SOME MORE DATA ABOUT HANOVER-KRONSBERG

Source:
Kronsberg, Hannover: Component of a Factor 10 Strategy

Kronsberg settlements story:
1970 Most of the area bought up by the City Council as reserved 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 start of residential buildings (around 30 different developers)
2000 Completion of approx. 3000 homes

The Kronsberg Settlements case:
• Reserve land to the North and South for further 3000 homes
• Excellent transport connections to the City center
• Approx. 80% of building land owned by the City
• Overall concept enforced through clauses in land sale contracts and planning permission contracts
• Approx. 50% subsidized housing
• 2700 units in 3-5 stories apartment houses
• 300 2-stories terraced houses

FACTOR 10 - Energy
• Hannover Successes with Renewable Energy
  - Within the City area: 446 registered solar thermal units, total area 4 500 m2; 209 solar electricity units, total 1 600 KWpel capacity; Exploitation of hydro-electric potential of Hannover’s river (1,38 MW rating)
    - In the Hannover region: Approx. 225 large wind turbines, which can meet the electricity needs of around 170 000 homes; About 1 000 buildings a year retrofitted for energy efficiency
• CO2 reduction in Kronsberg
  - Low energy house standard + quality assurance – 27%
  - Cogeneration heating power plants – 19%
  - Two wind turbine generators each 1,5 MW – 28%
  - Electricity saving – 1%
  - The target was 60 % less CO2 emission
  - The result: Currently 45 % less CO2 emissions compared to the conventional new constructions (2 tones per household p.a., total 6,000 t p.a.
• Optimized insulation in Kronsberg
  - Walls – 15-20 cm
  - Roofs – 18-25 cm
  - Heating energy demand – average 56 kWh/m2 and year (42% reduction compared to conventional buildings)
• District Heating in Kronsberg
  - Decentralize cogeneration heating plants
  - Compulsory connection to the network
- Only 5% more expensive than new-build developments with district heating connections elsewhere in the City

• Wind energy in Kronsberg
- Two MW-class wind turbine generators in the countryside
- Meeting of electricity needs of 3 000 homes
- Successful and not protest from the citizens

• What make Passive House
- Maximum insulation (40-45 cm in walls, 30-40 cm in the roof)
- Triple glazed reflecting coating windows filled with inert gas
- Comfortable ventilation system with heat recovery
- Max. supplementary heating demand: 15 kWh/m²a
- Optimized solar gain
- Blower door test

• Energy Saving Concept
- Target: 30% reduction in domestic electricity demand
- Result: 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.

• “Solar- City” - Model pilot project for large-scale new development: 90 social housing units; Solar thermal collectors: 40% of heating demand met from solar energy; Thermal storage tank landscaped as children’s playground

FACTOR 10 – Waste

• Dramatic reduction in waste quantities in Hannover: Waste avoidance (-380 000 t.); Dumping of soil, building rubble, sewage sludge (-340 000 t.); Recycling, composting of organic waste (+72 000 t.); Recycling of glass, paper, packaging and scrap metal (+41 700 t.); Decrease in waste-to-disposal from c 1 000 000 to 200 000 t. p.a.

• City of Hannover waste treatment concept: ca.70 000 t/a Composted waste — 35 000 t/a compost; ca.215 000 t/a Mechanical residual waste treatment: ca.20 000 t/a recycles; ca.100 000 t/a biological treatment; ca.100 000 t/a waste to energy

• City of Hannover treatment concept for residual waste: 50% incineration; 50% biological treatment (fermentation); Use of landfill gas at the central dump and methane from a waste fermentation plant

• City of Hannover Construction Waste concept: Preventive waste management planning of building sites; Result: 86% pre-sorting of waste and recyclables

• Kronsberg Household Waste Concept: Home composting; Household waste pre-sorting; Result: Approx.30% reduction in waste volumes (City: 219 kg per household p.a., Kronsberg: 154 kg per household p.a.)

• Soil management in Kronsberg: 700 000 m³ excavated soil re-used; Making about 100 000 lorry journeys unnecessary; Saving of 1 200 t. CO₂ emissions

FACTOR 10 – Rainwater management

Factor 10 approach: Where possible total retention and infiltration of rainwater within the development area

• Intelligent Rainwater Management in Hannover
- Conventional construction: Paved and built-up surfaces; Rainwater runs off into the sewers;
- Hannover future standard: Fewer sealed surfaces; Permeable surfaces on e.g. car parks; Grand water infiltration; Alternative flood protective measures;
  - Rainwater concept in Kronsberg
- Situation in 1994: Infiltration – 45%; Evaporation – 53%; Runoff – 2%
- Conventional drainage: Infiltration – 25%; Evaporation – 46%; Runoff – 29%
- With new soak away in Kronsberg: Infiltration – 50%; Evaporation – 47%; Runoff – 3%; Natural water balance retained
- Grass Roofs: Minimizing built-up areas; Remarkable positive commitments by planners
- Semi-natural rainwater infiltration: Construction of 11 km of infiltration trench systems (“Mulden-Rigolen’’); Copes with all street water run-off, even cloudbursts
- Ponds: Water as a design element in the courtyards; Diverse planning and landscaping solutions; Infiltration and evaporation

GREEN SPACE Concept
  - Well-designed green inner courts with enjoyable water features
  - Border avenue between the new development and the countryside
  - Park corridors
  - Neighborhood parks
  - Landscaping of semi-natural school playgrounds
  - Extensive games and sports park for individual use
  - Retaining and enhancing a unique landscape on the city margins
  - Extensive public access green space on the edge of the settlement