

Smart, multifunctional and sustainable infrastructure for water supply and sanitation

**Decentralized water management:
a Franco-German perspective**

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Assessment of potentials of new system solutions and implementation on the level of districts in Frankfurt/Main and Hamburg (netWORKS 3)

- Project of the Research Association netWORKS
- On the background of two former projects
- One of the central questions: the extent to which semi- and decentralized solutions are economically and ecologically more efficient and how they can be gradually introduced within existing operational frameworks.

GEFÖRDERT VOM



Bundesministerium
für Bildung
und Forschung

Background netWORKS 2

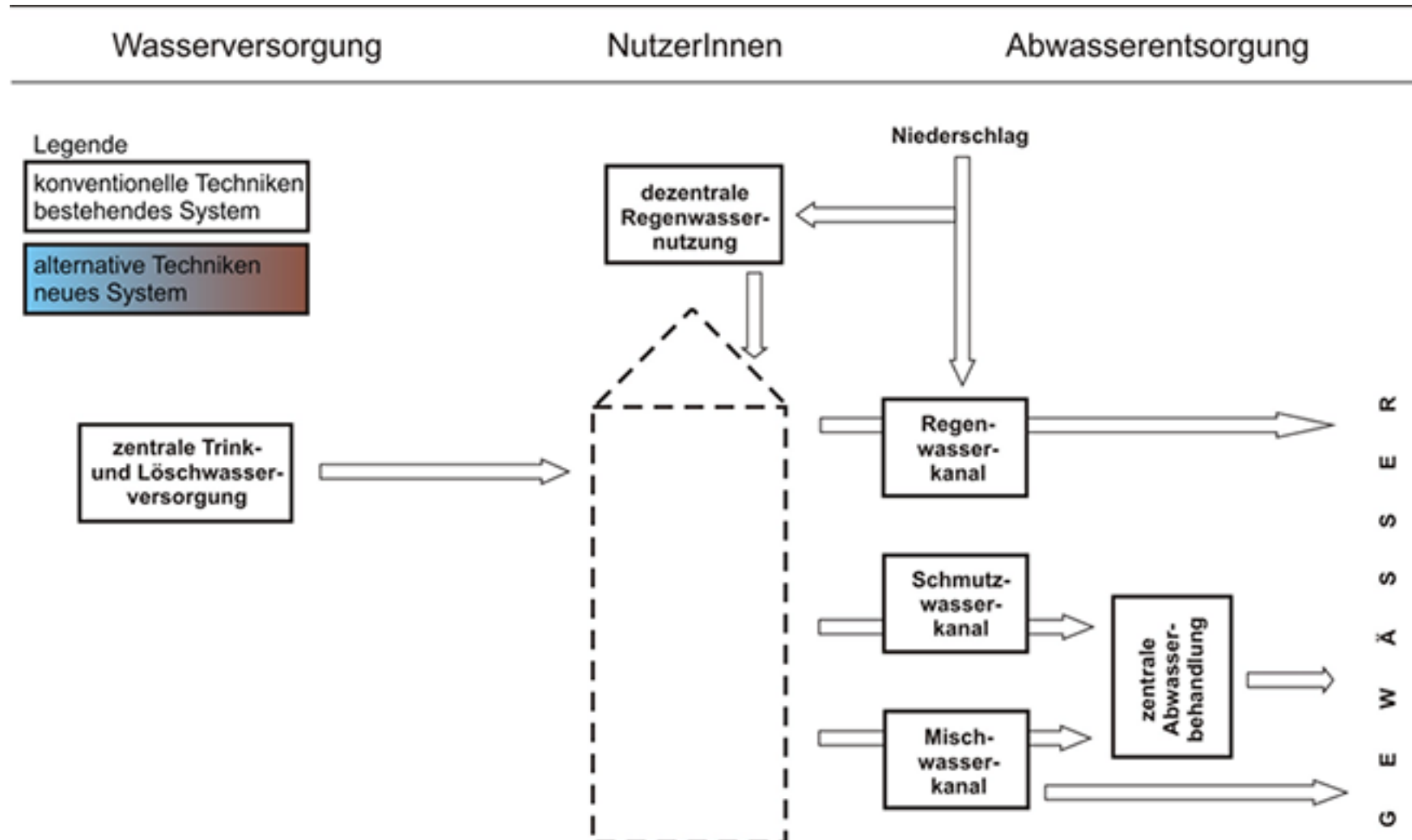


Model City



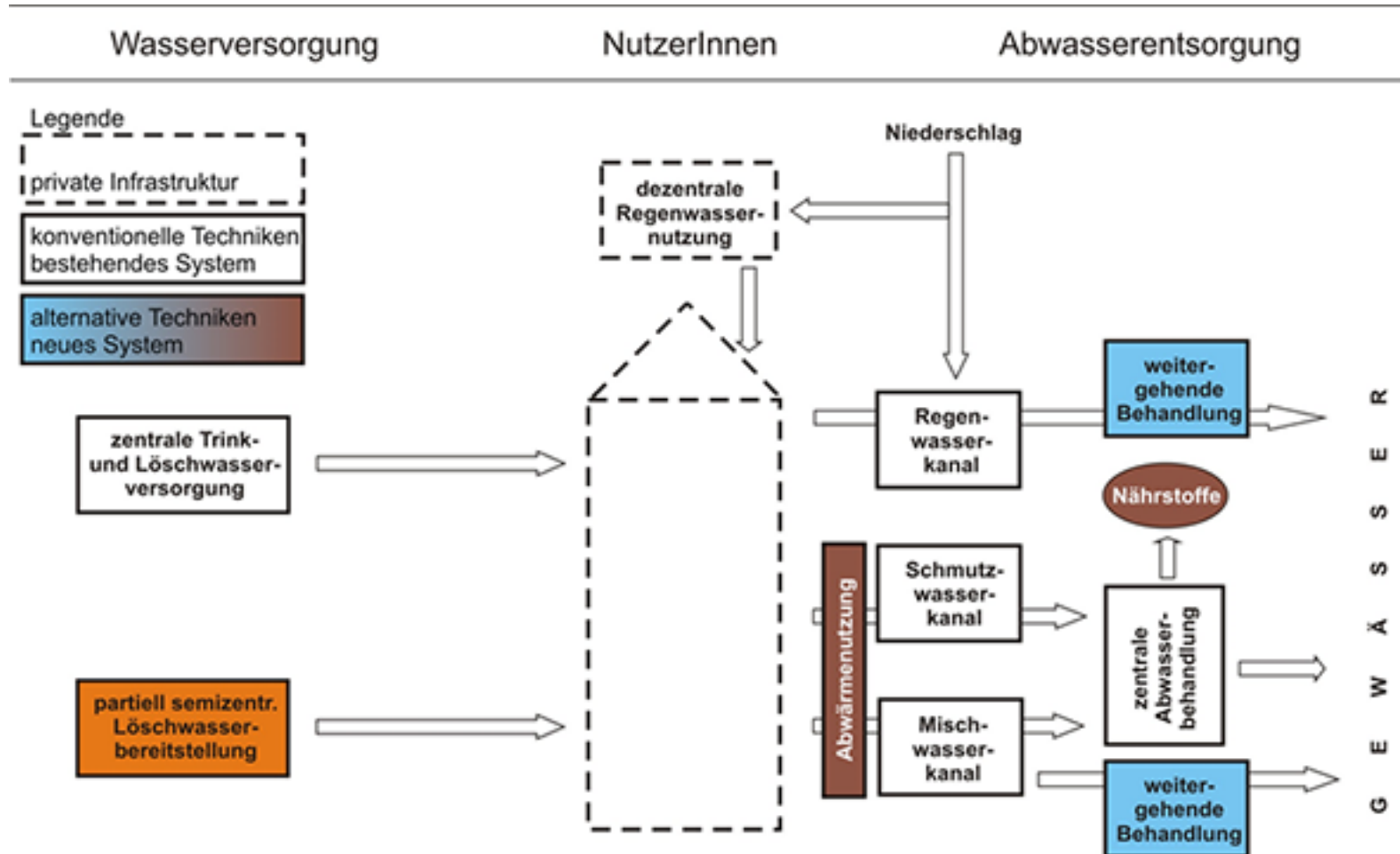
Background netWORKS 2

System View – Status-quo 2010



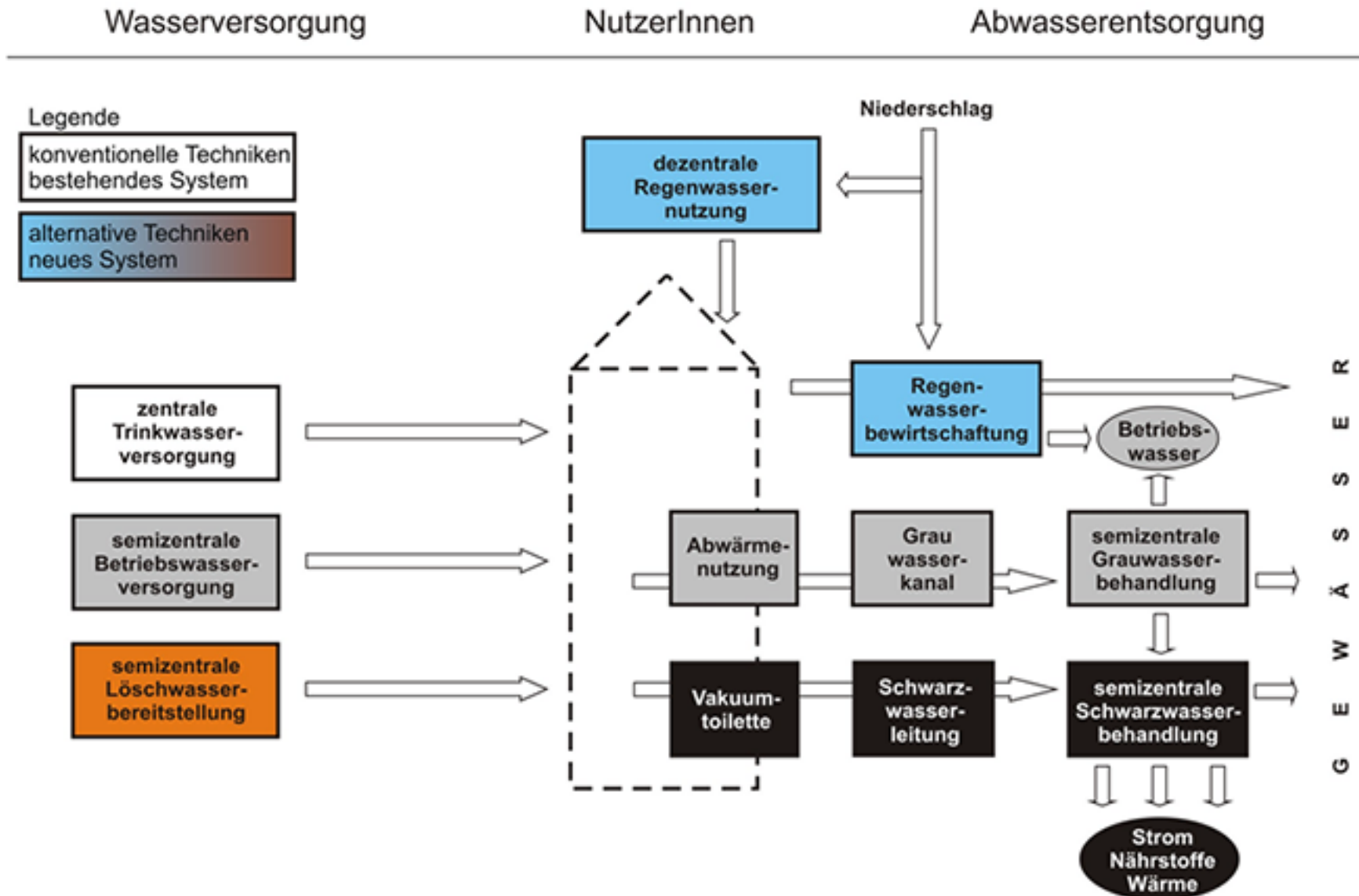
Background netWORKS 2

System View – Reference 2080

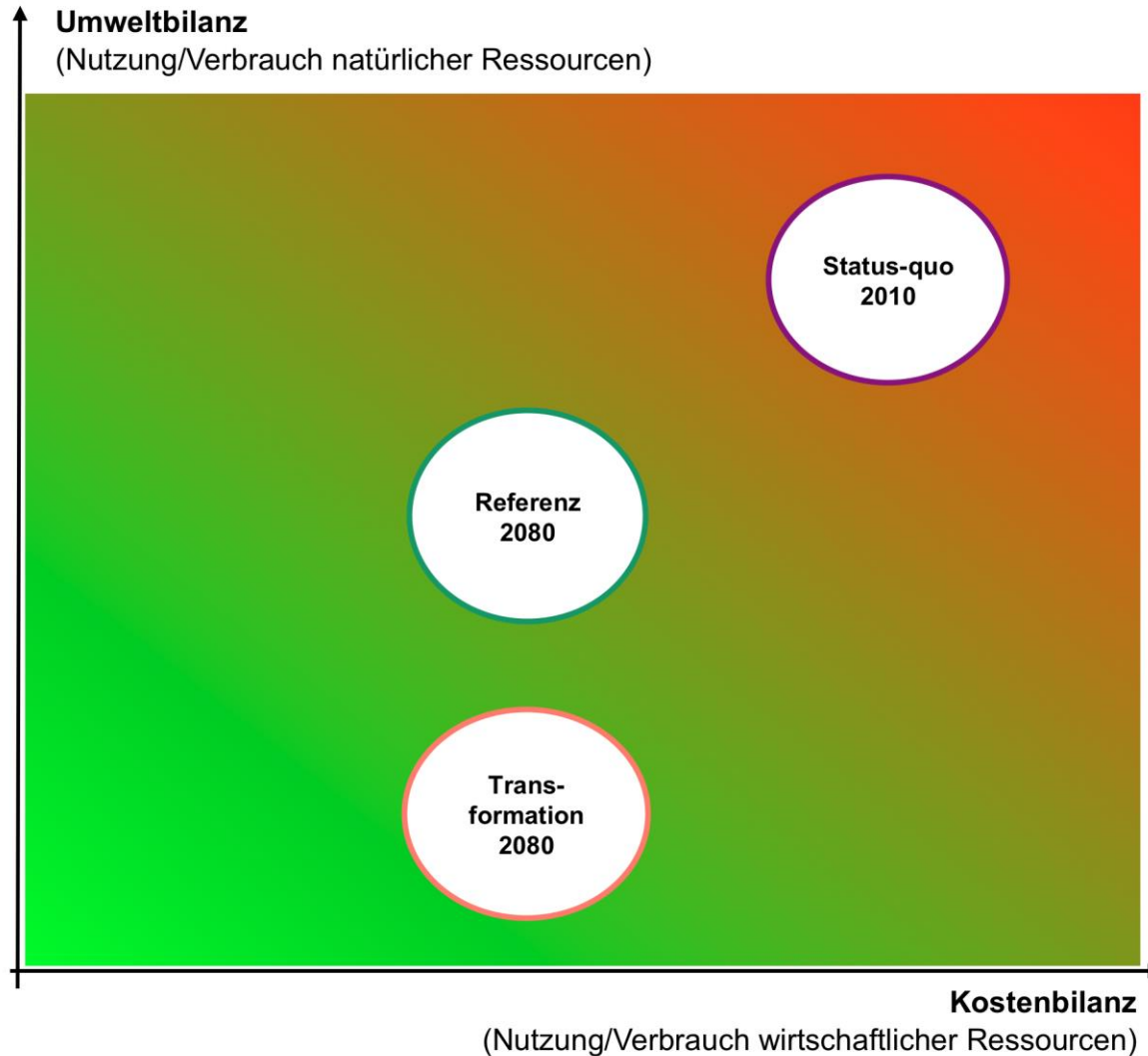


Background netWORKS 2

System View – Transformation 2080



Eco-Efficiency-Analysis

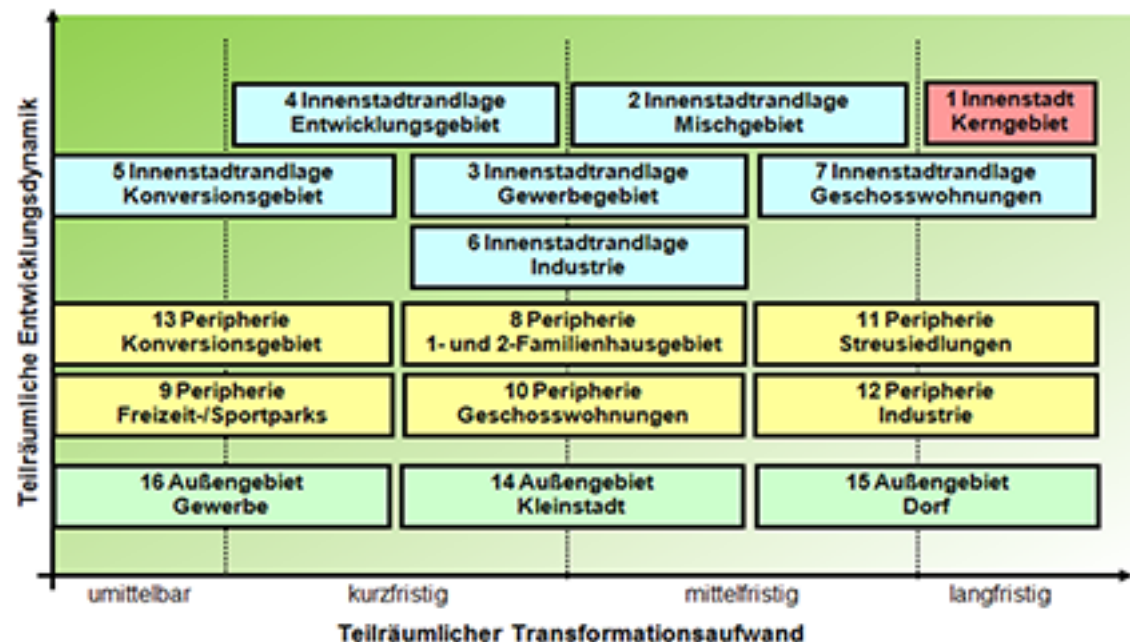


Some Results



- New forms of water and waste water management can be realized in different urban spaces. Starting points are in areas, where development measures are planned already (e.g. conversion areas).
- Realisation with public participation: Social acceptance!
- The new forms of combination energy, water, waste water and waste will cause integrated service provision.
- Integrated solutions imply that the municipalities adapt the sustainability of their infrastructure to their strategic business of public service provision.

Chronological and Spatial Priorisation



netWORKS 3

- Estimating potentials and limits of the intelligent use and transformation of urban water infrastructure
- Simulation, evaluation and implementation of new system solutions in districts of Frankfurt and Hamburg
 - Frankfurt/Main
 - Heat recovery from wastewater
 - Use of treated grey water for toilet flushing
 - Hamburg
 - identification of city districts suitable for transformation
- Analysing institutional constraints
- Recommendations for Stakeholders



Source: ABG Frankfurt Holding



BMBF-Research-Initiative

Smart and multifunctional infrastructure systems for sustainable water supply and sanitation (INIS)

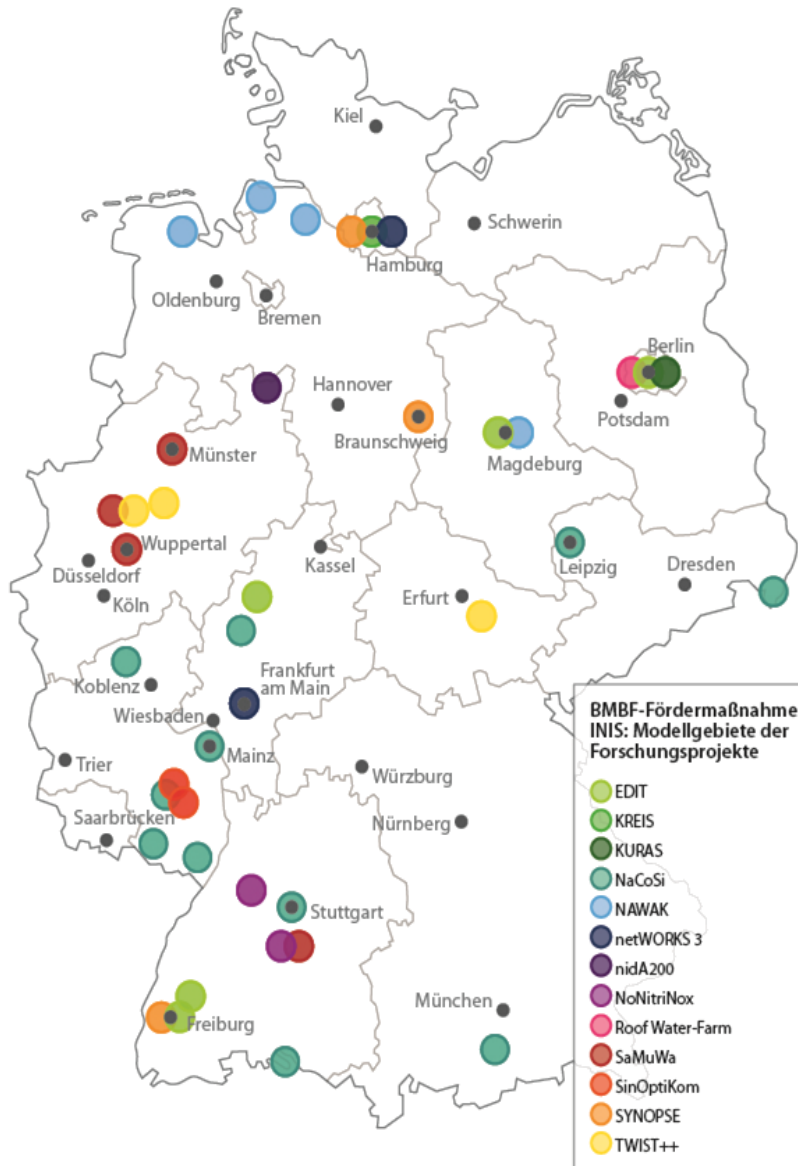
- New program of the German Federal Ministry of Education and Research (BMBF).
- Duration 2013 – 2016
- ca. 30 Mio. € budget

Scientific Coordination Project for Exchange and Transfer



INIS model regions

- 41 model regions
- ca. 80 institutions involved



Thematic focus of INIS

I. Integrated concepts for drinking water, wastewater and energy

- Analysis of framework conditions
- Implementing options for action
 - Separate collection and treatment of domestic wastewater streams (nutrients, energy)
 - Grey water usage, rainwater usage
 - Separation and recovery of nutrients
 - Energy-efficient water treatment processes
- Planning and decision-making processes in urban areas
- Impact analyses, cost-benefit analyses, user acceptance, legal and institutional framework
- Simulation and decision-making tools and management instruments
- On-site construction/implementation

II. Adaptation and optimisation strategies for urban drainage

- Operation, extension or conversion of urban drainage systems
- Rainwater management
- Development of planning instruments and organisational processes
- Connecting urban and open-space planning
- Improvement of data base

III. Processes for sustainable wastewater treatment

- Semi-centralised/decentralised treatment technologies
- Optimal operation of existing facilities/plants (Anlagen)
- Concepts and processes for reusing separately collected domestic wastewater streams and nutrients
- How can implementation be achieved?

IV. Concepts and systems for securing water supply

- Influence of climate change on water availability
- Changing drinking water consumption
- Adaptation of operational management / system management (Betriebsführung)
- Strategies for long-term protection of drinking water resources

Information about INIS



www.bmbf.nawam-inis.de

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