

# Energy renovation of Socialist-era apartment blocks in Berlin

**Competence Center for Large Housing Estates  
Kompetenzentrum Großsiedlungen e.V.**

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# Large housing estates of the 20s, 50s, 70s and 80s of the 20<sup>th</sup> century





# Competence Center for Large Housing Estates unites the expertise and knowledge of its members.

**German Tenants'  
Association  
DMB**

**Housing companies and  
cooperatives**

**Municipalities**

**Associations  
of housing and  
construction industry**

**Architects  
Urban planners  
Engineers**

**Business companies**

**Associations**

**Individuals**

**Redevelopment agency**



# Center of Competence for Major Housing Estates: **competencies**





# District Marzahn-Hellersdorf in Berlin

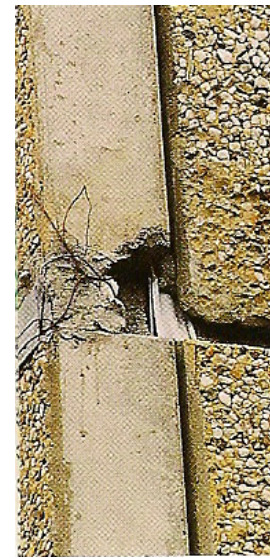
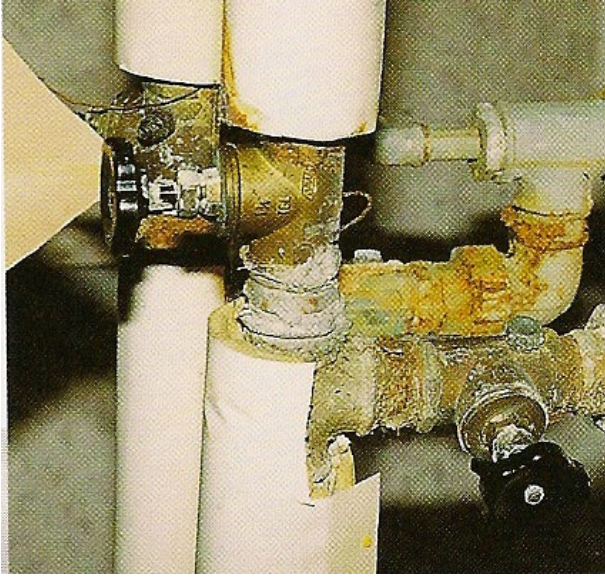
## Starting point:



- nearly 100,000 apartments in industrial construction (Prefabricated construction)
- 56 000 apartments in LHE Marzahn, 43 000 apartments in LHE Hellersdorf
- approximately 20,000 units in single-and two-family houses
- Around 250,000 people live here about 200,000 inhabitants in the LHE



## Starting situation 1990: **Constructional state, Unfinished residential quarters**



Residential buildings were in poor technical condition.

Energy use was extremely high due to:

- Open-window temperature control.
- Missing or faulty thermostatic valves.

Renovation was essential.





## The goal:

To quickly eliminate defects and deficiencies, and to prevent the risk of social segregation in Hellersdorf and other parts of Berlin.



before



after



# The successful large-scale modernization of housing stock

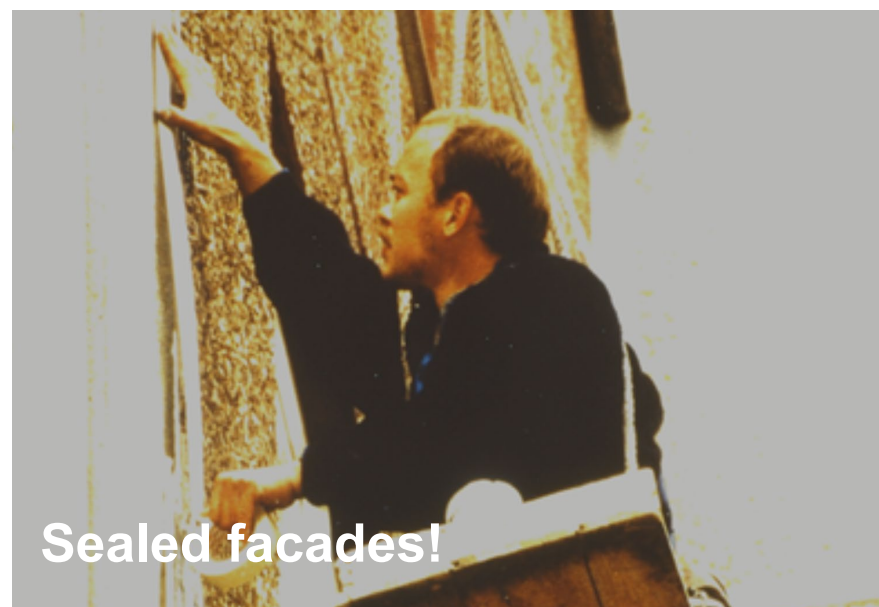




# 1. Get into conversation with the residents!

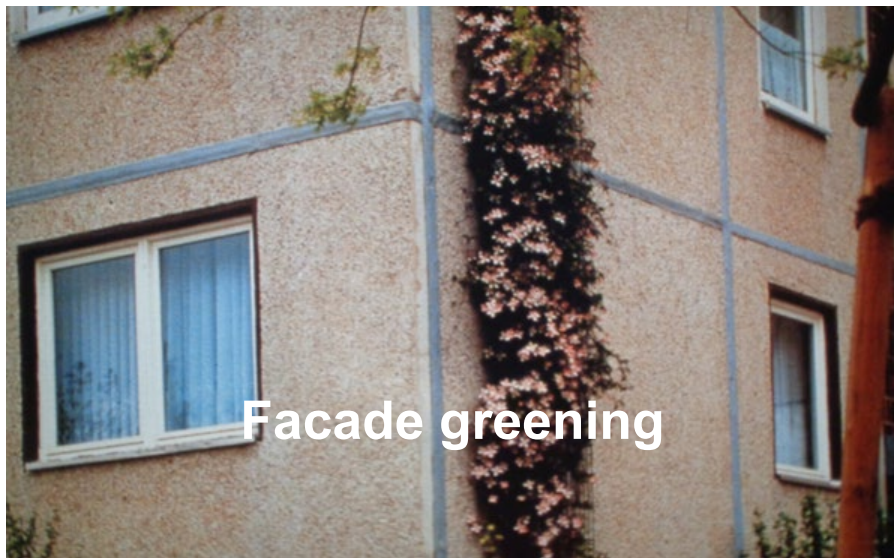


## 1.b First measures begin: “The process has begun!”





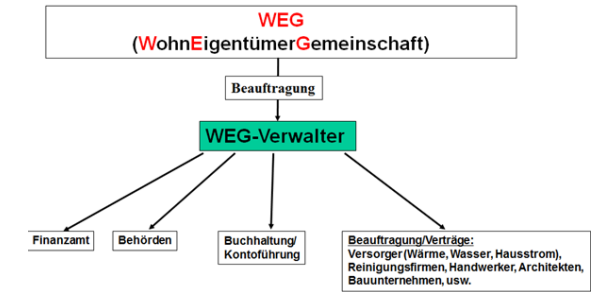
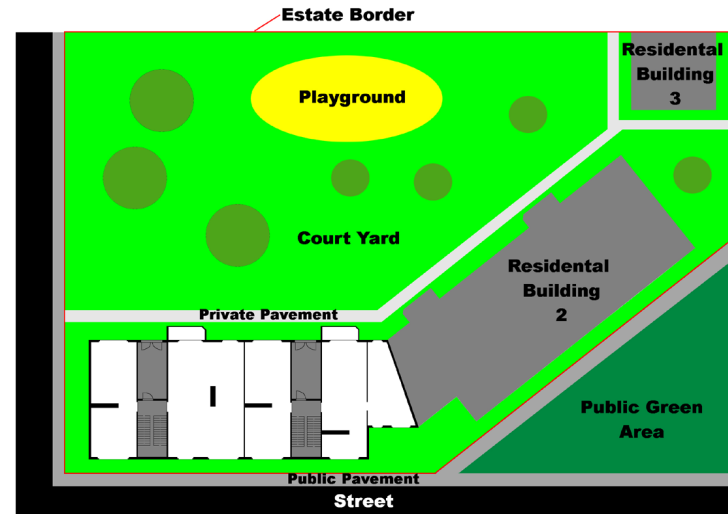
## 1.a First measures begin: “The process has begun!”





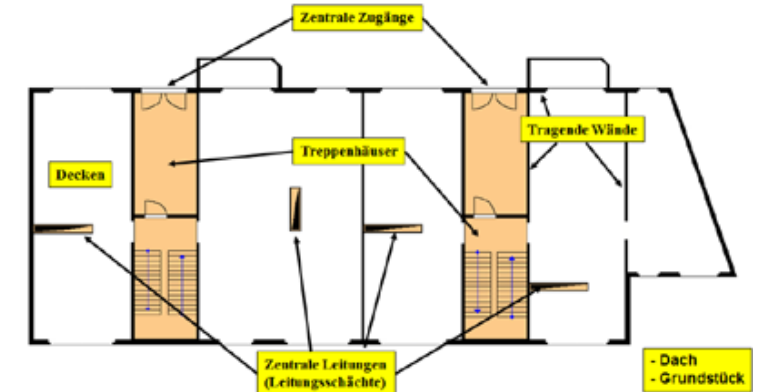
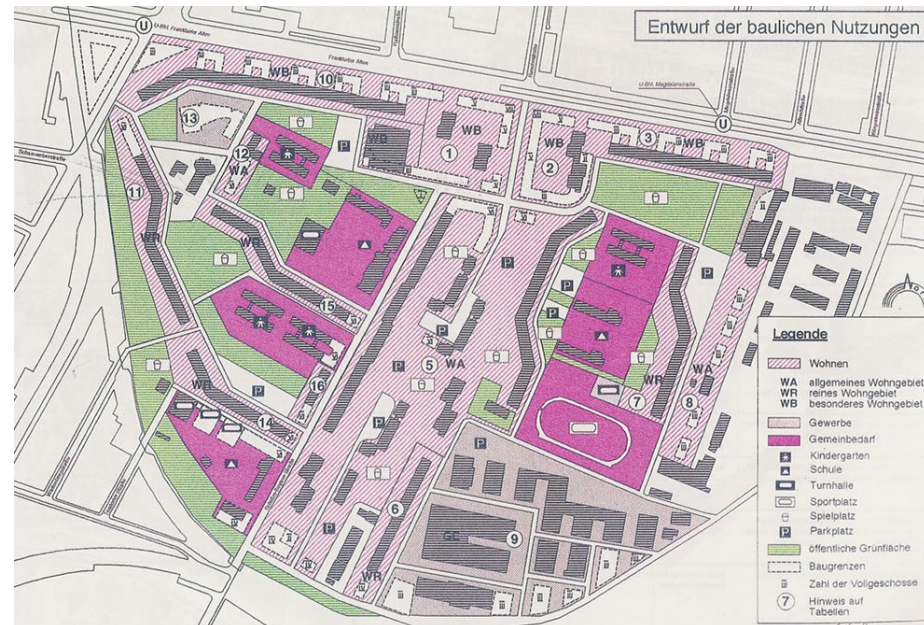
## 2. Analysis:

- **legal terms**
- urban planning
- Technical situation
- social situation



Establishment of a co-ownership association (WEG)

Clarification of land ownership

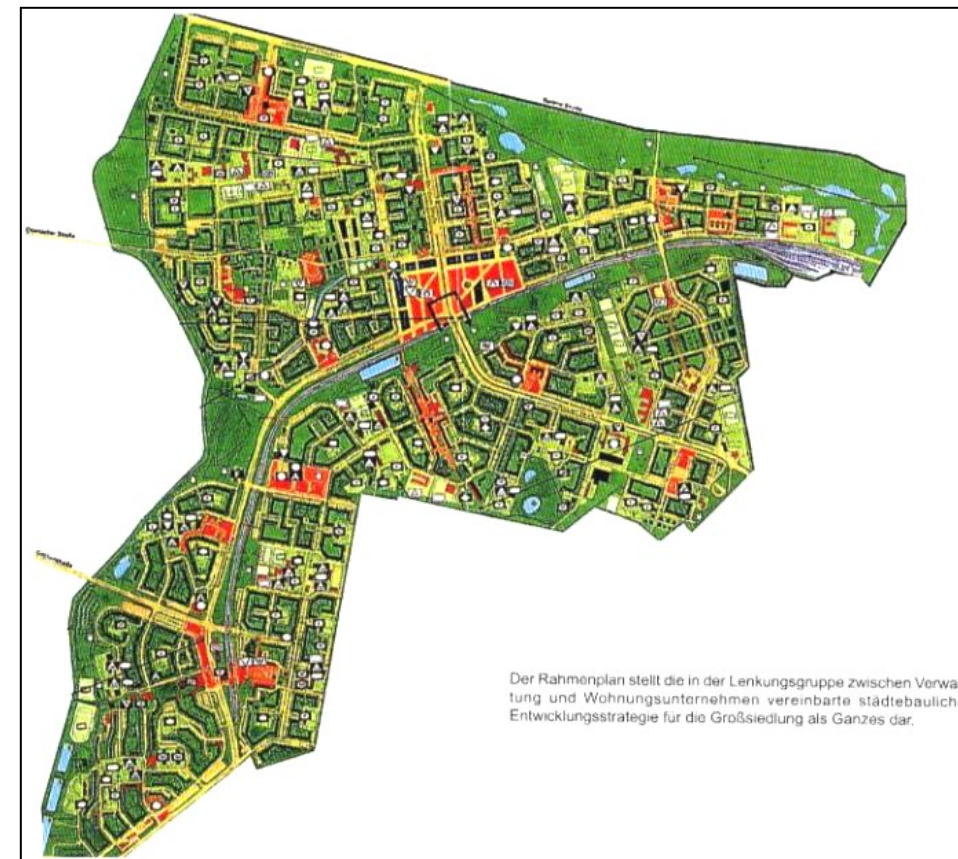


Clarify common property



## 2. Analysis:

- legal terms
- **urban planning**
- Technical situation
- social situation





## 2. Analysis:

- legal terms
- urban planning
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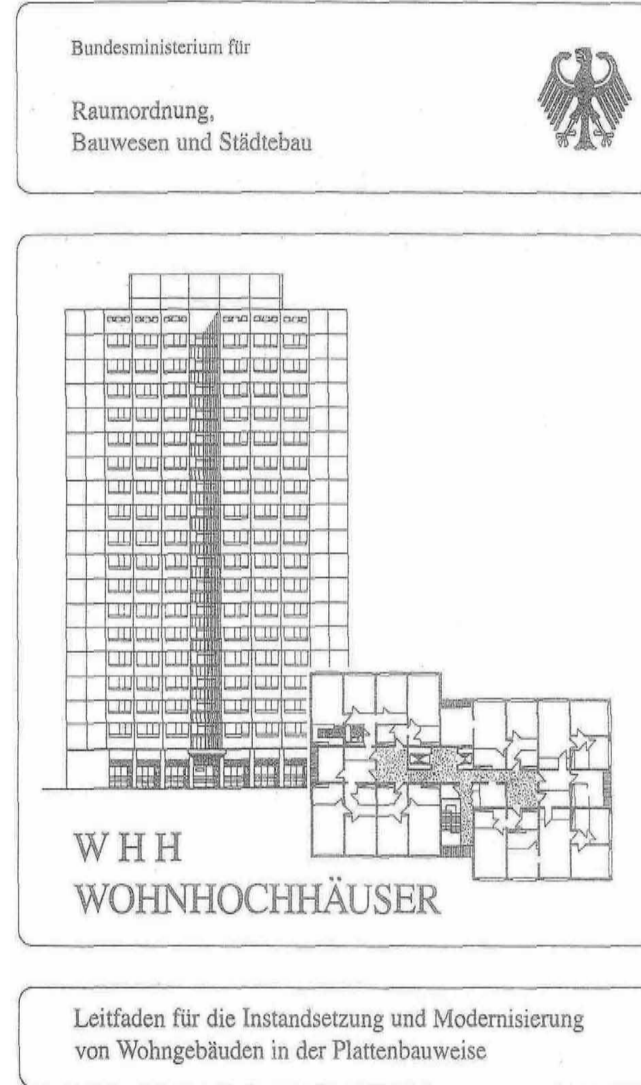




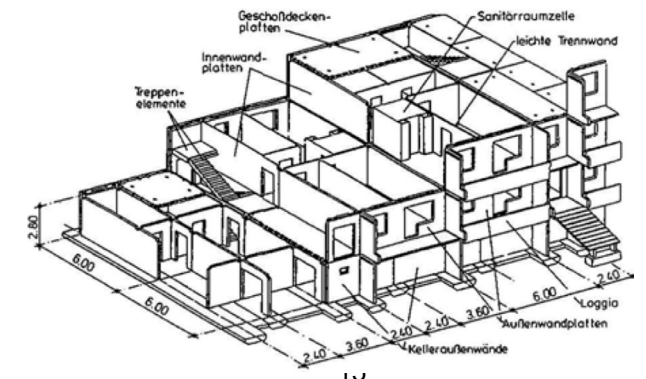
## 2. Analysis:

# The 10 most frequently built residential building series in East Germany

- legal terms
- urban planning
- social situation
- **technical situation**



- Q3A
- QX
- QP
- P2
- WBS 70/5
- WBS 70/11
- WHH SK
- WHH GT
- WH H GT 85
- SK Scheibe





# Result of the technical analysis: Building Modernization Support Program

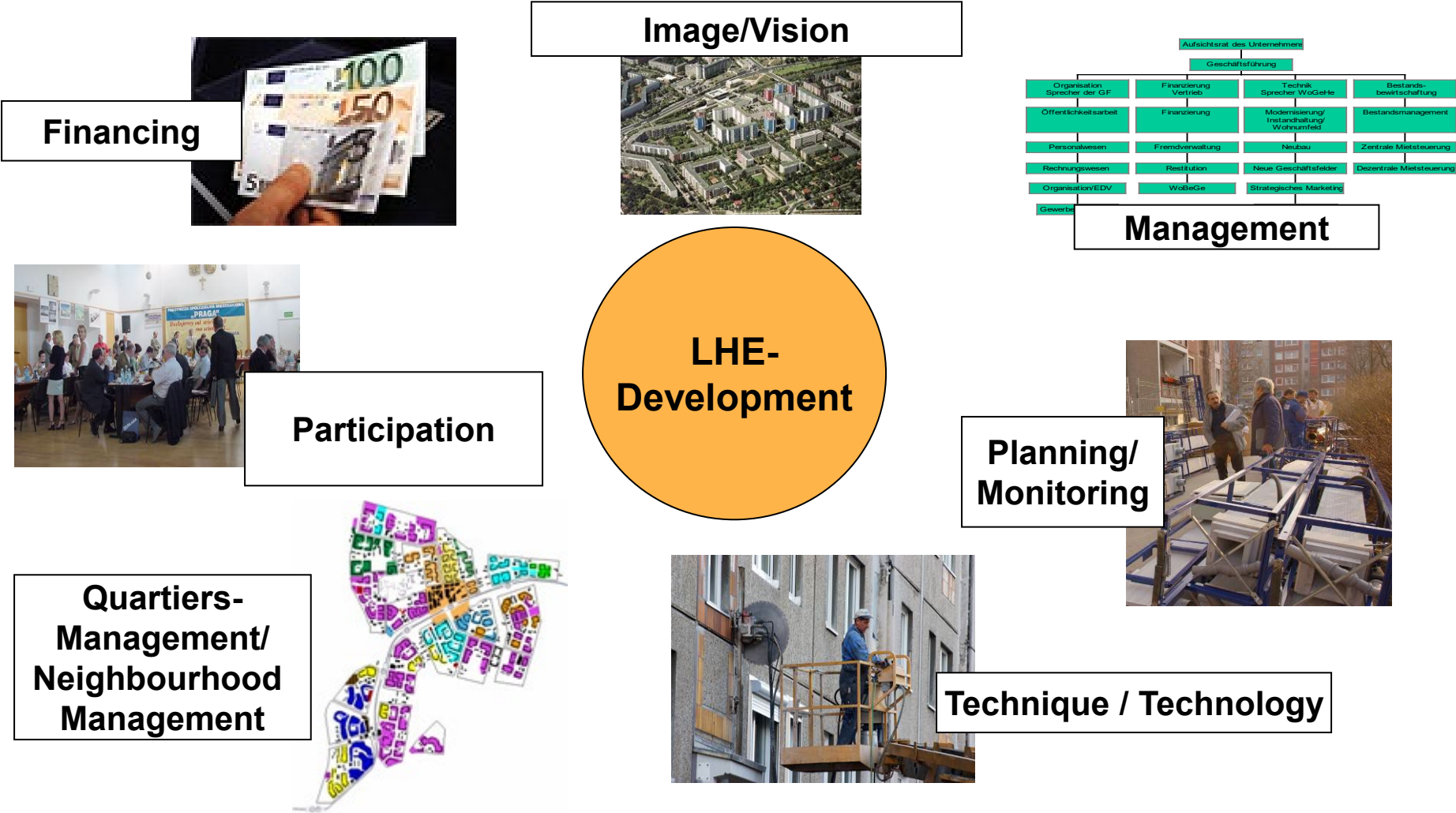
Construction measures	Q3A	QX	P2 5	P2 11	QP 59-64	QP 71	WBS 70 11	WBS 70 5-6	WHH GT	WHH GT 85	WHH SK	SK Scheibe
<ul style="list-style-type: none"> <li>•Heating</li> <li>•Ventilation</li> <li>•Electrical wiring</li> <li>•Fire safety</li> <li>•Water / Sanitation</li> <li>•Ceramic tiles</li> <li>•Facades</li> <li>•Basements</li> <li>•Balconies</li> <li>•Roofs</li> <li>•Windows</li> <li>•Sealing / Insulation</li> <li>•Apartment doors</li> <li>•Entrances / Stairwells</li> <li>•Roller shutters</li> <li>•Design</li> <li>•Staircases</li> <li>•Railings / Handrails</li> <li>•Waste management</li> </ul>												
Upper cost limit (thousand euros)	32,5	32	32,5	23	30	28	15-30	10-32	22,5	7	22	22,5

**The technical analysis provided answers to key questions:**

- What needs to be done?
- What are the costs for each type of building?

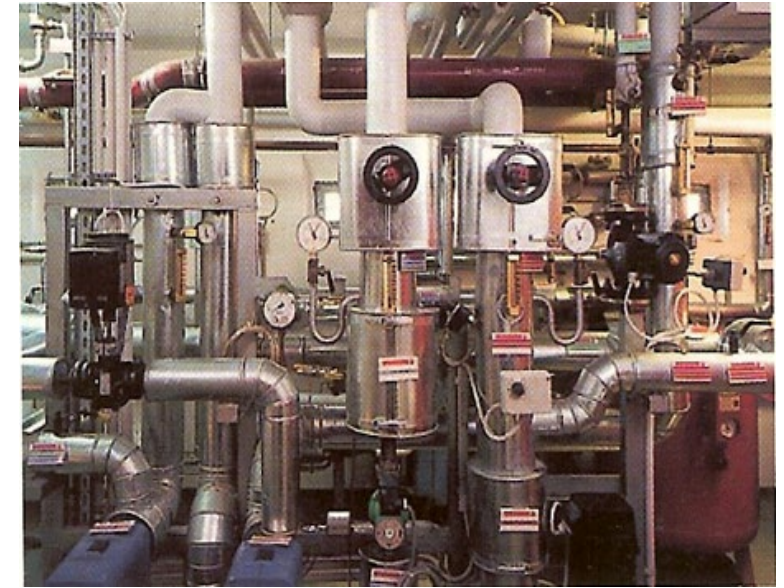


# Integrated approach to the development of large housing estates





## Pilot project to test the strategy



**Biggest challenge: the refurbishment of the pipeline systems in the bathrooms and kitchens**



# Refurbishment of pipeline systems



**From the demolition of  
the old bath ....**



**... on the exchange of  
the old pipelines ...**

**... only a short time was allowed to take.**



**... to a complete new  
bathroom ....**



# Key Measures



**new balconies**



**Insulation / windows / heating / sanitary / installation / roof**



**Installation of elevators**



**Bathroom/kitchen modernization**



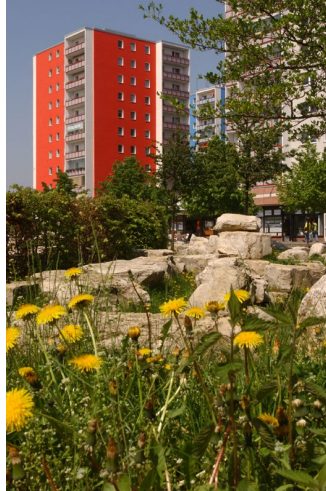
**New floor plans (accessible)**



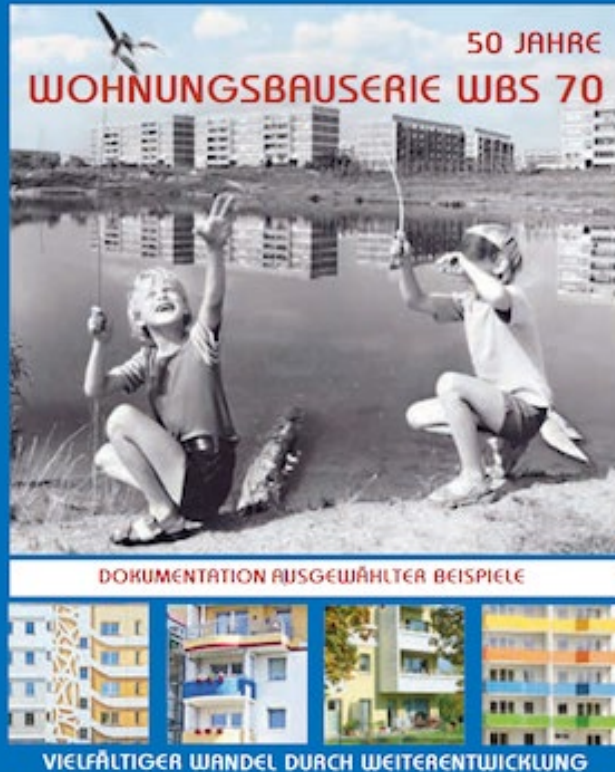
## Energy savings comparison Berlin and the Marzahn-Hellersdorf district

Bezirk	Primärenergie		CO 2
	kWh/m <sup>2</sup>	kWh/WE	t/WE
Marzahn-Hellersdorf	61	4.000	1,0
Berlin (average)	148	9.000	ca. 2,0

Quelle: BBU







# 50 Years of the WBS 70 Housing Series: Diverse Transformations and Reconstruction

30 Examples of the Reconstruction of Prefabricated Buildings

<http://gross-siedlungen.de/de/media/pdf/4500.pdf>



# Modern Experience from Germany: Jena-Lobeda, Smart Quarter

Jena-Lobeda, Ziegesarstraße 9-19, 07747 Jena

Developer: jenawohnen

Number of apartments: 270 (before renovation: 306)

Year of modernization: March 2020 to end of 2023



Renovation of three interconnected residential buildings.

Quelle: <https://www.stadtwerke-jena-gruppe.de> (© grafiker.org)

- All apartments equipped with smart home technology for controlling heating, lighting, video intercom, and for measuring humidity and energy consumption
- Provision of digital and analog services in the areas of health, energy, logistics, and mobility
- Demolition and reconstruction of all balcony railings, with fixtures for photovoltaic systems
- Modifications to apartment floor plans



Quelle: Außenvisualisierung (grafiker.org) <https://www.smart-es-quartier.de/>



# Modern Experience from Germany: Garden City Drewitz, Potsdam

Developer: ProPotsdam/GEWOBA,

Year of modernization: from 2011

## Development of the Masterplan for a Climate-Neutral Garden City™ (2009 / 2011):

- Removal of main road and conversion into neighborhood park
- Reduction of motorized and parked traffic (mobility and parking concepts)
- Climate yards
- Energy-efficient renovation and using of alternative energy





# Modern Experience from Germany: Garden City Drewitz, Potsdam

Developer: ProPotsdam/GEWOBA,

Year of modernization: from 2011

- Energy-efficient renovation
- Installation of an external thermal insulation composite system, joint repair
- Replacement of windows and entrance doors, renewal of the roof
- The building services systems (heating, ventilation, sanitation, electrical) were completely renovated.
- Rooftop solar thermal system (total collector area of 118 m<sup>2</sup>)
- Installation of elevator, large balcony additions, and barrier-free access to buildings and apartments





## Preparatory Stage

- Use the opportunity to develop technical solutions for typical building series. This increases transparency in the modernization process and facilitates future financing.
- Invest in pilot projects to test the feasibility and financial viability of planned measures and to showcase innovative approaches.
- Combine energy modernization strategies with broader improvement efforts and urban development initiatives.
- Think beyond insulation: focus on motivating residents to actively save energy.
- The importance of municipal energy planning should not be underestimated! Energy savings in residential buildings free up capacity in supply networks.

## Implementation Stage

- Try to work at the neighborhood level – coordinate measures across multiple buildings and construction companies.
- Ensure intensive residents communication and participation from the very beginning.
- Ensure excellent construction site and process management – with clear and contractually secured schedules. Monitor every step of the work on site and consider potential risks already during planning (e.g., resident does not open the apartment, construction company goes bankrupt, materials are unavailable, etc.).
- Industrial housing construction was based on prefabricated components. This advantage can also be leveraged for renovation. Prefabricated elements can be produced independently of the weather with consistent quality and save installation time on the construction site.



# Thank you for your attention!

**Center of Competence  
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[www.gross-siedlungen.de](http://www.gross-siedlungen.de)



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