

## Bringing All Actors Together

Sustainable Urban Planning Needs Interdisciplinary Dialog, User-friendly Science, and Participation of Citizens



*In the center of Manhattan: The High Line Park in New York is a decommissioned elevated rail line. (Photo: J. Fallmann)*

More than 70 cities and municipalities in Germany have meanwhile declared a state of climate emergency. But what will be the consequence? Which concrete measures are suited best to adapt urban planning and building design to climate change? "These questions have not yet been addressed holistically," says Joachim Fallmann from the Troposphere Research Division of KIT's Institute of Meteorology and Climate Research (IMK-TRO) and KIT's South German Climate Office. "Climate-friendly urban planning needs more interdisciplinary dialog, better transfer from science to application, and a new understanding of "smart city," Fallmann and his colleague Professor Stefan Emeis conclude from their recently published review.

When redesigning cities or designing new urban districts, the cities' climate managers should cooperate with a number of other actors: Architects, urban planners, political decision-makers, utility companies, mobility experts, and the citizens, of course. "Also atmospheric and environmental research

should be involved," Joachim Fallmann emphasizes. "It is already known that white house walls and trees in urban canyons reduce temperatures in a city. But they may also have undesired side effects." For example, plane trees that are rather widespread in cities may adversely affect air qual-

ity. Under heat stress, the robust species increasingly emits isoprenes. Decomposition of these volatile hydrocarbons results in the formation of ozone near the ground surface. During hot spells in summer, so-called photo smog may form in urban canyons and it may strain respiratory passages and the cardiovascular system.

In the opinion of researchers, the different perspectives are important to create a smart city that is holistically sustainable. "Smart city means more than just digitalization. It means social, economic, and climate- and environmentally compatible sustainability of a city and its neighborhood, and it requires an integrated concept." Science can make an important contribution by offering understandable communication and user-friendly services. "Development of an urban climate forecast tool for urban planners under the project [UC]<sup>2</sup> is a good example," Fallmann says. And not least, the citizens have to be involved. They need clear and transparent communication of the measures improving the quality of life in their city.



*"Active wall" of the elephant house in Karlsruhe Zoo. (Photo: J. Fallmann)*

### INDUSTRIAL RESOURCE STRATEGIES

## THINK TANK Defines Main Topics

Eleven projects are presently being carried out by the THINK TANK "Industrial Resource Strategies" in cooperation with 17 industry partners. "To better organize our work, we have defined five main topics," says the Chairman of the Steering Group, Professor Jochen Kolb from KIT's Institute of Applied Geosciences: 1. Resource-efficient, climate-neutral global chains of value added in industry; 2. Digitalization to enhance resource efficiency; 3. Climate-neutral circular economy for plastics with a low consump-

tion of resources; 4. Resilient resource supply, securing of resources, and requirements to be met by an industrial infrastructure for circular economy; 5. Resource-efficient production. In the area of plastics, for instance, a big project on chemical recycling was launched recently. "We study how to handle plastic wastes in the best possible way," Kolb explains. In addition, the project focuses on pre-sorting plastics for the different types of recycling.