Type: Increase energy efficiency

Category: Energy efficiency and mitigation

Less energy need for the same results
in the urban structure, water system and green structures

Description

Measures to reduce the energy consumption and to increase the efficiency of the energy input of a building or entire city quarters i.e. less energy for the same or even better results.
Aspects concerned are density of a city / city quarter, type of buildings, orientation. Aspects on building level are e.g. passive solar design, air tight building envelope, high insulation system, passive cooling or natural ventilation.

Spatial scale

Building; City quarter/street; City

Problems addressed

- Heat/ Extreme cold: The resilience of the buildings against heat waves and extreme cold is improved

Combination with other types of measures

- Green roofs; green walls
- Renewable energy
- Urban setting; urban texture

Implementation – functionality issues

The implementation is highly depending on the location and the initial conditions, e.g. new buildings/city quarters or existing buildings/city quarters.
The orientation of the buildings and the set-up of the quarter is important to achieve low energy or passive house standard.

Further benefits

- Less energy consumption, greenhouse gas emission is reduced
- Create good living conditions, improve liveability in the city quarter
- Raise comfort and healthy conditions in the building / quarters
- Reduce the overall energy demand and therefore the dependency on fossil energy sources like gas, oil or coal

Economic issues

- Cost for low energy / passive house are 10 to 15% higher than for a standard building (Belgium, 2011)
- Additional costs for maintenance of the ventilation system arise
- Additional costs will be repaid after a long time period (with yearly energy bills); depending on energy prices
- Several funding possibilities exist, reduce individual costs (e.g. for solar panels, for retrofitting existing buildings).

Acceptance

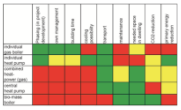
- Social acceptance is growing during the last years, especially as energy prices are increasing
- Solutions on building level are more accepted than collective solutions (e.g. central heat storage for quarter)
- Information campaign and stakeholder involvement is beneficial to improve acceptance

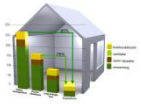
Possible obstacles

- Improper use and maintenance of buildings
- Lack of know-how of local business of sustainable building
- Lack of recycling material in decent distance

Find examples in Structural Fact Sheets


Location, orientation
Hastings, UK


Sustainable energy system
Wvi, Ieper, BE


Low energy houses
Wvi, Ieper, BE


Less fossil energy use
EG, Bottrop, DE


Ambition note
Wvi, Ieper, BE


Urban planning
Wvi, Ieper, BE


Green roof De Tweeling
Nijmegen, NL


Green and brown roofs
Hastings, UK


Green roofs Town Hall
Nijmegen, NL


Green roofs Latenstein
Tiel, NL