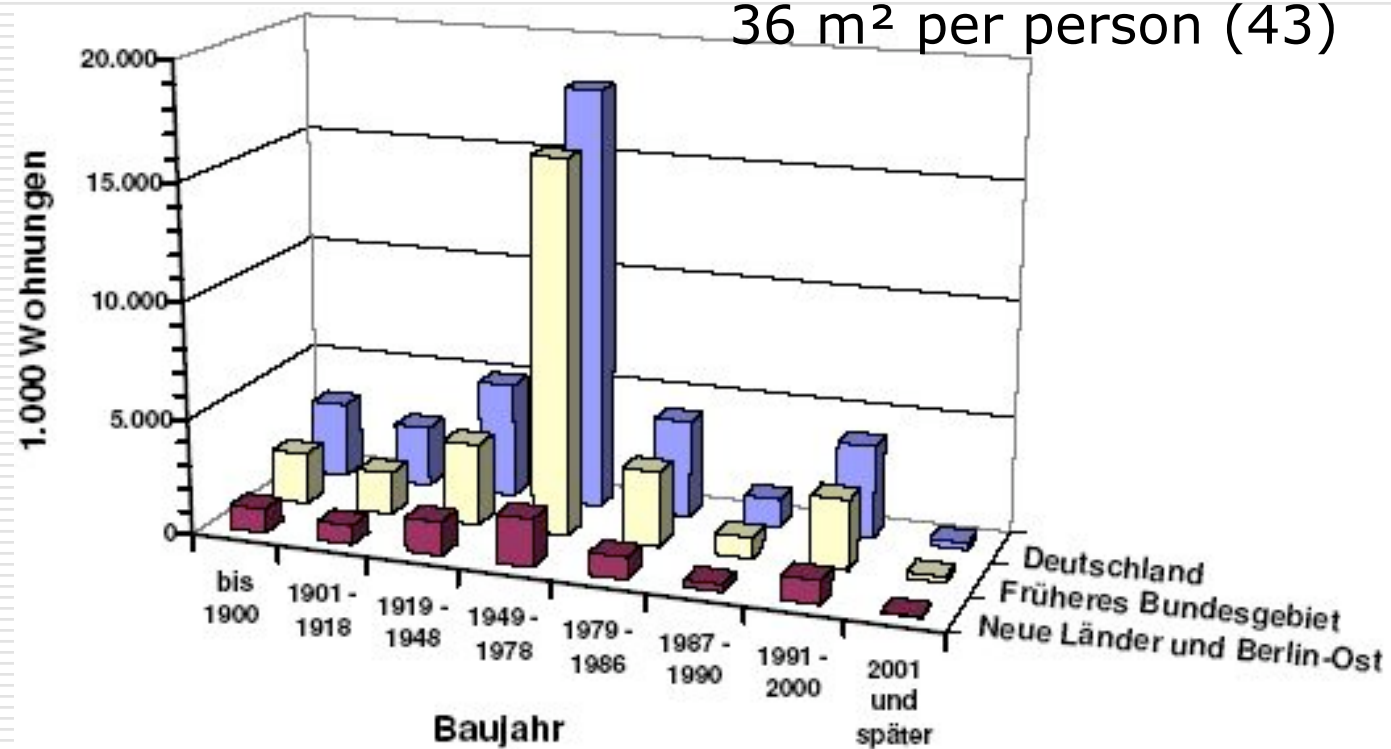
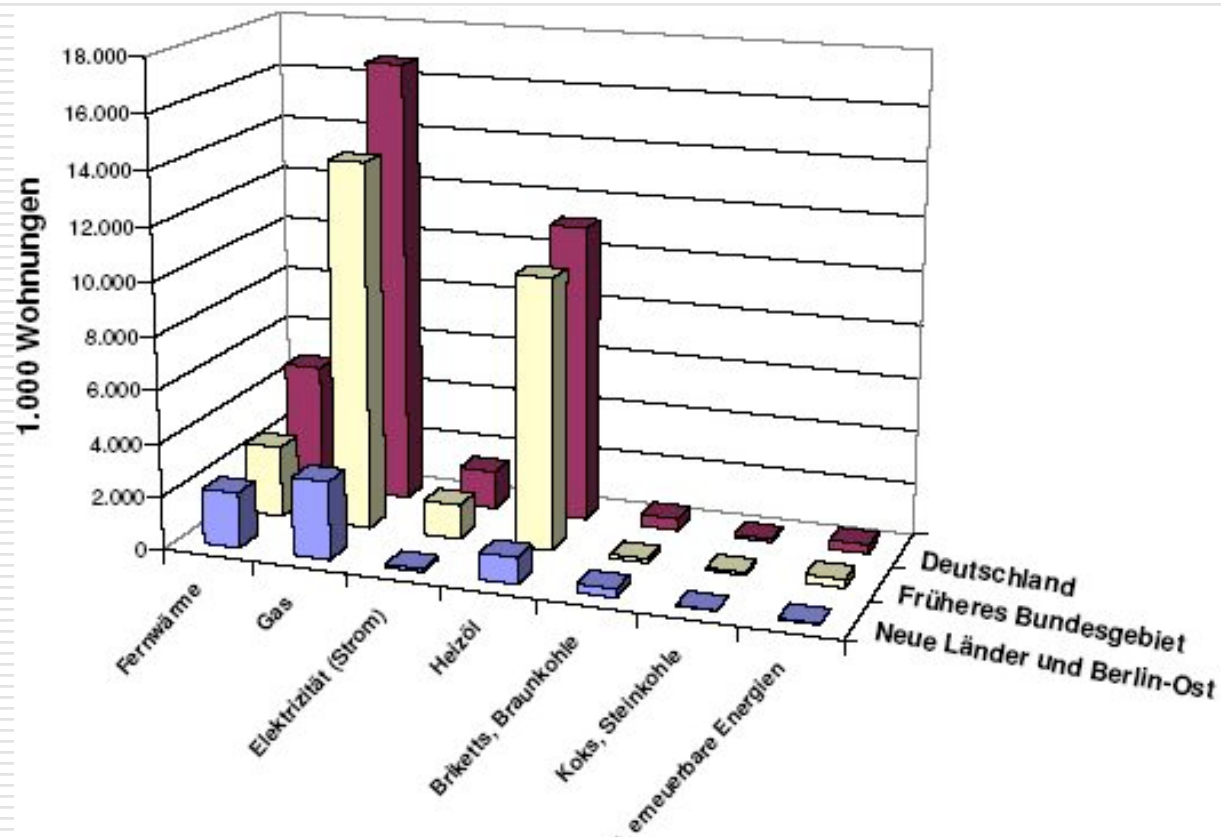


## Age structure

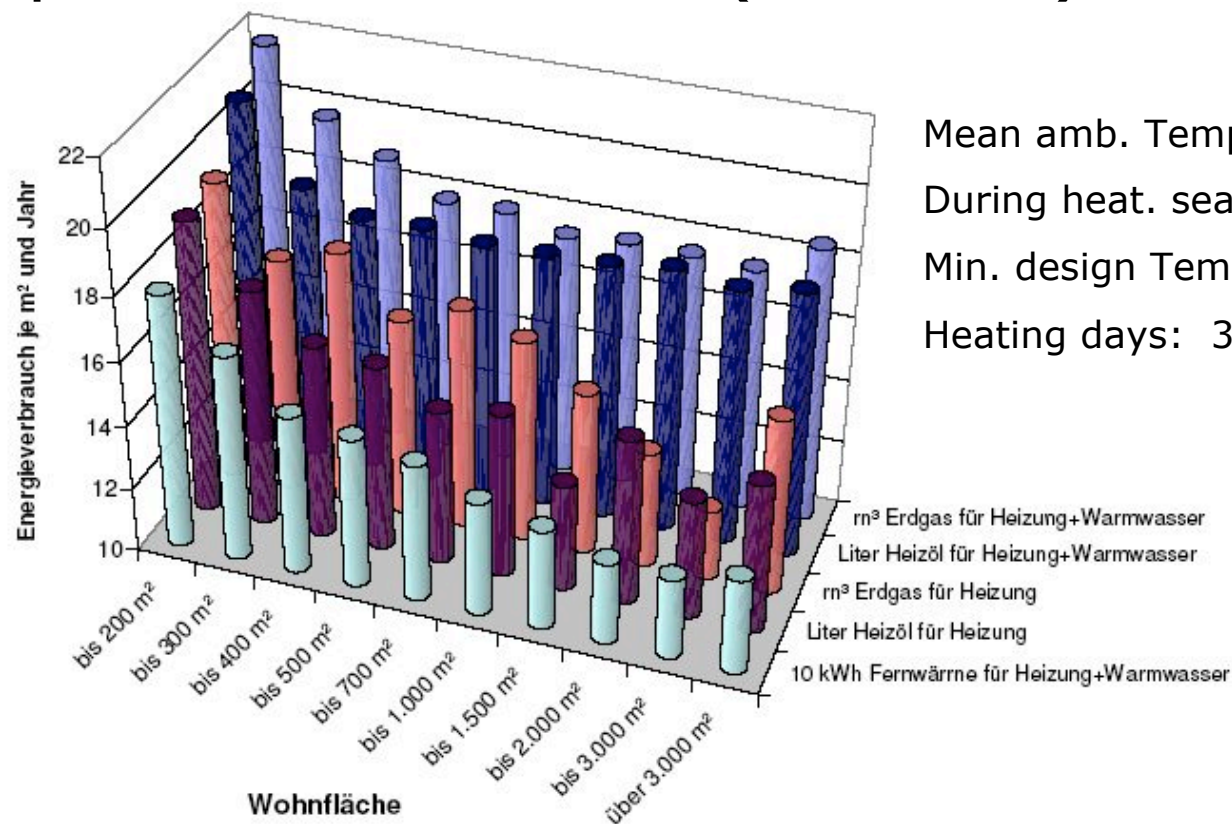
New (Old) Länder 2002:  
77 m<sup>2</sup> per flat (99)  
36 m<sup>2</sup> per person (43)



# Energy carriers

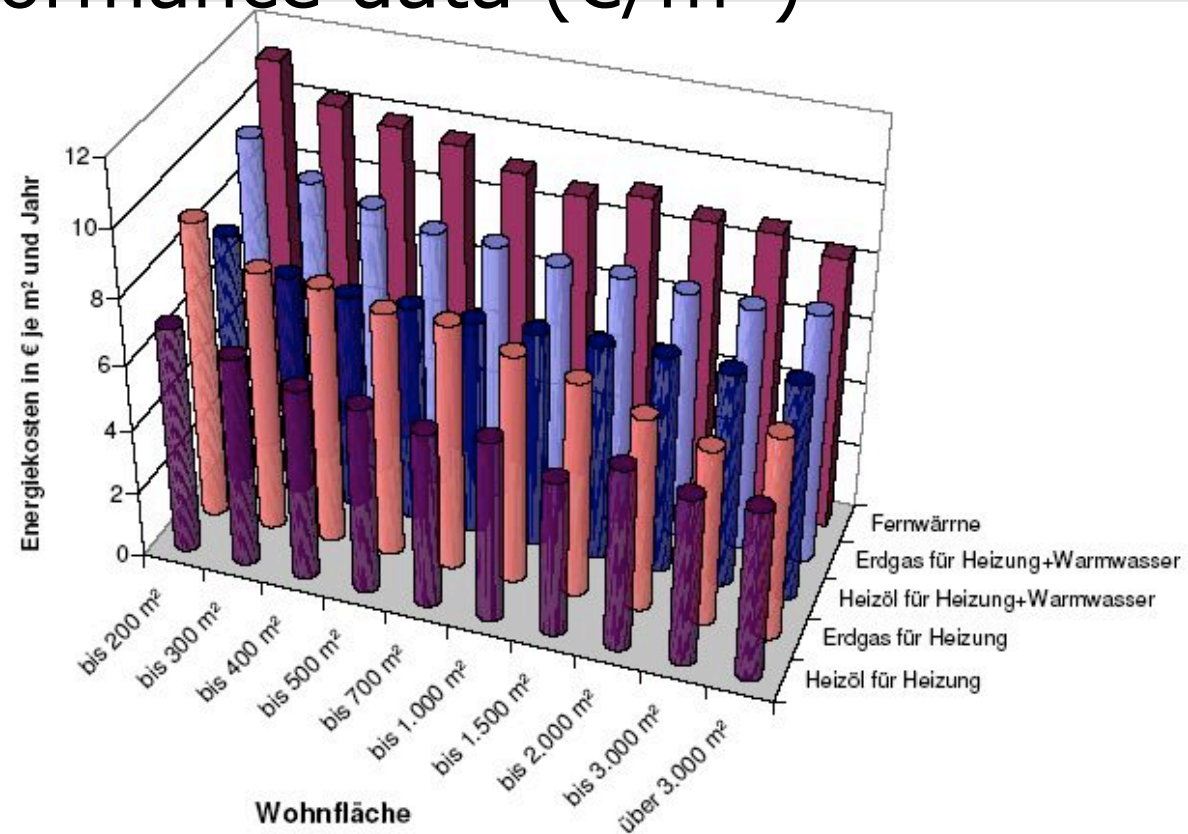


## Energy performance data (Unit/m<sup>2</sup>)



Mean amb. Temp: 8.1-10.7°C  
During heat. season: 7.1-2.3°C  
Min. design Temp: -10- -18°C  
Heating days: 350 – 251

## Energy performance data (€/m<sup>2</sup>)



# Main housing acts and regulations

## [Federal republic versus Bundesland]

- **The Second Housing Law (D)**
- **The Fair Housing Act (D)**
- **The Rent Regulation Law (D)**
- **The Second Billing Regulation (D)**
- **The new housing rent regulation (D)**
- **The housing benefits act and ordinance (D)**
- **The Housing Support Provision, which acts as an administrative regulation (Bbg)**

## Example

- **residential building, construction year 1957**
- **5 floors, 40 flats, 2,216m<sup>2</sup> living area**
- **Energy supply through an old gas boiler**
- **Energy consumption before refurbishment: 184 kWh/(m<sup>2</sup>·a) for heating and hot water energy costs before refurbishment: 0,77 €/ (m<sup>2</sup>·mon); (5 ct./kWh)**
- **rent before refurbishment: 4,80 €/ (m<sup>2</sup>·mon)**



## Results

- **Energy consumption after refurbishment: 69 kWh/(m<sup>2</sup>·a) for heating and hot water**
- **Energy costs after refurbishment: 0,29 €/ (m<sup>2</sup>·mon)**
- **Savings in costs: 0,48 €/ (m<sup>2</sup>·mon)**
- **primary energy consumption after refurbishment: 79 kWh/(m<sup>2</sup>·a)**
- **CO2 reduction in total: 79,8 t/a**
- The measures fulfill the requirements of the Energy Conservation Regulation (84,45 kWh/(m<sup>2</sup>·a)). Therefore debt relief of 20% of the credit will be granted. While having taken into account all kinds of support, the rent would increase by Euro 0.49 (m<sup>2</sup>·mon) only, instead of Euro 0.86 (m<sup>2</sup>·mon). While considering in addition the energy costs savings, the rent would be increased by Euro 0 (m<sup>2</sup>·mon).

# Example

Measures	Costs	Support
New gas condensing boiler	Approx. 14,000 €	17,600 €
Chimney refurbishment	Approx. 3,600 €	at 2.12% <sup>11</sup> interest
Solar hot water production, 40m <sup>2</sup>	Approx. 26,000 €	21,000 € at 2.12% 5,000 € subsidy
Heat insulation (14cm)	approx. 130,000 €, of which 78,000 € to be allocated as modernization <b>12</b>	301,000 € at 2.12%
Windows (U = 1.5 W/(m <sup>2</sup> ·K))	Approx. 126,000 €,	
	of which 42,000 € to be allocated as modernization <b>12</b>	
Top floor ceiling (20cm)	approx. 11,000 €	
Basement ceiling (14cm)	approx. 19,000 €	
Planning	approx. 15,000 €	
Investment in total	approx. 344,600 €	
Investment, which is to be treated as the modernization and therefore allocated in the increased rents (less the support)		approx. 203,600 €



## Institutions in the field

- **After reunification municipal housing stock moved to municipal companies and cooperatives and private estate owners.**
- **Most companies are organized under BBU in Berlin/Brandenburg area.**
- **A 2nd association of independent estate owners is existing.**
- **BBU is part of the German roof association GdW, which is part of CECODHAS.**
- **BBU organizes its work by working groups, a.o. one on technical matters (energy performance figures, running costs data base).**

## pros and cons

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"><li>■ A lot of existing examples</li><li>■ A grant scheme counting CO2 reduction in Brandenburg</li><li>■ State funds for “rebuilding” East German cities</li><li>■ Model concept for Garden Town Cottbus Schmellwitz</li></ul>	<ul style="list-style-type: none"><li>■ Only few examples on integrated renovation</li><li>■ Renovation and sustainable energy supply and use are not seen in line</li></ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"><li>■ Integration of social housing refurbishment and regional development</li><li>■ Cottbus network will gain reputation</li></ul>	<ul style="list-style-type: none"><li>■ MIR will not gain a share in structural funds means for further refurbishment</li><li>■ The last chance for integrated refurbishment passes by</li></ul>