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Smart and reliable water and wastewater infrastructure systems for our future cities in India and Germany: An introduction to the project

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The overall goal of the Indo-German research-project SMART & WISE is to support the implementation of reliable and sustainable water and wastewater infrastructure systems with added value for smart cities. The project brings together the Institute of Technology Madras in Chennai, the Tamil Nadu Water Investment Company Limited, the Institute of Water Infrastructure Resources of the Technical University of Kaiserslautern (Germany), the Engineering Office Scheer based in Oberstdorf (Germany) and tandler.com based in Buch am Erlbach (Germany). The project is funded by Indo German Science And Technology Centre (IGSTC), Department of Science & Technology, Government of India and the German Federal Ministry of Education and Research.

Planning for urban water infrastructure faces four major challenges: Spatially heterogeneous development of population and settlement, climate change and the growing scarcity of resources (UNESCO 2019, World Bank Group 2018, DIFU 2017). In the project systematic planning methods and tools were developed to face these current and future challenges on three levels; conventional, advanced and smart. Application of developed methodologies and tools will be demonstrated in pilot studies in India (Coimbatore) and Germany. Country-specific diverging conditions in the pilot cases, e.g. local climate, population density and existing infrastructure, lead to robust systems under varying conditions. The bilateral research teams, in cooperation with local stakeholders will identify smart WIS solutions to be integrated in city planning processes.

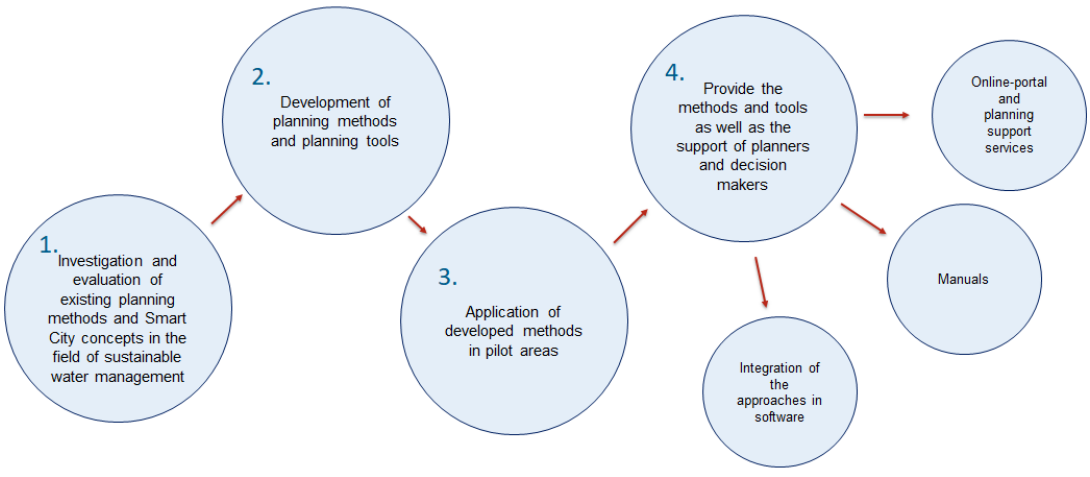

Figure 1: SMART&WISE work packages

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As shown in figure 1 four work packages are processed in the project. A literature analysis shows that in the age of 'Internet of Things' capturing, documenting and evaluating simplifies the linking of individual sectors (i.e. integral operation of various sectors). This applies to the sectors (i) water supply, (ii) urban drainage and (iii) wastewater treatment but also to links the urban water management with other sectors like energy or waste. For example the treatment of wastewater streams (sewage, greywater) for recycling is considered as a possibility to link wastewater treatment with water supply.

The first project meeting in India took place in Chennai and Coimbatore in December 2018. The project team carried out an evaluation of established planning methods in Germany and India.

Currently flow charts are developed, that provide the planner with systematic guidance on water infrastructure planning. They include (i) an analysis of necessity, (i) a feasibility assessment, (iii) a pre-design stage and (iv) a design stage.

The current project status can be found on the project-website smart-water.solution. The project partners thank the Indo German Science And Technology Centre (IGSTC), the Department of Science & Technology, Government of India and the German Federal Ministry of Education and Research for the funding.

Figure 2: Systematic for wise planning processes in smart cities (http://smart-water.solutions/).

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