Hannover-Kronsberg - a Model for Sustainable Urban Development

Hans Mönninghoff
Director of Economic and Environmental Affairs,
City of Hannover, Germany
Agenda 21
The Local Agenda process in Hannover since 1995

Sustainable Urban Development

Leitmotif of the 1992 United Nations Agenda 21 Conference Rio de Janeiro:

- Holistic concept of sustainable development, including:
  - ecological
  - economic and
  - social aspects
1974-1986  Engineering consultant for water and energy issues
1986-1989  Member of Lower Saxony State Parliament
since 1989  Head of City of Hannover Directorate of Environmental Affairs
since 1997  also Deputy Chief Executive
now        Head of combined Directorate of Economic and Environmental Affairs

1,900 employees, 360m Euro budget
City of Hannover:
520,000 inhabitants

Region Hannover:
administrative entity of
1.1 million inhabitants
Hannover - City of Gardens

Around 50% of the city area is greenspace, making a major contribution to the quality of urban life.

- many parks and gardens
- a good place to live:
  - culture
  - environment
  - urban lifestyle
  - amenities
The Kronsberg Settlement

Excellent transport connections to the city centre

9 km from the city centre
The Kronsberg Settlement

- Approx. 80% of building land owned by the City
- Overall concept enforced through clauses in land sale contracts and planning permission contract
- Approx. 50% subsidised housing
- 2,700 units in 3 – 5-storey apartment houses
- 300 2-story private terraced houses
The Kronsberg Settlement

- **c. 1970**: Most of the area bought up by the City Council as reserve building land
- **1988**: Decision to develop
- **1992**: Urban and landscape planning competition
- **1993**: Urban planning competition for The ‘Bemerode Ost’ district
- **1995**: Start of development planning
- **1996**: Construction starts on public services infrastructure (sewage, roads etc.)
- **1997**: Construction starts on residential buildings (around 30 different developers)
- **2000**: Completion of approx. 3,000 homes

Reserve land to the north and south for further 3,000 homes
Model Eco-project

- Energy
- Water
- Waste and Soil
- Landscape


CO₂ Reduction

Reduction of CO₂ emissions at Kronsberg

CO₂ emissions in %

CO₂ reduction in %
100% = 23.800 t CO₂ p.a.

+ quality assurance (-7%)
+ LEH standard (-17%)
+ CHP & district heating (-23%)
+ electricity saving (-13%)
+ wind energy (-20%)
+ photovoltaic, solar district heating, passive houses = a further 5-15% reduction
CO₂ Reduction

60% less CO₂ emissions through:
- LEH construction methods with quality assurance monitoring
- district heating network, supplied from CHP plants
- electricity saving programme

Result:
- currently 45% less CO₂ emissions compared to conventional new constructions
  (2 tonnes per household p.a., total 6,000 t p.a.)
Walls: 15 - 20 cm
Roofs: 18 - 25 cm

Heating energy demand:
Average 56 kWh/m² and year (= 42% reduction compared to conventional buildings)
Only 5% more expensive than new-build developments with district heating connections elsewhere in the city.

**District Heating**

- Decentral CHP
- Compulsary connection to the network
32 Passive Houses

Energy consumption only 15 kWh/ m² p.a.

Target met! Residents very satisfied
‘Solar-City’

90 social housing units

Solar thermal collectors:
40% of heating demand met from solar energy

Model pilot project

Large-scale new development planned
Thermal storage tank landscaped as children’s playground
Two MW-class wind turbine generators in the countryside, meeting the electricity needs of 3,000 homes

Successful, and no protests from local citizens!
Energy Saving Concept

Target:
30% reduction in domestic electricity demand

- Failed!

- Only about 6% reduction, despite subsidies for efficient appliances and distribution of 5 free low-energy light bulbs per household

- Increased consumption by inefficient existing appliances, PCs, standby devices etc.
rainwater management

situation in 1994

- infiltration: 45%
- evaporation: 53%
- runoff: 2%

conventional drainage

- infiltration: 25%
- evaporation: 46%
- runoff: 29%

with Mulden-Rigolen soakaway system

- infiltration: 50%
- evaporation: 47%
- runoff: 3%

April 2000
Minimising built-up areas

Remarkable positive commitment by planners
Semi-natural rainwater infiltration

- Construction of 11 km of infiltration trench systems (‘Mulden- Rigolen’)
- Copes with all street rainwater run-off, even cloudbursts
Water as a design element in the courtyards

- Diverse planning and landscaping solutions
- Infiltration and evaporation
Construction Waste

Preventive waste management planning on building sites

Result:
86% pre-sorting of waste and recyclables
Home composting
Result:
Approx. 30% reduction in waste volumes
(City: 219 kg per household p.a.,
Kronsberg: 154 kg per household p.a.)
Result:
700,000 m$^3$ excavated soil re-used, making about 100,000 lorry journeys unnecessary and thus saving 1,200 tonnes of CO$_2$ emissions
Greenspace Concept

Well-designed green inner courts with enjoyable water features
- Border avenue between the new development and the countryside
- Park corridors
- Neighbourhood parks
- Green inner courts
Common Land

Project:
Extensive public access greenspace on the edge of the settlement

Economical care and maintenance with sheep grazing
Greenspace Concept

Landscaping of semi-natural school playgrounds
Greenspace Concept

Extensive games and sports park for individual use
Aim:
Retaining and enhancing a unique landscape on the city margins
Major aspects of the ‘Kronsberg Standard’ have been transferred to construction on publicly-owned land.

Kronsberg as a model project has attracted worldwide admiration.

Summary:

On the whole, the ecological aims were achieved.
Sustainability and new local employment

3,000 new jobs
Social Aspects of Sustainability

Networked community services:

- Library
- Social services
- Youth and senior citizens
- Urban planning and environment

‘KroKuS’ Arts and Community Centre
Social Aspects of Sustainability

- Citizens environmental campaign
- Old people’s day centre
- Private childminding
- Second-hand shop
- Tenants association
- District council office

Communal rooms
Social Aspects of Sustainability

- ‘HABITAT’
  International housing project

- ‘Integrated not Isolated’ project

- ‘FOKUS’ housing project for the disabled
Sustainability through Participation

Cooperative project development and integrative procedures:
- City administration project group including planning, environment and social directorates
- Interdisciplinary project consultations
- Basis for contracts

Concept of extended citizen’s participation:
- Information events, district newspaper
- Planning advocate
- District coordinator
- ‘KUKA’
Hannover Kronsberg

- **Successful!** Apartments were rented quickly
- Above average voluntary work
- Residents very satisfied with the accommodation! Very low tenant fluctuation
- Local pride – no vandalism, no graffiti!
Key factors for success

- A political majority, which sets a priority for sustainable development (since 1988 a coalition of social democrats (about 40%) and green party (about 14%))

- A city administration, planners and engineers, who accept and implement these priorities
Thank you!

- Internet:

  www.hannover.de
  bauen&wohnen>planen&bauen>ökologischesBauen /
  ModellKronsberg

  www.sibart.org (German, English, French & Spanish)