

# Chapter 11

## Smart City, IT Systems, and Sustainability: Some Insights From the Italian Context

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### ABSTRACT

*With the rapid increase of the urban population worldwide, cities nowadays face complex challenges to guarantee a sustainable development and the quality of life of their inhabitants. The concept of “smart cities” is a response to these challenges. This chapter explores how three Italian smart cities have developed a fertile environment for innovative and high-tech projects. In particular, the research describes some of the main projects implemented by Italian smart cities and the impacts on the sustainability pillars. The research is based on a qualitative method and, in particular, on multiple case study analysis, where theory and empirical research are intertwined. This work shows some interesting implications as it contributes to increase the existing literature on smart city and sustainability and it provides ideas for further reflections about the effects of ICT-oriented projects on sustainable development.*

### INTRODUCTION

More than half of the World’s population nowadays lives in urban areas and this trend is expected to continue for the next couple of decades (Chourabi et al., 2012, Dirks et al., 2010). With the rapid increase of the urban population worldwide, cities have to face a variety and complex challenges in order to preserve the natural environment and the quality of life of their citizens and future generations. Cities and megacities face new kind of problems such as the scarcity of resources, the difficulty in maintaining high standards of safety and hygiene, air pollution, traffic congestion, human health concerns, and inadequate, deteriorating or aging infrastructures (Chourabi et al., 2012; Marceau, 2008; Borja, 2007; Toppeta, 2010; Washburn et al., 2010).

A particular set of challenges involves the social area and is associated with multiple and diverse stakeholders, high levels of interdependence, social and political complexity (Dawes et al., 2009).

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The urgency around these themes is involving many cities and policymakers around the world that are called to find smarter ways to manage them.

In this context, cities should become smarter, facilitating mobility, adding efficiencies, conserving energy, improving the quality of air and water, identifying problems and fixing them quickly, collecting data to make better decisions, deploying resources effectively, and sharing data to enable collaboration across entities and domains. These cities are described with the term smart city.

In view of the challenges associated with growing European urbanisation, as well as the wider agenda to tackle economic recovery poverty, unemployment and environmental damage, the Europe 2020 strategy incorporates a commitment to promote the development of Smart Cities throughout Europe and to invest in the necessary ICT infrastructure and human and social capital development.

A research conducted by the European Parliament Committee in 2014 found that the highest absolute number of Smart Cities are found in the UK, Spain and Italy; the countries with the highest proportion of Smart Cities are Italy, Austria, Denmark, Norway, Sweden, Estonia and Slovenia. However, most Smart City initiatives are still in the early phases of development, even if larger cities tend to be at a most mature level.

As regards Italy, the research conducted by Ernst & Young in 2016 highlights that the Italian smartest cities are located in the North of Italy while Southern cities show a significant structural gap with low innovations. The Italian Observatory for Smart City observed that in Italy, until now, 3.7 billion Euros have already been invested for smart cities in more than 1,300 projects that have reached 15 million citizens. These initiatives, undertaken in most of cases with local and Regional funds, involve the issues of energy efficiency, sustainable mobility, digital agenda, social innovation and urban governance.

But what is smart city? Smart city is an organic system where Information and Communication technology (ICT) plays a key role as a facilitator of linkages between the various sub-systems and between the city government and its citizens. Indeed, ICT is considered both by policymakers and academics the new economic force for urban growth, able to considerably change the way cities are organized and offer services (Bakici, 2013).

In literature, it is possible to find various definitions of smart city, not always homogenous; however, scholars agree in identifying connection between human capital, social capital and information capital in order to generate greater and more sustainable development (Culasso et al., 2016, Manville et al., 2014). Sustainable development that aims to achieve economic advancement and progress while protecting and, if possible, increasing the long-term value of a territory.

The work, starting from the smart city concept, focuses on how information technology system applied to different city projects enables the sustainable development of an urban territory. In particular, the research aims to investigate and compare how three Italian smart cities have been implementing high technological projects to favor the sustainability, reducing the environmental impact (e.g. in terms of wastes and gas emission reductions), increasing the well-being and the quality of life of their inhabitants as well as the economic development. Basing on the research goals, the following research question has been identified:

**RQ1:** What are among the various projects implemented by a smart city, the most ICT oriented? What are their impacts on sustainability, especially referring to the social and environmental issues?

The research methodology is firstly based on a literature review about the smart city phenomenon, the relevance of ICT and the sustainability issues.

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