**Strategic research program:**

# Sustainable renovation of multi storey housing / REBO

**with focus on environmentally friendly  energy use and universal design**

# Aims

- Contribute to new knowledge and change of practise for a ambitious renovation of post war multi storey housing, with focus on:
  - **The needs of disadvantaged resident groups**
  - **Reduced energy need and increased use of environmentally friendly energy sources**
  - **Universal design**

Ammerud, Oslo

# Aims

*Develop, communicate, and implement* new knowledge on renovation of multi storey post war housing.

- *Making visible the needs of the residents and strengthen management and decision processes*

- Develop recommendations *and examples on good technical and architectural solutions to an affordable price*

- *Develop* concepts for sustainable renovation

- *Reveal success criteria for successful renovation*

- Carry out communications and implement activities *that engages.*
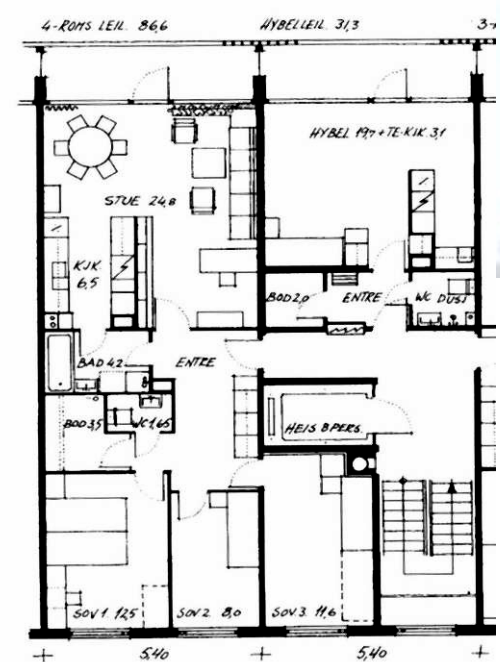
Ammerud, Oslo, 1966
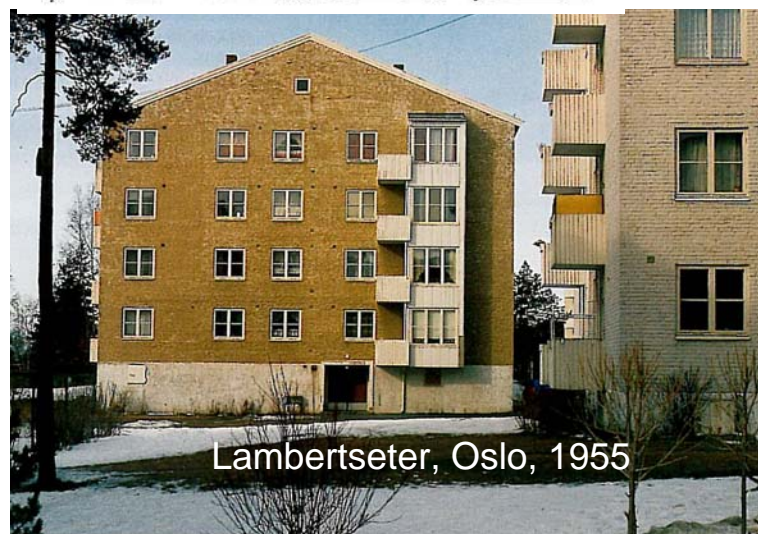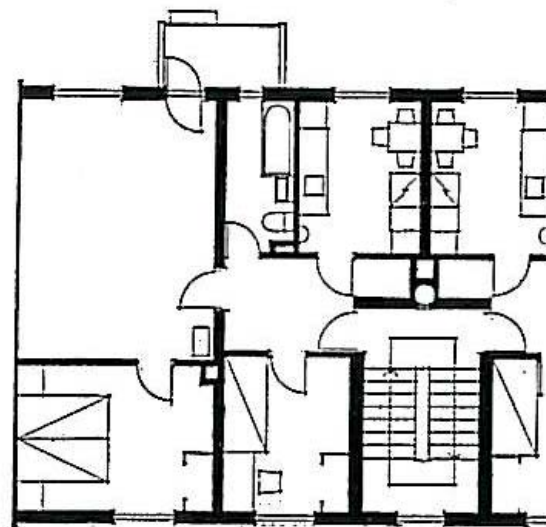
# Scope and time

- **Scope**
  - Total 12 mill Nkr.
  - 6 mill Nkr. - activities that are a part of ZEB - The research centre on zero emission buildings.

- **Time**
  - Program period: December 2008 – June 2012.





Lambertseter, Oslo, 1955

# Research activities

- Theory: Knowledge status

- Empirical data: Case studies of rehabilitated post war multi storey housing.
  - Inspections and measurements
  - Document studies
  - Interviews with residents and central actors in the projecting and building processes

- Demonstration buildings
  - New knowledge will be tested and developed through demonstration buildings.

# Work packages

**WP 1**: Knowledge status

**WP 2**: Management and decision processes in social housing work.

**WP 3**: Environmental friendly energy

**WP 4**: Universal design

**WP 6**: Testing and implementing in demonstration projects

**WP 5**: Multi disciplinary analysis

**WP 7**: Communicating / implementing – workshop, publishing, courses / conferences
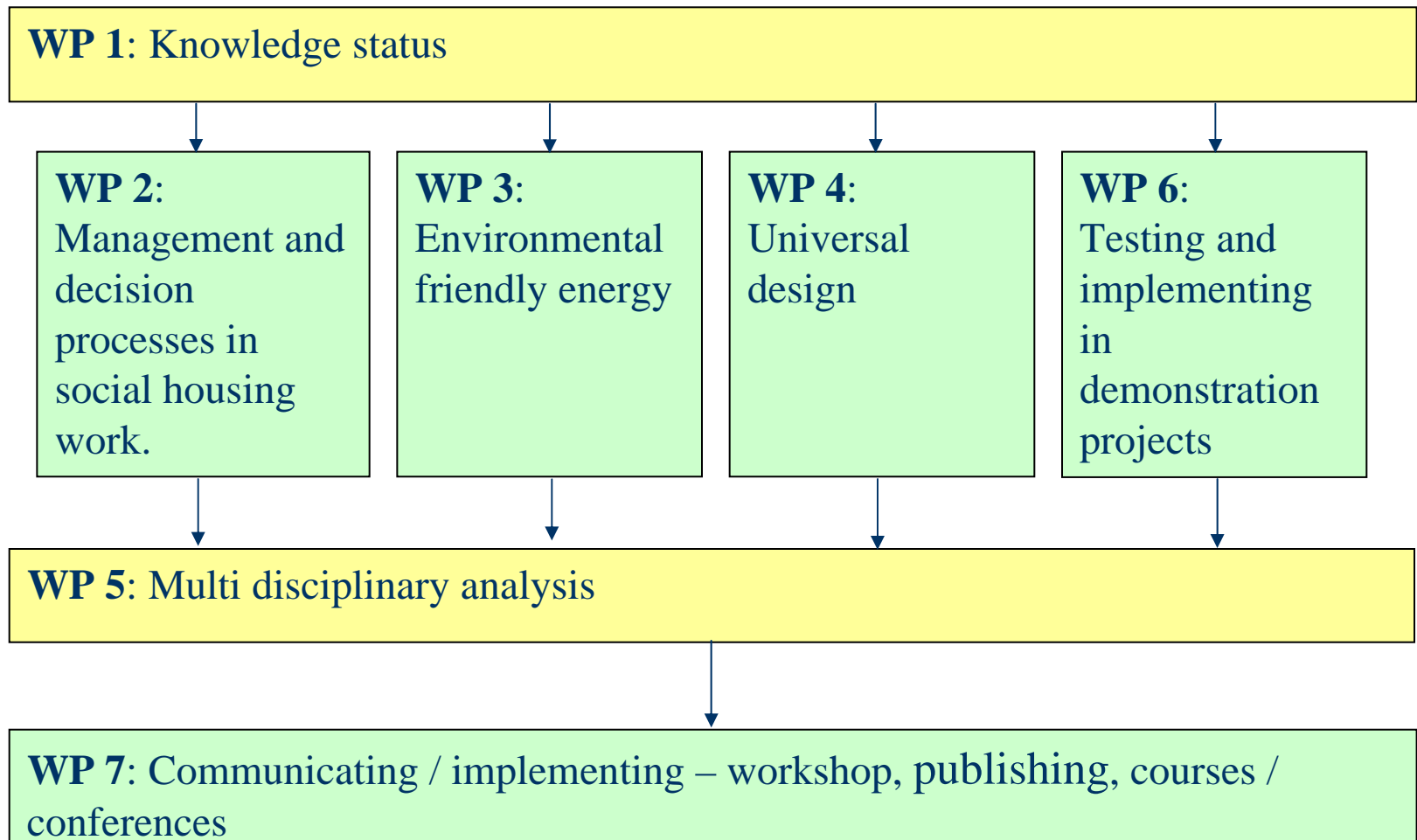
# The program organization

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                    ┌─────────────────────────┐
                    │     Program leader      │
                    │    Kari Hovin Kjølle    │
                    │   SINTEF Building and   │
                    │      infrastructure     │
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  ┌──────────────────┐          │          ┌─────────────────────────┐
  │ Reference group  │◄─────────┼─────────►│    Quality assurance    │
  │                  │          │          │     Randi Narvestad     │
  └──────────────────┘          │          │   SINTEF Building and   │
                                 │          │      infrastructure     │
                                 │          └─────────────────────────┘
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                                 ├─────────►│   Working committee:    │
                                 │          │     Program leader      │
                                 │          │  Project leader WP 2,3,4,│
                                 │          │    Quality assurance    │
                                 │          └─────────────────────────┘
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| Project leader WP 1 | Project leader WP 2 | Project leader WP 3 | Project leader WP 4 | Project leader WP 5 & 6 |
|---|---|---|---|---|
| Wibeke Knudsen SINTEF Building and infrastructure | Berit Berg NTNU Social research | Tore Wigenstad SINTEF Building and infrastructure | Karine Denizou SINTEF Building and infrastructure | Kari Hovin Kjølle SINTEF Building and infrastructure |

# Communication of results

- The website of the research program:
  **www.sintef.no/projectweb/boligoppgradering**

- Reports, articles and presentations will be put on the website.

- Workshop
  - Every six months a workshop with the advisory board will be held.
  - Advisory board: representatives from urban municipalities, housing cooperations, building industry, architects, universities and Ministry of local government and regional development.
  - The workshops are arenas for exchange of experience and competence spread.

- Demonstration buildings
  - Knowledge demonstration through ideal projects.

# WP 2 Management and decision processes

■ WP 2 will study the municipalities' work with planning, arranging, and evaluating housing for different groups in need for social services.


Dalegata, Kristiansund

■ Housing for "disadvantaged"

Heterogeneous group:

- Drug/ alcohol abuse and/or mental health problems
- Physically disabled
- Refugees
- Economic and social disadvantaged
- Compound problems

# WP 3 Environmental friendly energy use

WP 3 will study energy efficiency improvement and sustainable energy sources in post war multi storey housing, to contribute to release some of the great potential for energy savings.

Brogården, Allingsås, Sweeden

# WP 4 Universal design

- WP 4 will study the challenges and the possibilities for universal design of post war multi storey housing.



- Universal design is treated as a superior strategy for usability in buildings, products, and environments.

  - As many residents as possible should be able to master everyday life.
  - Equal opportunities for all residents.



Barkaleitet borettslag, Bergen
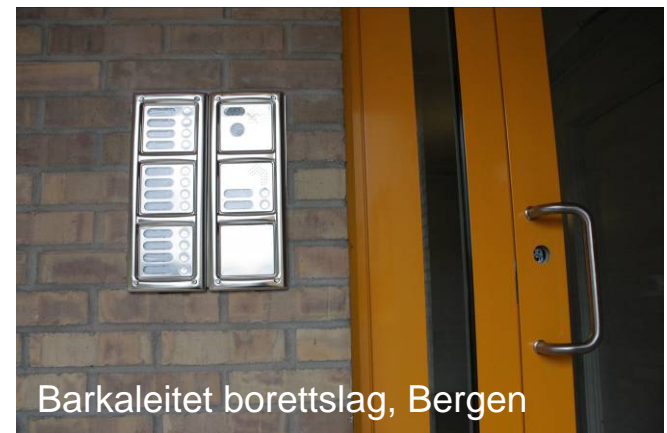
# WP 5  Multidisciplinary challenges

- **Economy**
    - The economic priorities among the residents
    - Costs, support and bank loan arrangements
    - Profitable?

- **Attitudes**
    - Attitudes towards disadvantaged groups
    - Attitudes towards groups associated with universal design
    - Neighbourhood image
    - Attitudes towards the environment

- **Organizational challenges**
    - Decision making processes in housing cooperatives
    - Multicultural residential environments
    - The connection between organizational challenges and technical solutions
    - Relocation of residents during the rehabilitation process

- **Knowledge shortage**
    - Acknowledgement among architects and in the building industry of rehabilitation projects and universal design?
    - Knowledge shortage, technical and aesthetical