Sustainable Smart Cities: environmental impacts of smart, urban infrastructures

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In the 21st century, cities are becoming the central organisational form for human societies. According to forecasts, the urban population will grow from currently about 4 billion to 6.5 billion in 2050. With the increasing urbanisation, corresponding urban infrastructures are growing and, in conjunction with advancing digitalisation, the opportunities for efficiency gains are increasing. The increasing spread of information and communication technologies (ICTs) can be used to network physical and digital infrastructures, enabling more efficient resource use. The Smart City debate thus bridges the gap between the two challenges: the growth of urban infrastructure and the sustainable use of resources.

This project aims to provide in-depth insights into possible environmental impacts of Smart City approaches and applications, to provide a better understanding of the relevant framework conditions, and to develop environmental recommendations for municipalities. Environmental benefits and burdens, as well as economic and social impacts are to be taken into account.

For the project, adelphi is generating a number of case studies to provide more detailed information on environmental impacts. On the basis of the case studies, future scenarios will be assessed as to the range of possible impacts the Smart City concepts could lead to in the future. In this way, it will outline the potentials for steering these impacts and possible starting points for utilising the development toward Smart Cities. In this context it is also necessary to consider the extent to which international standardisation of services and technologies for Smart Cities is possible and sensible, and what opportunities and challenges arise from the existing and foreseeable future legal framework. In addition, the project offers an overview of both existing Smart City concepts in place in cities and regions of Germany, and their environmental impacts. Using this array of preparatory work, we will generate recommendations for municipalities on how they can design sustainable and environmentally friendly Smart City concepts.

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