

A strategy for Bremen's adaptation to extreme climate change-related rainfall events – the KLAS project

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Investigation of the events

- hydraulic capacity of the stormwater network in bremen is sufficient and lies within the german best practice rules
- Some landmarks and measure points registered up to 45 mm precipitation amount within 90 minutes
- recurrence intervall (RI) of >70 years probability
- within only 2 weeks !



Summary

Strategy for climate adaptation: a "common municipal task"











Project organisation





Summary

1- Risk Management





Critical infrastructure

Analysis:

- potential flooded areas with
 - Energy & water supply, pumping stations, ...
 - traffic infrastructure (tunnels, underpasses, underground parking,)
 - public properties (hospitals, ...)

Steps:

- Identification of critical infrastructures in potential flooded areas
- Initiate measures to protect infrasturcture and traffic/emergency managemet
- no analysis of private properties (idea: information systems for owners)





Multifunctional spaces in the city

Analysis:

- Retention and surface run off in
 - green areas
 - streets
 - parking spaces
 - sports fields, ...





Multifunctional spaces in the city



Retention of rainwater in the street





Working Field 2- Climate Adaption: Water sensitive urban design

Analysis of "potential flooded areas" precaution & development chances

Integration of the topics heat and rainwater in the "land development plan" \rightarrow precaution areas & development chances

Integration of the topics heat and rainwater in the "Landschaftsprogramm"





Information System and Guideline



Pilot Projects







urbanism must











Water sensitive urban design

Multifunctional spaces







🗙 Status Quo





Water sensitive urban design

Multifunctional spaces







Water sensitive urban design







Retention of storm water

Water sensitive urban design

Multifunctional spaces



urbanism must



Summary

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Integration of the topics heat and
rainwater in the "land development plan"
→ precaution areas & development chances

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Information System and Guideline



Pilot Projects











EXTREME REGENEREIGNISSE



2 Climate Adaption

3- Information

Summary



Guide for town planners in Bremen





guideline hWB

Working field 3 - Information

RISK MANAGEMENT

• object protection, protection against surface water

CLIMATE ADAPTION (private properties)

- Infiltration, green roofs, ...
- in print: Guideline "private properties and climate adaption"

INTEGRATED COMMUNICATION

- project presentation
- Homepage <u>www.klas-bremen.de</u>

• in discussion: communication strategie "climate adaption"



Summary

- First step to a climate adaption strategie
- Integrated approach



Further steps:

- register of infiltration/premeable areas
- register of green roofs
- Information system(s)
- pilot projects











Thank You for your attention !

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