Freiburg-Vauban

From Military Area to Model District
Sustainable Neighbourhood Design
- A Communicative Process

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Handout for Participants
CABE Urban Design Summer School
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1. General Information

2. Process (communicative planning & implementation)

3. Energy Concept

4. Mobility Concept

5. Conclusion
Freiburg - Vauban - The Setting

- Central Railway Station
- City Center
- Black Forest Mountains
- Vauban

3 km
Vauban - District Map

2000 units, 5000 people

1000 m

600 m
Vauban - Development: 1993-2008

The City owns the entire area, develops it and sells the building lots.

1. 1997-2001
2. 1999-2005
3. 2003-2008

„Planning that Learns“
An Overview from a different Perspective: The Participation Process

1995: kick off, acknowledgement, ideas
- participation structures established
- working groups disseminate sustainable ideas
- initiatives start to refurbish 10 army barracks

1996: alternative concepts & campaign
- ideas -> first concepts -> campaign
- communication: involving future inhabitants
- parallel: first master plan completed

1997-99: implementation
- the first lots are sold: Vauban becomes a resort for „co-housing“-projects
- consultation: how to implement sustainable concepts? (e.g. mobility c.)
- special design topics: green spaces, residential streets, neighbourhood center

since 2000: evaluation, continuation
- phase 2 and 3: marketing and design topics as mentioned above, master plan changes, tram connection ...
- neighbourhood (social) work: after the pioneer-phase: integrating the new inhabitants
Vauban - Main Objectives

City of Freiburg

- 2000 housing units (5000 inhabitants)
- High quality building spaces for young families on the city’s territory
- Dense urban design concept
- Diversity: preferences for private builders instead of (big) investors
- Low energy standard for all houses and central co-generation plant
- Good public transport (incl. new tram)
- Short distance: social & commercial infrastructure (child care, school, shops)
- "Green belts" (public space)

Public Participation (Forum Vauban)

- Promotion and support of building within self organized groups (co-building/co-housing groups)
- Design of special areas for passive houses, preferences for builders with advanced energy concepts
- CHP with wood chips
- Car-free project combined with:
  - A specific traffic concept and
  - Alternative mobility offers
- Car-free streets (public space)
- Centrally located market place and neighbourhood center
Vauban - Main Objectives

City of Freiburg

Public Participation
(Forum Vauban)

„Planning that learns“

Participation needs gradual planning & implementation - an evolutionary process

< a solid basis >

< innovation >
The Part of Forum Vauban

promoter of sustainable ideas & projects
(originally rooted in the environmental movement)

organizing body of the participation process - the link between the city ...

working groups‘ platform

... and (future) inhabitants
organizing workshops: e.g. design of the ‘green belts’, ...

assisting people: e.g. to form co-housing groups, ...

How did the Forum work?

• with permanent office „on site“
• with a paid staff and volunteers
• with financial support from the City plus additional funding
• as an interest group (of Vauban Citizens & for Sustainability)
• as an information transfer center (e.g. district magazine since 1996)
• with enthusiasm

organizing festivals, events, ...
Some of the People who gave Professional Support

- Water Expert
- Environmental Engineer
- Solar Architect
- Landscape Planner
- Urban Planner
- Ecological Building Expert
- Mobility Expert
- Lawyer
- Car Sharing Association
- Banker
- Manager
- Car Sharing Association
- Publication Service
- + many more

Forum Vauban was able to form its own expertise!
The 1996 campaign

get in contact!
Co-Housing-Groups - advantages

- Cost Savings (up to 30%)
- Influence
- Social contacts

Building together ...

1. First, a small group of people is developing ideas ...

2. When a concept is set up and the „critical mass“ of 5-10 committed persons is achieved, the group applies for a building lot and looks for an architect
3. The City gives an option to the group for 6-12 months. Within this time frame, all remaining questions shall be solved. The architect can start with the planning.

4. The group is completed and organized (group structure, responsibilities). The building lot is bought from the City and the construction of the new house can start.

In Vauban, about 50 co-housing projects have been realized.
Visible results: Welcome to ... our new home!

Co-housing Projects - Examples
Also single households get their building lot
A typical residential street („neighbourhood“)

C = co-housing project

Gerda-Weiler-Street (1st development phase)
Planning workshop
The Neighbourhood Center
1999
2006
District Culture ...
The Design of the „Green Belts“
„It’s a hard piece of work ...“
(Roland Veith, Freiburg building dep.)

we need a „long breath“

courage, faith and trust in an open and (partly) unpredictable process (the opposite of planning)

good structures: participation - administration - politics

don’t be afraid!

keep in contact (despite of all conflicts)

keep the power of individual motivation (emotion) alive but also be professional

human resources: patience, good will, comprehension, need-based communication, (self-) reflection ...

material aspects - ensure that participation influences the project (it matters!) extra resources needed (otherwise it is „just“ informing & convincing people)
Leave the Old Patterns!

<table>
<thead>
<tr>
<th></th>
<th>people</th>
<th>administration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>typical attitude</strong></td>
<td>complaining, demanding</td>
<td>defending, pushing through</td>
</tr>
<tr>
<td><strong>perception</strong></td>
<td>we are not at all recognized</td>
<td>they have no understanding for my work and the regulations I have to deal with</td>
</tr>
<tr>
<td><strong>challenge</strong></td>
<td>create a positive atmosphere of understanding and build bridges which are strong enough for cooperative action</td>
<td></td>
</tr>
</tbody>
</table>
The People of Vauban ...
German Society - The Social Background

Higher 1

Middle 2

Lower 3

Social Status

Basic Values

A

Tradition

Sense of Duty and Order

B

Modernisation

Individualisation, Self-actualisation, Pleasure

C

Re-orientation

Multiple Options, Experimentation, Paradoxes

Established

Intellectual

Modern Performing

Traditional

Modern Mainstream

Sensation Orientated

Consumer-Materialistic

Dominating in Vauban: German Post-Materialistic Milieu

„Meta Milieus“ Western Europe

Source: 44 Sinus Milieus from 5 Countries

www.sinus-sociovision.de © Sinus Sociovision
The fragile Balance between „Eco Pioneers“ and „Ordinary Citizens“

- Eco-pioneers is needed as „driving forces“
- Participation process in this regard is selective (but not prohibitive)
- Eco-enclave is not a solution!
- Somehow an anti-fundamentalistic consensus is needed
- Communication was the key point!
- It was not possible to solve all problems (social, ecological, ...) within one project
The Energy Concept ...

Key points:

1. The Urban Setting


3. Alternative forms of Energy Supply (Solar Energy, CHP)

4. Communication
Urban Setting ...

Urban Sprawl counteracts efforts to save energy on the „building level“

- 3000 kWh / year: annual energy need for heating in a passive house
- 10,000 kWh / year: or: about 1,000 liter of petrol
- annual energy need for a 25 km drive (2 times a day) to the workplace

Positive aspects of a certain density or settlement structure
More effects: shops, market, services ...
Reduction of Energy needed for Heating

- **Design of houses / density:** apartment and terraced houses (3-4 levels), no “single buildings”

- **Low energy standard (mainstream):** compulsory for all new residential buildings (65 kWh/m²a, meanwhile by the demand of Federal Law)

- **Advanced energy saving techniques (avant-garde):** about 200 housing units and some office buildings (about 5500 m²) have ”passive house” (15 kWh/m²a) “zero energy” or ”plus energy” standard (houses which produce more energy than they need).
Primary Energy Savings with the Passive Solar House

The graph illustrates the energy consumption and production for different categories:
- **Current Average**: Overall energy consumption.
- **Current Demands**: Current energy demands.
- **Passive House**: Energy consumption in a passive house.
- **Zero House**: Energy consumption in a zero-energy house.

- **Consumption**:
  - Electricity
  - Hot Water
  - Heating

- **Compensation**: Green Energy Production

The graph shows a significant reduction in energy consumption from current average to passive house and further to zero house, indicating substantial energy savings with passive solar technology.
The passive solar house

- Energy flow diagram
  (heating)

**Passive Solar Gains**

- Electricity
- Internal Gains

**Further Energy**
for heating / hot water,
* e.g. Gas, Wood,
  Collected Solar Heat,
  ...

**Transmission**
Lost heat from electrical appliances

**Ventilation**
Lost heat through wastewater

**MAX**

**MIN**

Energy lost through transformation and transport
The passive solar house - principles

A good example: the passive house „Wohnen & Arbeiten“, FR-Vauban

A very good insulation

Very good windows
The passive solar house - principles (2)

South orientation

The Ventilation System with heat exchange

“waste air”

fresh air
The solar settlement - Plus-energy houses
Alternative forms of Energy Supply

- Co-generation plant (CHP) operating with wood-chips (80%) and natural gas (20%) connected with a district’s heating grid.
- Thermal solar collectors (some buildings)
  -> 80% CO₂ reduction through insulation and efficient heat supply!
- Electricity: about 30% of the electricity needed in Vauban is produced on site through CHP and photovoltaic.
CHP - Details

Fuel use in the Vauban CHP through the year:

- Heat load: 5700 kW
- 4600 kW from natural gas
- 2000 kW from wood
- 600 kW from power production from wood

Heating and power production from wood in summer.

Heat from natural gas in winter.

Hours of the year:

1000 2000 3000 4000 5000 6000 7000 8000
Mobility - the Problem

- from 8 mio. vehicles in the 50s to about 50 mio. vehicles today
- 80% of the passenger volume is made by motorised modes
- How to tackle the problem at the roots?
Relevant car reduction in the entire district to the benefit of all inhabitants

Car-free life, but within a flexible system and not compulsory for everyone

Alternative transportation such as good public transport, car-sharing ...

Good local infrastructure

Regulation 1: No parking at the doorstep

- **No parking space** on private property and residential streets
- Cars are parked in a community car park
- Some public parking space on the main axis
- Pick-up and delivery is allowed
- **Speed-limit** in the residential area is 5 km/h
Regulation 2: The Flexible Car free-Concept

- **Residents without cars are exempted from buying a parking lot** in the community car park (and save money)
- But they need to **reserve some space for parking that may be needed in future** (according to the state building regulations)
- The solution: Association for car-free living was founded, which
  - bought a (small) piece of land
  - planned a multi-storey car park
  - proofs for the parking space by signing contracts with car-free households

Until today, the car park is only virtual, the space is an area for re-creation

If no space would be left in the existing car parks, then the association would install the first parking lots

a place for community activities
## Results of a Survey

by Claudia Nobis, Institute of Transportation Research, DLR, Berlin

<table>
<thead>
<tr>
<th>Area</th>
<th>Cars per 1.000 inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freiburg (whole city)</td>
<td>427</td>
</tr>
<tr>
<td>Freiburg Rieselfeld district</td>
<td>270</td>
</tr>
<tr>
<td>Vauban (all households)</td>
<td>150</td>
</tr>
<tr>
<td>Vauban (households with car)</td>
<td>240</td>
</tr>
</tbody>
</table>

Sources: Freiburg office of Population and Statistics and DLR survey

Vauban has the highest density of Car Sharing vehicles (20 based in Vauban)
Less Cars – more community ...
Car free Lifestyle ...

"Of course we could afford our own car, but we live better without having one"

Source: German Rail Magazine 01-2005
Some final pictures ...
Conclusion

• Many actors gave their contribution to the sustainable design of the Vauban district

• Commitment is a crucial resource

• Synergies between individual needs and sustainability can be used

• NGOs play an important role

• Have faith and trust in the creativity and the responsibility of your citizens!

• We do not need to be „the best“; but we should be pioneers on the path of sustainability in a way that others can learn from our cases and go ahead!
Thank you!

www.vauban.de
www.carstensperling.de
Credits

- Text and presentation: Carsten Sperling
- Photographs: Andreas Delleske, Sigrid Gombert, Daniel Schoenen, Carsten Sperling and Archive of Stadtteilverein Vauban
- Bird's-eye view (slide 18-19): The City of Freiburg, Building Department
- District maps (slide 4+5): Erich Lutz (www.naturconcept-eco.de)
- Image slide 24: Carla Schönfelder (Öko-Institut, www.oeko.de), Carsten Sperling
- Cartoon slide 25: Franz Grass (Vauban resident)
- Images Energy Concept: Georg Steimer (slide 31+35), Jörg Lange (slide 34) and Andreas Delleske (slide 41, CHP: www.vauban.de/projekte/holzbhkw/techdaten.html)
- Images Mobility Concept: Claudia Nobis

Links (English websites about Freiburg-Vauban and related projects)

- Overview: www.carstensperling.de/english.html
- Practical information: www.naturconcept-eco.de/services/vauban.html
- Sustainable Settlements in Europe (with a special focus on Germany, The Netherlands, Austria): www.sustainable-settlements.net
- Postgraduate Student Network for Sustainable Urban Development, Germany: www.nse-netz.de

Note

- This handout is designated for participants of the CABE Urban Design Summer School 2008. Please, contact me before using it for other purposes.

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