

# Chapter 5

## Smart City Solutions for India: Learnings From Best Practices Around the World

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### ABSTRACT

*Indian Government has proposed to develop 100 Smart Cities and 500 AMRUT (Atal Mission for Rejuvenation and Urban Transformation) Cities in its overall commitment of sustainable development. The proposed study aims at documenting the potential and need of developing Smart cities in India, to understand smart city principles and various dimensions of smart city adopted in various parts of the world which will further help in deriving recommendations and lessons for India's future smart cities. The objective of this study is to generate learning and exploration that will improve confidence in civic authorities, experts, city planners, developers; and help stimulate further private sector investment in developing Smart cities of India.*

### INTRODUCTION

The global environment in which people live is undergoing significant changes. In 1900, only 13% of the world's population lived in cities. By 2050, that number will reach to 70% (UN-DESA report, 2011). India with its 377 million urban population, living in 7936 cities and towns, is World's second largest country in terms of urbanization. (Keshava, 2014) It provides an opportunity for social transfor-

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mation, economic development, employment generation, infrastructure and urban development (Jain, 2015). However, with haphazard urban growth and deficit in energy, transport, housing and other basic infrastructure services, Indian cities are continuously under pressure of rapid urban expansion, gap in infrastructure services, growing carbon emissions and dangers of climate change. Cities are not only the engines of economic growth, but also the development of civil culture and vice-versa. Cities in India are growing indiscriminately which is disintegrating their eco-system and social fabric, trampling the rich heritage. India is heading towards the post-industrial economy, where knowledge economy is taking over. The existing employment sectors, market and government are shrinking and the GNP (Gross National Product) is rising faster than the birth rate. It means redistribution and reorganization of work, economy and time. Knowledge economy and micro-communication are giving a new meaning to work, leisure and creative civic culture (Jain, 2015). Indian cities need to address the specific issues of the local population and ecological context. A city with circular metabolism can give as much to the environment as it takes out (World Future Council, 2012). It reduces its ecological impact and safeguards its future sources of supply. To facilitate the efficient use of natural energy the form of cities and buildings has to be different (Ahuja and Tatsutani, 2009). They should be planned and designed to incorporate both old and new ecological strategies, learning from traditional forms, as well as modern technology.

The city of future has to be smart and sustainable, which integrates the peri-urban and rural communities around it for an overall regional development. Technology can play a larger role in making cities and communities smarter and resilient (De Angelis, 2015). The new age technology can create smarter and more sustainable cities. It is important to understand and analyze the potential of making smart and resilient city that can best maximize the social, economic and environmental sustainability of a city.

Physical and electronic communication brings opportunities of change and exchange. The ability to innovate to constantly changing ideas will ensure appropriate response in time and space context. Sustainable development is giving birth to a new aesthetic, where the nature (sun, wind, water and earth) integrates with technology (nano-technology, renewable, biotechnology, eco-efficiency, etc.) to create an efficient, comfortable, peaceful and beautiful built environment (Jain, 2015). It is a colossal task to integrate technology and address all the issues of sustainability, but some successful examples of transformation of existing cities or design of new cities as smart, sustainable, energy-efficient and green are evident and can be used as learning lessons for future smart cities. These include Plan IT valley (Portugal), Fuiisawa (Japan), Amsterdam, Cairo, Dubai, Masdar (UAE), Dongton (China), Singapore, Edinburg, Kochi Business Park, Lyon, Malaga (Spain), Malta, Santander (Spain) Songdo (South Korea), Kazan smart city (Tatarstan), Holyoke (Massachusetts), Dublin (Ireland), Shenyang (China) and Southampton.

Next few decades will be critical in shaping the urban infrastructure in India as investments flow to cities for expanding their infrastructure networks. India faces a unique challenge of closing the deficit in urban infrastructure and services, while at the same time making a transition to a more sustainable path. However, this deficit may well be a boon in disguise, as it could serve as an opportunity to leapfrog to more sustainable, less energy and resource-intensive forms of infrastructure (Wankhede, 2013).

This chapter attempts to address the need for smart cities in India and assess the smart city solutions adopted in various parts of the world which will further help in deriving recommendations and lessons for India's future smart cities.

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