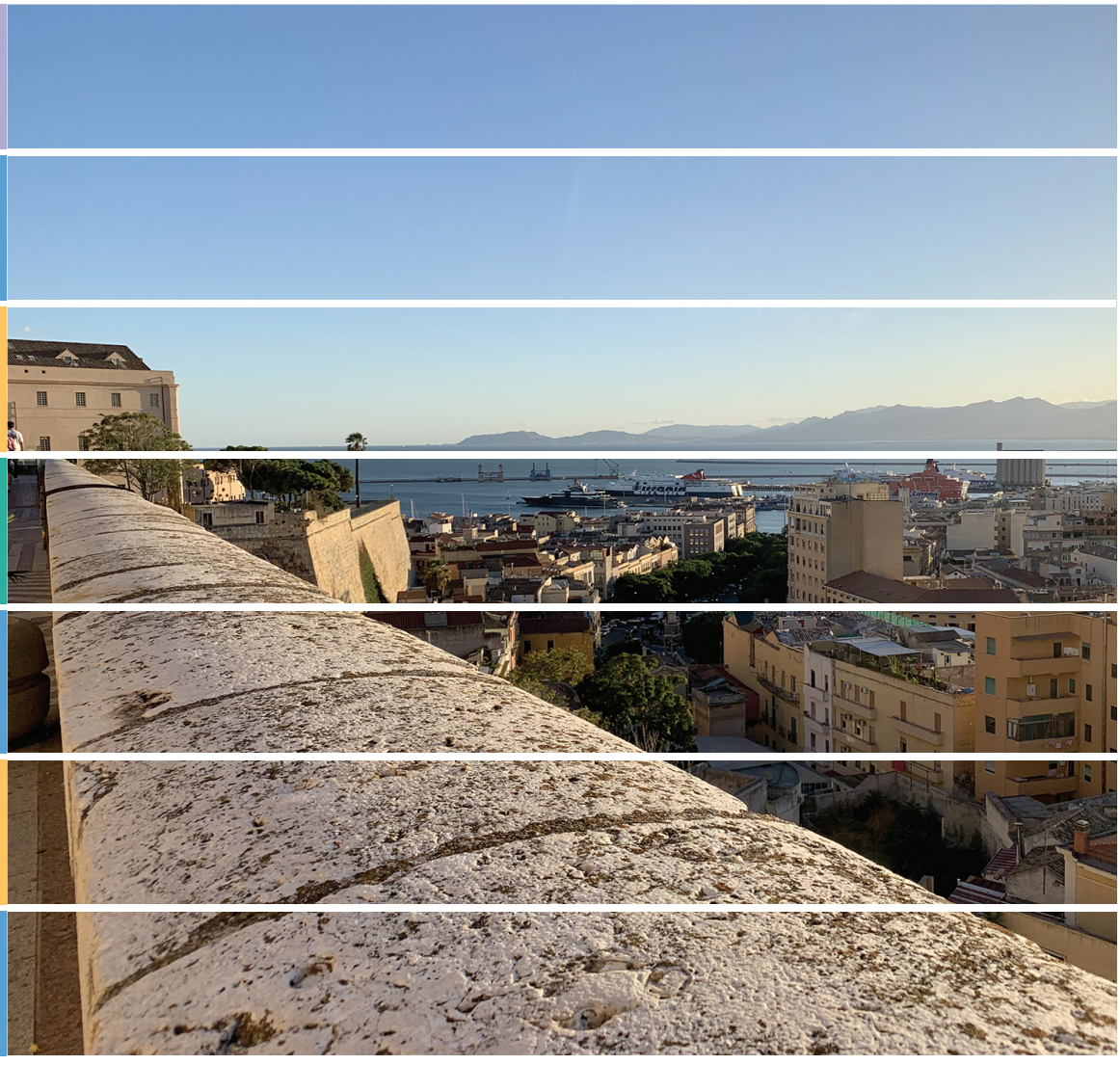
Carmela Gargiulo Corrado Zoppi
Editors

Planning, Nature and Ecosystem Services



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Smart City, Urban Planning for a Sustainable Future

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Carmela Gargiulo Corrado Zoppi

Editors

Planning, Nature and Ecosystem Services

INPUT aCAdemy 2019

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This book collects the papers presented at INPUT aCAdemy 2019, a special edition of the INPUT Conference hosted by the Department of Civil and Environmental Engineering, and Architecture (DICAAR) of the University of Cagliari.

INPUT aCAdemy Conference will focus on contemporary planning issues with particular attention to ecosystem services, green and blue infrastructure and governance and management of Natura 2000 sites and coastal marine areas.

INPUT aCAdemy 2019 is organized within the GIREPAM Project (Integrated Management of Ecological Networks through Parks and Marine Areas), co-funded by the European Regional Development Fund (ERDF) in relation to the 2014-2020 Interreg Italy – France (Maritime) Programme.

INPUT aCAdemy 2019 is supported by Società Italiana degli Urbanisti (SIU, the Italian Society of Spatial Planners), Istituto Nazionale di Urbanistica (INU, the Italian National Institute of Urban Planning), UrbIng Ricerca Scientifica (the Association of Spatial Planning Scholars of the Italian Schools of Engineering) and Ordine degli Ingegneri di Cagliari (OIC, Professional Association of Engineers of Cagliari).

This book is the most recent scientific contribution of the "Smart City, Urban Planning for a Sustainable Future" Book Series, dedicated to the collection of research e-books, published by FedOAPress - Federico II Open Access University Press. The volume contains the scientific contributions presented at the INPUT aCAdemy 2019 Conference. In detail, this publication, including 92 papers grouped in 11 sessions, for a total of 1056 pages, has been edited by some members of the Editorial Staff of "TeMA Journal", here listed in alphabetical order:

- Rosaria Battarra;
- Gerardo Carpentieri;
- Federica Gaglione;
- Carmen Guida;
- Rosa Morosini;
- Floriana Zucaro.

The most heartfelt thanks go to these young and more experienced colleagues for the hard work done in these months. A final word of thanks goes to Professor Roberto Delle Donne, Director of the CAB - Center for Libraries "Roberto Pettorino" of the University of Naples Federico II, for his active availability and the constant support also shown in this last publication.

Rocco Papa
Editor of the Smart City, Urban Planning for a Sustainable Future" Book Series
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Table of contents

Session: 2 - Integrated management of marine protected areas and Natura 2000 sites

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Session 3 - Rural development and conservation of nature and natural resources

Session 4 - Geodesign, planning and urban regeneration

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Session 5 - Green and blue infrastructure

Session 6 - Smart city planning

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Session 7 - Water resources, ecosystem services and nature-based solutions in spatial planning

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Session 8 - Conservation and valorisation of architectural and cultural heritage

Session 9 - Accessibility, mobility and spatial planning

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Session 10 - Tourism and sustainability in the Sulcis area

Special session 1 - Ecological networks and landscape planning

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

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RESILIENCE, SMARTNESS AND SUSTAINABILITY. TOWARDS A NEW PARADIGM?

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ABSTRACT

The urbanization and the vulnerability of a city make challenging the ability of remaining along a sustainable development path. From a sustainability point of view, the smartness concept has been enlarged up to incorporate the definition of sustainable development with the so-called smart and sustainable cities. Another aspect is gaining importance in this debate: the growing challenges posed by climate change and by environmental issue at large. This issue has forced governments and in particular cities, which represent the main place for the prevention and the implementation of initiatives against negative environmental events, to develop flexible and resilient actions, initiatives and plans. In the near future, the majority of the population will be establishing in cities or urban context, so that the active actions will be based on the need to adopt solutions that address the principle of resilience. Since policies, plans and projects should succeed in considering together these three principles – sustainability, smartness and resilience – the aim of this paper consists in analyzing the common features of these concepts which may be at the basis of an integrated approach. Adapting the definition already accepted for buildings in terms of bright buildings, the relevance of brightness issue consists in developing a new paradigm of reference for a city.

KEYWORDS
Smart City; Resilient City; Sustainable City; Bright City

1 INTRODUCTION

Cities are the world's engines for economic growth, generating more than 80 percent of global GDP. The rapid urbanization as well as the increasing vulnerability to climate change events rise the risk for a city to maintain itself along a sustainable development path. Cities, therefore, represents "*the cornerstone of a battle to defend the planet*" (Bhatia et al., 2019, p. 1).

A city should reinvent itself following a new design of sustainable development. This improvement, by more efficiency and an advanced technology use, is now a reality in many medium to large urban centers. The need for cities to evolve themselves alongside this direction is the consequence of the growing urbanization of the world population, the increasing demand for energy-efficiency and more in general the management of non-renewable natural resources that tend to be more and more scarce (Addanki &Venkataraman, 2017).

The analysis of urban development based on the relationship among citizens, environment and new technology has yielded a bundle of several concepts about city's goals. These different issues are related to different stakeholders spanning across different sectors in pursuing the future development of a city. Many of these concepts are not mutually exclusive but complementary if not overlapping. Recently, the political debate has expanded considering a plethora of new city definitions such as: sustainable cities, green cities, livable cities, digital cities, intelligent cities, knowledge cities, resilient cities (Arafah et al., 2018; Bibri & Krogstie, 2017; de Jong et al., 2015).

These terms are used in an interchangeably way by policy makers, planners and developers, even though they capture different aspects of a city development. The sustainable city concept results the most frequent occurring category and the most interconnected node, related closely to the eco city and green city concepts. The smart city concept represents the second interconnected node in the academic debate. Finally, resilient city is considered as a distinct concept with low frequency and an isolate node. Hence, the main issue becomes whether these city categories are interchangeable due to similar principles and characteristics or not because of distinct features with limited overlapping (de Jong et al., 2015).

A sustainable city, whose original definition comes from sustainable development of the Brundtland Commission (WCED, 1987), is such "if its conditions of production do not destroy over time the conditions of its reproduction" (Castells, 2000). Sustainability is based on human activities and human ability in using resources and reducing pollution to reach a balanced socio-ecological system in the long-run (Bibri & Krogstie, 2017). The smartness concept, firstly related to energy saving and efficiency use issues, it has been developed to include quality of life, environment, transport net, telecommunication facilities etc. (Auci & Mundula, 2017). A

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benchmark research by Giffinger et al. (2007) has defined smart city on the base of several intangible indicators as smart economy, smart mobility, smart environment, smart people, smart living, and smart governance. The resilience concept consists in creating a better quality of life, sustainable urban development, and improving environmental condition (Arafah et al., 2018). Developed by Holling (1973), resilience is based on the ability of a system to recover from disturbances and disruptions. Thus, urban resilience concept describes a city that (CEN-CENELEC, 2018): is prepared to resist, absorb, adapt and recover from any shocks; involves stakeholders and citizens in disaster risk reduction processes; reduces vulnerability and exposure to natural and man-made disasters; and finally increases its capacity to respond to climate change challenges and other unforeseen stresses.

Starting from the two by two analysis of smart, sustainable and resilient city, the study develops a new paradigm for a sustainable, digital, and less vulnerable city which may be defined as Bright City, where combined actions are implemented in order to maximize city's efficiency and management efficacy. This concept is traced back from the definition of bright buildings and is adapted to cities to develop a new paradigm of reference (Auci et al., 2019).

2 THE CROSSING PARADIGMS IN THE URBAN AGENDAS

In these recent years many cities have stepped up and started setting their own sustainability, resilience or smartness agendas where actual actions are implemented to solve some main problems related to urban environments.

To face these challenges some crossing paradigms have been developed in literature. Some recent researches have focused on how to incorporate sustainability in smart city approaches for developing a more complex smart sustainable urban model. The increasing awareness about environmental and sustainability issues related to urban growth and technological transformation is at the basis of the Smart Sustainable Cities concept (Höjer & Wangel, 2015). This kind of city which has to face climate change as well as other challenges as concentration of population within an urban area, has become a concept widely used since mid-2010s (Al-Nasrawi et al., 2015; Bibri & Krogstie 2017). With smart sustainable city, it is described a city "*that is supported by a pervasive presence and massive use of advanced ICT, which, in connection with various urban domains and systems and how these intricately interrelate, enables cities to become more sustainable and to provide citizens with a better quality of life*" (Bibri & Krogstie, 2017). The new technology, based on the Internet of Things (IoT) (ITU, 2016), allows citizens to be always connected through several devices. The real-time data may provide the opportunity of real-time feedback which may support real-time citizens' decisions in light of sustainable choices. The smart sustainable city allows decoupling high

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quality of life and economic growth from resource consumption and environmental impact (Addanki & Venkataraman, 2017).

Moreover, sustainability has been closely associated with the concept of resilience (Folke et al., 2002), since this last term "*is often used to describe characteristic features of a system that are related to sustainability*" (Carpenter et al., 2001).

Verma and Raghubanshi (2018) distinguishing among three aspects, economic, social and environmental, underline how these have resulted in the development of Sustainable Development Goals (United Nations, 2015). These goals allow both developing and developed Nations to reach sustainable development through a holistic approach. In particular, Sustainable Development Goal 11 vows to "*Make cities and human settlements inclusive, safe, resilient and sustainable*".

However, there are some authors (Timon, 2014) which disapprove this connection considering resilience as just a label. To be sustainable, cities and urban areas must be ready to face shocks and stresses which undoubtedly sooner or later will occur and will modify the state and the operating ways. In other words, they must be resilient (Pierce et al., 2011).

Coherently with this approach, Beatley and Newmann (2013) propose the term of Biophilic City. The idea is that to make cities greener, more natural or, in their words, more biophilic, it is important to make them more resilient. This target can be reached in a direct way when investments in green infrastructure – i.e. a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services' in both rural and urban settings (EC, 2013) – achieve resilience outcomes; or in an indirect way when actions or projects stimulate green and healthy behaviors that in turn serves to enhance the resilience of a city and of individuals.

Over the past decade and from a political point of view, urban resilience concept has emerged as one of the core principles of sustainable urban development widely acknowledged among various agreements such as the 2030 Agenda for Sustainable Development with its dedicated goal on cities—SDG 11, the Paris Agreement on climate change and the Sendai Framework for Disaster Risk Reduction.

It is worth to note that the urban resilience issue has also been associated with the smart city concept (Arafah et al., 2018). In fact, both concepts "*are operationalized on the basis of similar or even the same systems, having similar trajectories of development and similar dilemmas to be solved*" (Baron, 2012). Moreover, these notions aim at improving sustainability and increase the quality of life, although follow different paths. Even if some international organizations or networks as well as a wide number of cities are fostering integrated projects and strategies for building up smarter and more resilient cities, a theoretical framework is still missing. An attempt in this direction is the one of Papa et al. (2015) that develop a conceptual

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hybrid model which combines a solid theoretical background with some operational elements. The authors begin with the identification of the common characteristics of smart and resilient urban systems to define a model structured as a cyclical process, based on the learning capacity of urban systems, and characterized by the dynamic interplay of persistence, adaptability and transformability.

3 A BRIGHT CITY: A PARADIGM SHIFT

In line with Papa et al. (2015) view, our analysis aims at developing a systematic and a holistic approach combining fragmented knowledge, strategies and objects. This view allows facing the climate change issue as well as other interconnected challenges within complex urban systems through the definition and the development of a new paradigm based on cross-sectoral strategies and multi-objective actions. Smart city, resilient city and urban sustainability are three concepts which follow different paths and use different instruments to reach similar and close benchmarks such as the increase of the quality of life and the economic sustainable development. Since these three concepts complement one another, altogether they completely define the main problems of a community of citizens and suggest the more appropriate and mutual solutions to be applied within an urban context. For this reason, smart city, resilient city and urban sustainability delineate a new paradigm for a city. In line with Kuhn (1970), the definition of a paradigm is based on how some scientific achievements are universally recognized and shared among scientists and on how successful is in solving problems of a group of practitioners who has come to recognize as acute.

Following Buzási & Csete (2017), the interrelation among smart city, resilient city and urban sustainability may be summarized in Fig. 1, where urban sustainability represents the main aim of a city planner. The smart city pursues urban sustainability through creating a digitally-enabled environment which promotes a more efficient use of energy consumptions and a more effective management of networks. The more a city is innovative, the more information and communication technologies is used improving the quality of life and the sustainable development. Uncertain events such as weather and climate negative events at urban level, together with a growing population which increases the urban sprawl phenomenon, feature the need of creating and maintaining prosperous social, economic and ecological systems through sustainable urban systems (Papa et al., 2015). Moreover, the capability of a city planner to develop a strategic approach that adopts a wide and long-term vision may contribute to make a city more resilient and less vulnerable. Climate resilience as well as a digital environment may contribute to support strategies for reducing vulnerability and achieving sustainability. In fact, the more information and data are available from multiple sources in a smart city context the more it may facilitate the knowledge of potential climate-

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related risks and damages. This may increase urban resilience due to a more conscious planning and decision-making process in reducing urban vulnerability. Technology may contribute to better planning and managing a resilient city through the improvement of city's adaptive capacity and the implement of city's mitigation strategies (Buzási & Csete, 2017).

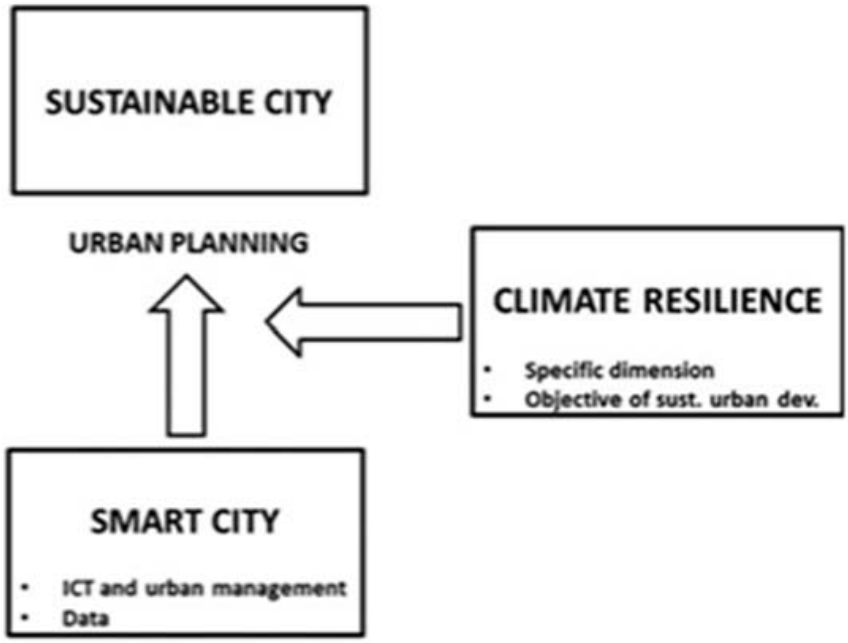

Fig. 1: Interconnections between climate resilience, smart and sustainable city

As a consequence, these three definitions provide a common paradigm of future urban development and structure. The city's evolution aims at increasing the quality of life and reducing vulnerability following a sustainable path of development in the near future as well as guaranteeing further progress in the future. This new paradigm for a sustainable, digital, and less vulnerable city may be defined as "bright city", where combined actions are implemented in order to maximize city's efficiency and management efficacy. In Fig. 2, all the intersections are reported. The three concepts are represented by three circles. Their intersections delineate three areas in which the two by two concepts are analyzed and a central area in which all the circles overlaps. While in literature the two by two intersections are considered and well analyzed, the central area represents a new perspective. In this case, a city is bright if the main object consists in combining aspects of sustainability, resilience and smartness. Following Papa et al. (2015), the characteristics of bright cities, as common features of smart, resilient and sustainable cities, can be delineated as: adaptability, awareness, collaboration, creativity, diversity, efficiency, flexibility, innovation, learning, networking and participation. Thus, a bright city means a city which is based on knowledge and performance-oriented approaches to urban design and planning. This means that

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stakeholders from different backgrounds and domains of expertise are involved bringing and sharing multiple levels of information, at multiple scales of analysis and intervention. In this way the bright city is a reaction to the growing challenges that urban centers are facing and could represents a new urban design and policy paradigm. Environmental degradation, increasing economic inequalities, as well as growing populations may exhaust social and physical infrastructure and increase the need of improving the operational, service and energy efficiency of cities, rendering them better places to live for all (Auci et al., 2019).

Fig. 2 Bright city as integration of sustainability, smartness and resilience

According to the evolutionary approach of the resilient city (Drobniak, 2012), the bright city is assumed to be a complex adaptive system which is dynamic, connected and open with the ability of evolving in many and varied ways. Thus, there is no a unique equilibrium and growth path to be reached but several possibilities. A bright city's economy would be a city that adapts successfully returning to or improving its long run equilibrium path.

4 CONCLUSIONS

Cities, facing new environmental challenges and social dynamics, are asked to answer with the adoption of new approaches. To find effective solutions, the actual academic debate focuses mainly on some concepts such as resilience, smartness, and sustainability. Consistently with these concepts are not mutually exclusive but complementary if not

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overlapping, the more recent literature combines them two by two, exploring new ways and strategies. However, these proposed solutions - aiming for example to a more efficient use of resources and a greater ability to respond to stresses and shocks - achieve a sub-optimal result because they are not framed in a broader strategic framework which permits managing these concepts in an integrated way. From this point of view, solutions are optimal when are framed in a coherent framework with the aim of achieving consistent targets and assessing reasonable choices. The concept of the bright city, proposed in this paper, although at an embryonic stage and therefore to be deepened, can represent the answer to these challenges. Adopting this concept, a city should be considered as a complex adaptive system, i.e. a dynamic, connected and open city with the ability of evolving in many and varied ways. Moreover, bright cities are not obliged to reach a unique equilibrium or to follow the same growth path but several possibilities are allowable and feasible. Finally, a city may be considered "bright" whether it is able to adapt itself successfully to the challenges and the opportunities with the aim of returning to or improving its long run equilibrium path. As a next step for further researches, the characteristics of bright cities through a set of indicators, weights and relationships criteria should be defined.

REFERENCES

Addanki, S.C., & Venkataraman, H. (2017). Greening the economy: A review of urban sustainability measures for developing new cities. *Sustainable Cities and Society*, 32, 1-8.

Al-Nasrawi, S., Adams, C., & El-Zaart, A. (2015). A conceptual multidimensional model for assessing smart sustainable cities. *Journal of Information Systems and Technology Management*, 12(3), 541–558.

Arafah, Y., Winarso, H., & Suroso, D.S.A. (2018). Towards smart and resilient city: A conceptual model. *In IOP Conference Series: Earth and Environmental Science*, 158(1), 1-20.

Buzási, A. & Csete, M.S. (2017), Adaptive planning for reducing negative impact of climate changes in case of Hungarian cities, in Stratigea, A., Kyriakides, E., Nicolaides, C. (Eds.), *Smart cities in Mediterranean*, Cham, CH: Springer.

Auci, S. & Mundula, L. (2017), Smartness, City Efficiency and Entrepreneurship Milieu, in L. Carvalho (Ed.), *Handbook of Research on Entrepreneurial Development and Innovation within Smart Cities*, 173-198, Hershey PA, US: IGI Global.

Auci, S., Mundula, L. & Quaquero, E. (2019), Bright Cities and City Information Modeling, in M. Schrenk, V.V. Popovich, P. Zeile, P. Elisei, C. Beyer and J. Ryser, *REAL CORP 2019: Is this the Real World? Perfect Smart Cities vs. Real Emotional Cities*, Vienna.

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Baron, M. (2012). Do We Need Smart Cities for Resilience, *Journal of Economics & Management*, 10, 32-46.

Beatley, T., & Newman, P. (2013). Biophilic cities are sustainable, resilient cities. *Sustainability*, 5(8), 3328-3345.

Bhatia, S., Pruksapong, M., & Papa, C. (2019). The Challenge of Resilience: A Tool to Support City Planners, 22 gennaio 2019, https://www.ispionline.it/it/pubblicazione/challenge-resilience-tool-support-city-planners-22041.

Bibri, S.E., & Krogstie, J. (2017). Smart sustainable cities of the future: An extensive interdisciplinary literature review. *Sustainable Cities and Society*, 31, 183-212.

Castells, M. (2000). Urban sustainability in information age. *City*, 4(1), 118–122.

CEN CENELEC (2018), CWA 17300:2018 (E) ftp://ftp.cencenelec.eu/EN/ResearchInnovation/CWA/CWA%2017300.pdf

de Jong, M., Joss, S., Schraven, D., Zhan, C., & Weijnen, M. (2015). Sustainable–smart–resilient–low carbon–eco–knowledge cities; making sense of a multitude of concepts promoting sustainable urbanization. *Journal of Cleaner production*, 109, 25-38.

Drobniak, A. (2012). The urban resilience–economic perspective. *Journal of Economics and Management*, 10, 5-20.

EU EC (2013). Infrastrutture verdi – Rafforzare il capitale naturale in EU. Comunicazione della Commissione al Parlamento europeo, al Consiglio al CESE e al Comitato delle Regioni, COM (2013) 249 final.

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., & Walker, B. (2002). Resilience and sustainable development: building adaptive capacity in a world of transformations. AMBIO: A *journal of the human environment*, 31(5), 437-441.

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanović, N., & Meijers, E. (2007). Smart cities. Ranking of European medium-sized cities. Centre of Regional Science of Vienna. Retrieved from http://www.smart-cities.eu/

Höjer, M., & Wangel, S. (2015). Smart sustainable cities: Definition and challenges. In L. Hilty and B. Aebischer (Eds.), *ICT innovations for sustainability*. Cham, CH: Springer.

Holling, C. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics,* 4, 1–23.

ITU (2016). Shaping smarter and more sustainable cities. Striving for sustainable development goals. ITU, Geneva.

Kuhn, T.S. (1970). The Structure of Scientific Revolutions*. International Encyclopedia of Unified* Science, Foundations of the Unity of Science, Volume II, Number 2.

Papa, R., Galderisi, A., VigoMajello, M.C. & Saretta, E. (2015), Smart and Resilient Cities. A Systemic Approach for Developing Cross-sectoral Strategies in the Face of Climate Change, *TeMA. Journal of Land Use, Mobility and Environment,* 8(1), 19-49.

ISBN: 978-88-6887-054-6
DOI: 10.6093/978-88-6887-054-6

Pierce, J.C., Budd, W.W. & Lovrich, N.P. Jr., (2011), Resilience and sustainability in US urban areas, *Environmental Politics*, 20(4), 566-584.

Timon, M. (2014). The rise of resilience: Linking resilience and sustainability in city planning. *Urban ecology at The New School in New York City*, New York.

United Nations, 2015. Transforming our world: The 2030 Agenda for sustainable development. New York, NY. Available from: https://www.un.org/pga/wp-content/ uploads/sites/3/2015/08/120815 _outcome-document-of-Summit-for-adoption-ofthe-post-2015-development-agenda.pdf.

Verma, P. & Raghubanshi, A.S. (2018). Urban sustainability indicators: Challenges and opportunities. *Ecological Indicators*, 93, 282-291.

WCED (The World Commission on Environment and Development) (1987). Report of the World Commission on Environment and Development: Our common future. United Nations. http://www.un-documents.net/our-common-future.pdf

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Sabrina Auci, is an Adjunct Professor of Economics at the University of Palermo and a temporary professor at the University of Cassino and Southern Lazio. Her actual research interests are related to innovation economics, environmental economics, urban economics with a particular interest in the impact of climate change on human activities.

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