Nature-oriented infill development in growing regions—wishful thinking or reality?
Possibilities for nature-based solutions

Built dimension: Infill development (Project Rheinviertel)

Natural dimension: Qualification of open spaces (Nature into grey zones)
Background:

- KommAKlima (2011-2014 Difu, BMUB)
- „Rheinviertel“ prototype for future strategies of climate change adaptation

Task:

- Development of prototype planning solutions for infill development
- Qualitative climate analysis
- Variables: density, building position, surface materials/colors
Built dimension: Infill development (Project Rheinviertel)

Status Quo

Aims:
- Preserve and enhance ventilation
- Reduce temperature
- Reduce diffuse reflexion

Source: Schetke & Kötter 2013/2014
Built dimension: Infill development (Project Rheinviertel)

Scenario “moderate densification“

Option 1:
Different building heights induce turbulences to promote ventilation
Option 2: 
Dark east facades induce convection and suction effect

Scenario “moderate densification“
Built dimension: Infill development (Project Rheinviertel)

Scenario “moderate densification“

- facade greening / high trees reduce reflexion
- reduction of diffuse light
- enhance evaporation

Source: Schetke & Kötter 2013/2014
Built dimension: Infill development (Project Rheinviertel)

Status quo

Moderate densification

Envi-met modelling (potential temperature) for scenarios of infill densification

Source: Bsc-thesis Simon Bertram (Schetke/Kötter 2015)
Upgrade of existing structures?
Natural dimension: Qualification of open spaces (Nature into grey zones)

• 2013-2016 (funded by the German Federal Agency for Nature Conservation, the Foundation Environment and Development of NRW and the 'Lebendige Stadt' Foundation)

• Bonn Science Shop lead and coordination

• Nationwide campaign, 3 pilot cities with 26 participating companies (Duisburg, Wiesloch, Erfurt)
Natural dimension: Qualification of open spaces (Nature into grey zones)

Type 1: along fences, walls, buildings

- Garden Center, Erfurt
- 46 m beside the fence
- Desealing of asphalt and concrete paving, clay substrate, grasses, shrubs
Natural dimension: Qualification of open spaces (Nature into grey zones)

Type 2: Parking spaces

- Oral surgery (Dr. Klug · Dr. Roers)
- Desealing of 57 qm of asphalt and concrete paving (parking spaces for employees and patients)
- Measures: greening of flowerbeds and walls with perennials and plants
Natural dimension: Qualification of open spaces (Nature into grey zones)

Type 3: recreation areas
SmartDent GmbH

- 50qm within a courtyard/ parking space
- Desealing of asphalt
- Measures: shrubs, dry wall/ seating

Picture: Wissenschaftsladen Bonn
• Think big and very small!
• Need for innovative (building & living) concepts
• Too much water in cities and urgent need for unsealed surfaces
• Enhance visibility of formal benefits and solutions > stronger use of redemption agreement for parking spaces (Stellplatzablöse), reduced waste water charges due to split sewer fees
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