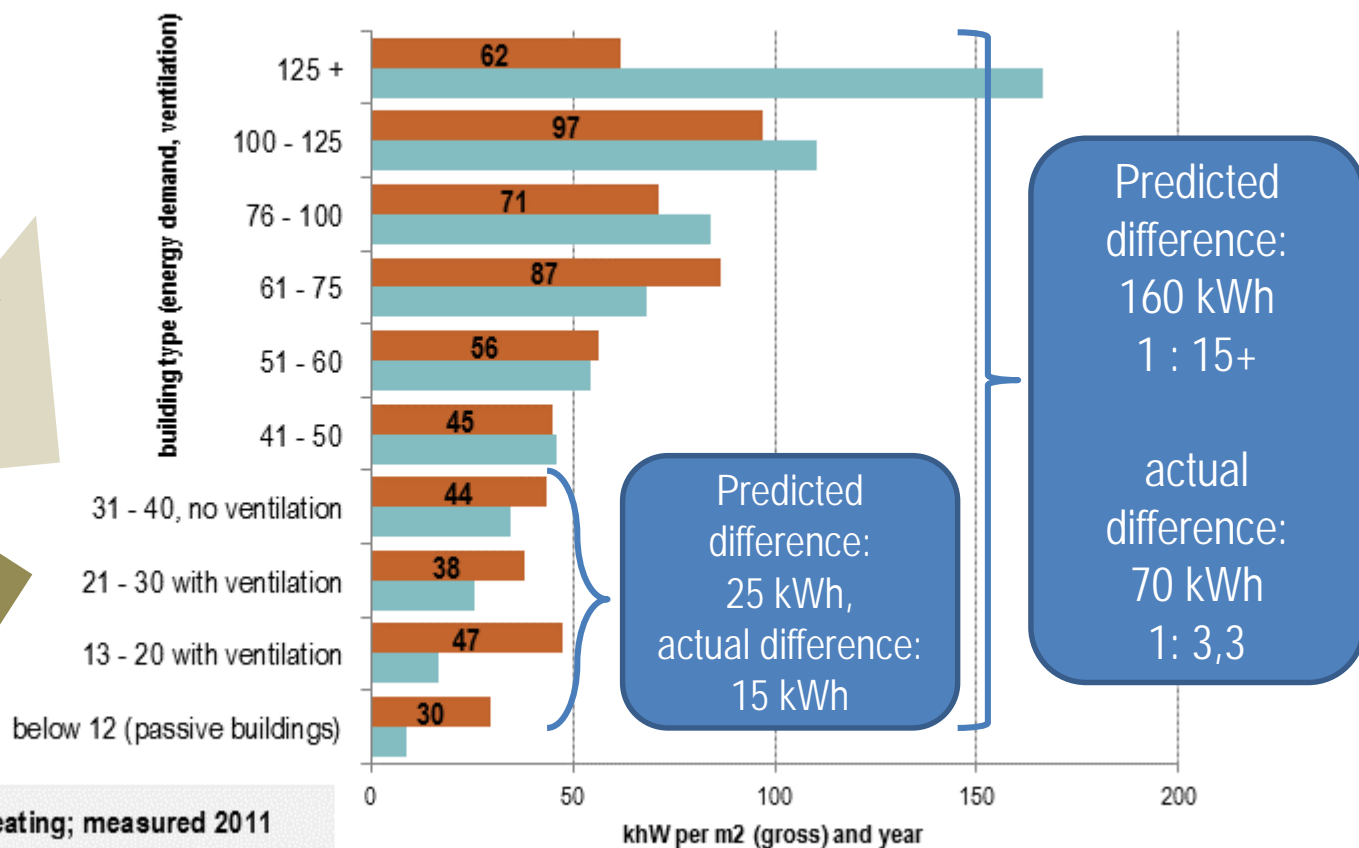
## Background:

- Limited profit providers produce each year about 15.000 new dwellings and renovate 10.000 – 15.000 per year.  
Their mission in general is the provision of affordable housing.
  - Since the year 2006 quality requirements have been tightened, requirements for subsidised housing are higher than in general building code.
  - The last years brought a remarkable increase in construction costs
  - While national plan towards Nearly-0 energy buildings and housing subsidy schemes increase requirements
- => This led to a investigation of the GBV housing stock to enable an analysis of energy consumption, energy costs, costs of construction and cost optimality

## predicted and real consumption 2011; rental housing stock GBV - sample (134 buildings, 5.500 dwellings)

Low energy according to actual building requirements; Nearly 0 in combination with renewables produced on site

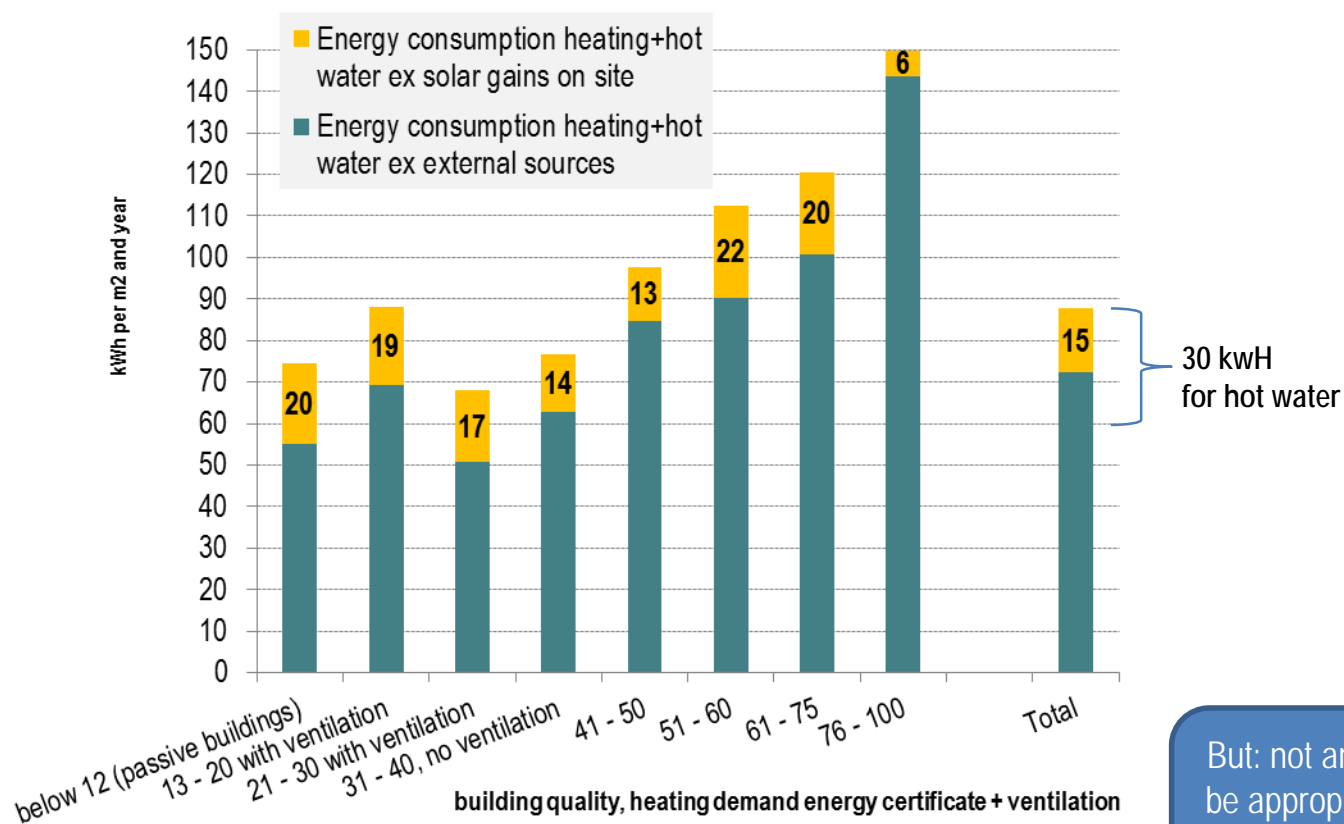
Nearly 0 from 2020, according to Austrian definition (proposed)  
Actual requirement subsidised housing



■ end energy consumption heating; measured 2011

■ Heating demand energy certificate

## Contribution of Solar Energy, GBV-sample of 50 buildings/1.670 dwellings with solar panels , year 2011



Solar energy produced on site may contribute about 50% of energy for hot water production - in „good“ years like 2011

But: not any building/location seems to be appropriate for sufficient solar gains: big compact buildings have disadvantages

## Cost aspects of very low energy /passive buildings:

There are **additional costs of constructions** for

- Automatic ventilation with heat recovery: 50 – 80 € /m<sup>2</sup>  
costs for „normal“ ventilation may be deducted: - 15 – 20 €/m<sup>2</sup>
- Higher insulation (facade, roof, cellar), improved air tightness:  
up to 50 €/m
- 3-glassing windows: up to 20 €/m<sup>2</sup>
- planning: 18 €/m<sup>2</sup>

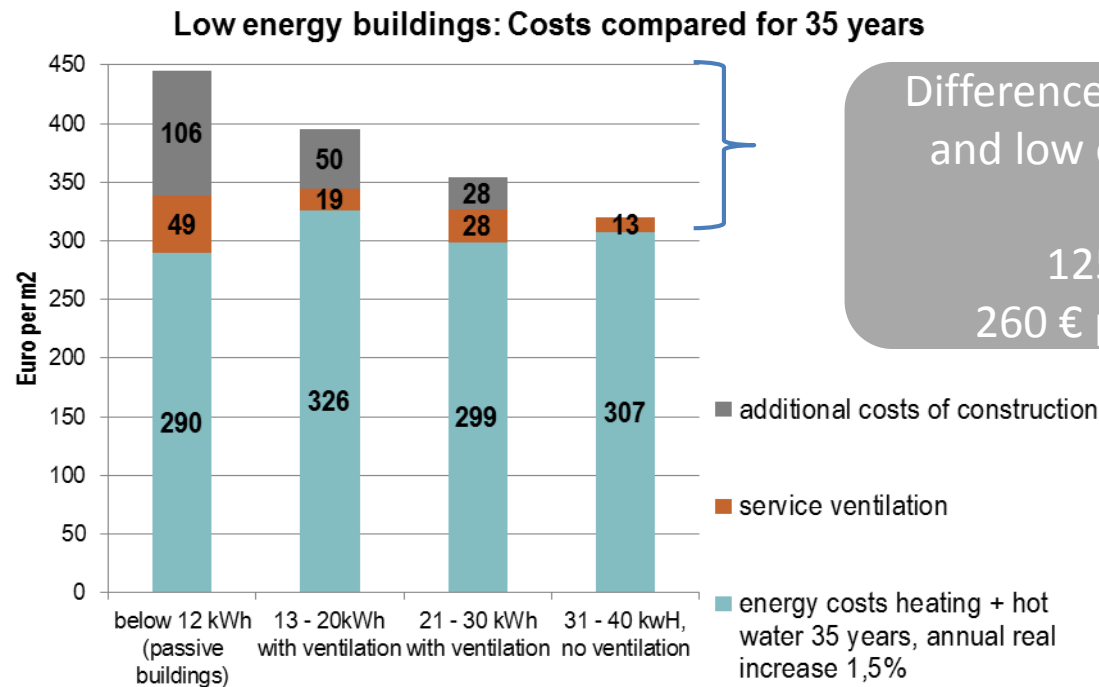
Costs for a heating system may not be as compensating element as we need a „normal“ heating system also in passive buildings! (temperature, air humidity)

=> These elements sum up to appr. 100 - 120 € per m<sup>2</sup> which leads to a **rent increase of about 0,50 – 0,60 €** per month and m<sup>2</sup>

- There are additional costs for electricity for ventilation (appr. 4 kWh/m<sup>2</sup>/year = **0,05 €** per m<sup>2</sup> and month)
- there are additional costs for service and maintenance of ventilation system: **0,10 – 0,15 €** per m<sup>2</sup> and month ./. .

## Cost aspects of very low energy /passive buildings:

The additional costs for very low/passive buildings per m<sup>2</sup> an month sum up to about **0,75 €** - energy savings gains via a reduced consumption of 15 kWh/m<sup>2</sup>\*a cannot compensate these costs (**saving = 0,20 €** m<sup>2</sup> and month; calculated with a „overrated“ energy price to reflect a future real price increase)



Difference between passiv building and low energy building without ventilation:  
 125 €/m<sup>2</sup> 35 years =  
 260 € per dwelling and year



## Conclusions:

- Low energy buildings can contribute to increase energy efficiency, reduce greenhouse gas emissions and also can contribute to energy security.
- But within low energy buildings differences in consumption are very small so that we should regard costs effects very carefully to define the optimal level of nearly-0 energy buildings.  
=> Austrian limited profit housing associations favour „simple“ low energy buildings without need for an automatic ventilation due to cost reasons and handling of technical systems.  
Existing passive buildings are all financed with specific subsidies, covering additional costs of construction completely or to a part.
- Any calculations of energy savings, increasing energy efficiency etc. should be based on CONSUMPTION DATA rather than on calculated demand since there is a substantial divergence between these data – due to rebound effects, prebound effects, complications with handling of technical systems; and: calculated energy demand in energy certificates seems to be not accurate in any case.