Designing climate proof urban districts

Presentation for Deltas in Times of Climate Change 2010

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Presentation

- What are climate proof urban areas
- Climate design tool
- Test of tool in pilot

‘Climate proof’ in area development

- Climate proof’ district is broad concept with different interpretations
- there is no single interpretation what ‘climate proof’ means in area development
- To help stakeholders IVAM and Witteveen + Bos are developing the Climate assessment tool DPL for area development
- The project is commissioned by the province of Limburg and the ministry of VROM
- The tool offers a language and an assessment method

Aim of the Climate assessment tool DPL

- develop a common language for communication about climate effects in area development:
- thereby creating a language for dialogue between stakeholders
- the tool assesses in a clear and transparent way the climate proof performance of areas
- The tools helps to design climate proof districts adapted to climate effects and with limited CO2 emissions

Target group of the tool

Stakeholders in the area development process

- Municipalities: various departments and politicians
- Private organisations: project developers, buildings companies, investors
- Citizens
- Provinces

Structure of Climate assessment tool DPL

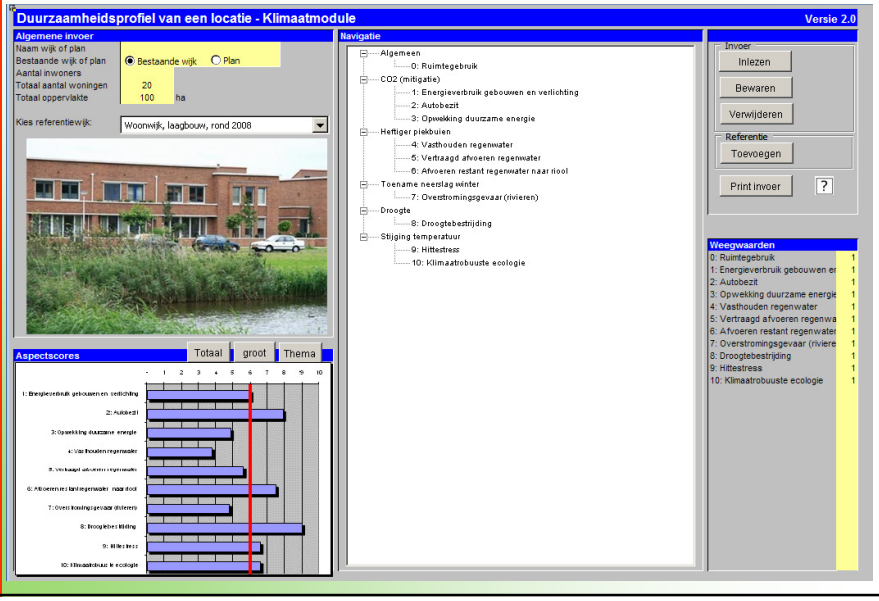
- Determination of performance with 9 indicators,
- Balance between science and practise
- Result is the climate proof profile of the area : score 0 is very bad, score 10 is very good
- Compares pilot areas with reference areas
- Reference areas represent the ‘6’ scores at school (pass score):
- reference areas just comply with regulations without special attention for climate change

Indicators for the assessment

- Energy consumption buildings and public lighting
- Car ownership
- Renewable energy generation

- Rainwater catchment in the area
- Rainwater delayed runoff
- Rainwater runoff to sewer system
- Flood risk
- Drought control
- Heat stress
- Climate resilient ecology

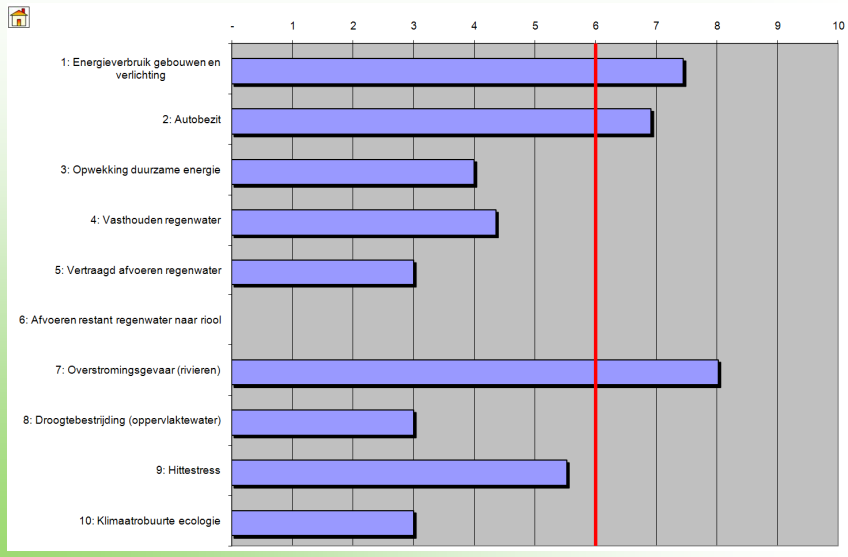
Climate assessment tool DPL



Pilot test in Maastricht, Netherlands

- District Mariaberg
- Existing neighbourhood build in 1950-1960
- 55 hectare
- 2200 houses

Climate profile of Mariaberg – Maastricht



Energy consumption for buildings and public lighting

- Mariaberg in Maastricht:
- Most houses: B label
- Public lighting: 350 kWh per streetlight per year

- Reference for existing area: ± label D
- Reference for public lighting: 250 kWh, 10 streetlights per hectare.

Score houses: 7,4
Score public lighting: 4,2

Car Ownership

Two indicators for car ownership:

- Indicator 1: number of cars in the area: 1435 per 2223 dwellings (0,65 per dwelling)
- Marieberg -> score 7,4

- Indicator 2: on the basis of physical characteristics of the district: distance to the railway station, floor space index and number of parking lots
- Mariaberg Maastricht -> score 6,9

Renewable energy generation

- Indicator: percentage renewable energy for houses and public lighting

Mariaberg Maastricht:

- No generation of renewable energy in the district -> score 4

Rainwater catchment

- Indicator: the percentage of the rainwater which is released in the ground and not to the sewer system
- Mariaberg Maastricht
  - Much paving
  - Relatively scarce public green space
- score: 4,4

Sewer system

- Percentage of the area with double sewer system in which rainwater is separately released form the polluted water

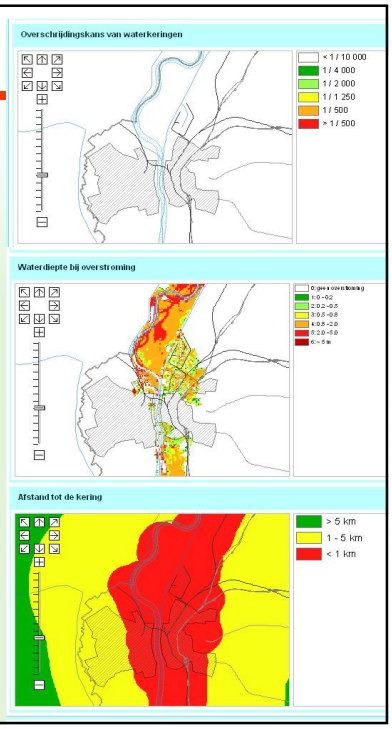
Mariaberg Maastricht:

- Single sewer system: score 3.

Flood risk

- Data from Dutch Klimaatatlas

- Mariaberg Maastricht:
- River Maas
  - Flood risk
    -> best category
  - Water depth
    -> best category
  - Distance to the dam
    -> < 1 km van Maas
- Score 8



Drought control

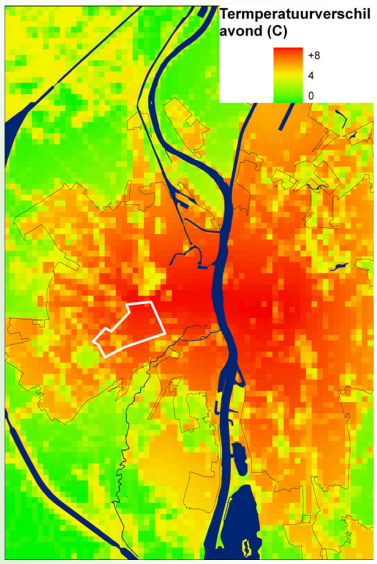
- Mariaberg Maastricht : no seasonal water storage capacity

Score: 3,0

Heat stress

- Indicator based on three
- physical characteristics
  - urban area
  - Floor space index in district
  - Percentage green area in district

Geschat temperatuurverschil met buitengebied in de avonduren	
Percentage bebouwd binnen een straal van 3 km rond het	54%
Bebouwingsdichtheid (FSI) (aspect 0)	0,40
Percentage groen in de wijk (aspect 0)	0,111927
ΔT	5,4
	0,18



- Maastricht:
  - ΔT= 5,4
  - Score: 5,5

Climate resilient ecology

- The Mariaberg district has no connections to nature areas around Maastricht

Score: 3,0

Climate proof profile of Mariaberg – Maastricht