Case study: Emscher Region
Structural SUDS in practice

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The Emscher Region

• Tributary of the river Rhine in Western Germany.
• Length: 84 km, Catchment area: 865 km²
• Densely populated: 2.3 million inhabitants
• Long tradition in steel industry and coal mining
Subsidence caused by Mining
The Emscher System

About 100 pumping stations
3 WWTPs
1 STP
40% of the catchment have to be drained
865 km² catchment with 350 km of open courses
Emscher Rehabilitation Project

• Ceasing of mining activities in the 1980’s; subsidence stopped some year later
• In 1990’s chance for rehabilitation was given
• Estimated project duration ~ 30 years
• Budget: ~ 4.5 Billion €
• Measures
  a) “Decentralized” WWTP
  b) Combined Sewers
  c) CSO and retention ponds
  d) River rehabilitation
Emscher Rehabilitation Project

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Problem of Flood Peaks
"The Rainwater Route"

- Many pilot projects for USWM since the 1990’s
- Subsidized by Emschergenossenschaft and the Ministry of Environment of the Federal State
"The Rainwater Route"
Stormwater Management Information System (SMIS)

- Pilot projects are good for demonstration...
- ...but effect on catchment level is small
- Catchment-wide investigation
Potentials for Disconnection

Average Potential: ~ 18%
Project "15/15"

- Target
  15% disconnection in 15 years
- Contract between
  a) Emschergenossenschaft
  b) Federal State Ministry
  c) 17 municipalities
- “Storm Water Convention” was signed in Oct. 2005
Actual situation

• Although
  a) Many successful pilot projects
  b) BMP/SUDs are common practice for new developments
  c) Potentials for catchment-wide application are given
  d) From technical point of view decentralized urban stormwater management systems are ready to use
  e) Political support

• Still
  a) Resistance e.g. from drainage departments
  b) Hard to switch the daily practice
Emscher and SWITCH

• Emscher region is a demonstration “city”

• What they can bring in
  a) Demonstration projects
  b) Ongoing projects
  c) Experience with design, o&m, cost effectiveness, …

• What they expect
  a) Overcome the resistance
  b) Help for “switching” daily practice
  c) E.g. Life-Cycle-Cost-Assessment tool
Life-Cycle-Cost-Assessment

- See CD-COM
- For more information www.sieker.de

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Demonstration Projects

- **Welheimer Mark**: Disconnection of roof areas
- **Lake Phoenix**: Integration of open water systems into urban space
- **Klöcknersiedlung in Waltrop**: Disconnection of roads by using "pocket wetlands"
- **Drainage-Infiltration-System Herne**: Combined management of stormwater and groundwater
Disconnection in Essen

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Thank you for your attention