TeMA

Journal of
Land Use, Mobility and Environment

The 10th volume of the TeMA Journal will promote the debate on the definition and the implementation of methods, tools and best practices aimed at improving energy efficiency at the neighbourhood level while increasing the capacity of urban systems to adapt to natural changes and/or man-made changes.

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METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES

Vol.10 n.3 December 2017

print ISSN 1970-9889 e-ISSN 1970-9870
University of Naples Federico II

TeMA Journal of
Land Use, Mobility and Environment

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES

3 (2017)

Published by
Laboratory of Land Use Mobility and Environment
DICEA - Department of Civil, Architectural and Environmental Engineering
University of Naples "Federico II"

TeMA is realized by CAB - Center for Libraries at “Federico II” University of Naples using Open Journal System

Editor-in-chief: Rocco Papa
print ISSN 1970-9889 | on line ISSN 1970-9870
Licence: Cancelleria del Tribunale di Napoli, n° 6 of 29/01/2008

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Cover Image: Hunters Point Park South. Unite States -Landscape Architect - Thomas Balsley Accosiates with Weiss/Manfredi - Landscape Architecture, Temple University, Waterfront Design, ASLA (2016).

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TeMA Journal of Land Use, Mobility and Environment

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CALL FOR PAPERS: TEMA VOL. 11 (2018)

The Resilience City/The Fragile City.
Methods, tools and best practices.

The fragile/resilience city represents a topic that collects itself all the issues related to the urban risks and referred to the different impacts that an urban system has to face with. Studies useful to improve the urban conditions of resilience (physical, environmental, economical, social) are particularly welcome. Main topics to consider could be issues of water, soil, energy, etc.. The identification of urban fragilities could represent a new first step in order to develop and to propose methodological and operative innovations for the planning and the management of the urban and territorial transformations.

The Journal also welcomes contributions that strategically address the following issues:

- new consideration of the planning standards, blue and green networks as a way to mitigate urban risks and increase city resilience;
- the territorial risks and fragilities related to mobility of people, goods, knowledge, etc.;
- the housing issue and the need of urban regeneration of the built heritage;
- socio-economical behaviour and the "dilemma" about emergency and prevention economy;
- the city as magnet of the next future's flows (tourism, culture, economy, migration, etc.).

Publishing frequency is four monthly. For this reason, authors interested in submitting manuscripts addressing the aforementioned issues may consider the following deadlines

- first issue: 10th January 2018;
- second issue: 10th April 2018;
- third issue: 10th September 2018.

CALL FOR PAPERS: GENERAL CALL.

Papers in Transport, Land Use and Environment

The Journal welcomes papers on topics at the interdisciplinary intersection of transport and land use, including research from the domains of engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science, and complex systems

TeMA Journal of
Land Use, Mobility and Environment

CALL FOR PAPERS: SPECIAL ISSUE 2018

Urban Travel Behavior in the Middle East and North Africa

The characteristics of urban travel behaviors and the attitudes of passengers in the Middle East and North Africa (MENA) is less-studied. When it comes to the effects of urban form, residential self-selections, and lifestyles, it is entirely not investigated in majority of the countries of the region. There is a considerable knowledge gap about the circumstances of how people think and decide about their short-term, medium-term, and long-term mobility for commute and non-commute travels. The we do not know if the land use traits such as population and employment densities as well as mix of land uses, accessibility to public transportation and neighborhood amenities, and connectivity of street networks are as influential as they are in western counties or in higher income societies. There is a very limited understanding about the extent to which the personal preferences, lifestyles, and in general psychology of the people of the region affect their transport behaviors. The complexity of the analysis methods applied for studying urban travel phenomena of the MENA region is even less-developed. Longitudinal or discrete choice molding methods are applied in mobility research considerably less than studies coming from high-income countries.

This special issue collects the results of some of the most-recent studies on the MENA countries to fill out a part of the gap in English-language publications. The main topics covered by the issue include the following with focus on the MENA region:

- The role of urban form and land use in forming urban travel behavior;
- Urban sprawl and urban travel behavior;
- The effects of historical urban transformations on urban mobility decisions;
- Car ownership and use; car dependency;
- The impacts of socioeconomics and culture in forming the transport patterns;
- Lifestyles and personal preferences and urban travels; Perceptions of mobility, safety, security, neighborhoods;
- The interactions of travel behavior and health effects of different ages, genders, and income groups;
- Travel behavior of public transport riders;
- and similar topics.

The target countries of this issue are the ones that are referred to as the MENA counties in most of the definitions. Studies on the cities of Turkey and Pakistan are also of particular interest and welcome. Manuscripts about all city sizes are reflected by the issue. The authors interested in submitting manuscripts addressing the aforementioned issues may consider the deadline of 31st January 2018. All submissions will go through rigorous double-blind review, and if accepted will be published. Interested authors are requested to contact Houshmand Masoumi at masoumi@ztg.tu-berlin.de, to discuss submission and review procedure.

TeMA Journal of
Land Use, Mobility and Environment

EDITORIAL PREFACE: TEMA JOURNAL OF LAND USE MOBILITY AND ENVIRONMENT 3 (2017)

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES

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The 10th volume of TeMA Journal, given the relevance of the topics, dedicates the three issues of 2017 to promotes the scientific debate on the definition and the implementation of methods, tools and best practices aimed at improving, in the forthcoming decades, the capacity of the urban areas to cope a range of climate, technological and socio-economic challenges that will require the development of integrated and adaptive strategies. The articles published in this third issue address some themes, such as the resilience capacity of urban system, relationship between the relationships between cities and energy, the renewal and regeneration challenger, the planning and landslide monitoring.

The section "Focus" contains the article "Cities and Energy Consumption: a Critical Review" by Carmela Gargiulo and Laura Russo (University of Naples Federico II), that systematize and compare the approach, methodology and results of the relevant literature on the relationship between cities and energy consumption over the last twenty years. Furthermore, this critical review identifies the knowledge gap between what is known and what is still under debate and, based on that, it proposes a conceptual framework that will help to outline a new direction for future research and support local policy makers in the definition of strategies and actions that can effectively reduce urban energy use and CO_2 emissions.

The section "Land Use, Mobility and Environment" collects four articles. The first one, titled "Implementing ITI for urban development locally" by Garyfallia Katsavounidou (University of Ioannina) deals with Integrated Territorial Investment (ITI), a new strategic instrument introduced by the European Commission in the 2014-2020 Programming Period. ITI shifts the decisions on allocation of funds to the local level and, most importantly, enables drawing of funds from several priority axes and from several European Structural and Investment Funds. The paper focuses on the Greek city of Veria, in the Region of Central Macedonia, where this approach has been implemented for the design of an ITI of urban scale (ITI-SUD). The paper describes the benefits and challenges of the new approach as applied in the local context, in a context of "procedural learning" that offers an insight on how European cohesion policy strategies and tools are tested at the local level.

The second article, titled "Urban Voids: renewal and regeneration experiences in Naples", by Gabriella Punziano (Gran Sasso Science Institute) and Anna Terracciano (University of Naples Federico II), focuses on experiences of renewal, regeneration and recycle, the objective of this exploratory study is to investigate their different impacts in a well-known complex urban system as Naples. The study emphases on the urban

and social dimensions, favouring a descriptive and visual perspective from those who experience life in the city, considering the processes implemented by local actors and the reactions of inhabitants to these processes.

The third article, titled "UAV Based Agricultural Planning and Landslide Monitoring" by Servet Yaprak (Gaziosmanpasa University), proposes the adoption of UAVs photogrammetry to study landslides as an alternative to more complex and costly approaches. To this end, the authors observe two different areas, one for agricultural planning and another one for landslides. The study of the first area provides, among the other, useful information about the accuracy of the approach. The study of the second area has been conducted with five different observations in five months. At the end, the authors show that the DSM obtained with an accuracy of 10 cm is useful to quantify landslides, shown on a map with land height decrease or increase.

The fourth article, titled "What is a learning town? Reflections on the experience at Wirksworth", by Peter Wiltshier (University of Derby), explores the legacy of regeneration project work and knowledge management and transfer as a result of intervention through a charity designed to support new business opportunities, specifically in arts and entertainment, tourism, skills development and training. As part of the University of Derby's own work-related learning and problem-based learning, a project team was assigned to work alongside the charity 'New Opportunities in Wirksworth!' (NOW!).

The section "Review Pages" defines the general framework of the issue's theme, with an updated focus on websites, publications, laws, urban practices and news and events on the subject of energy reduction consumption in the transport sector. In particular, the Web section by Maria Rosa Tremiterra describes three web resources of: (i) European Climate Adaptation Platform; (ii) U.S. Climate Resilience Toolkit and (iii) Resiliencetools.org – Empowering Resilient Cities. The Books section by Gerardo Carpentieri briefly reviews three relevant books related to the Issues' theme: (i) Enhancing Urban Climate Change Resilience. Seven Entry Points for Action; (ii) Essential Capacities for Urban Climate Adaptation. A Framework for Cities and (iii) Redefining the city Athens Resilience Strategy for 2030. The Urban Practices section by Gennaro Angiello presents two case studies in the us for planning for sharing mobility: (i) Los Angeles and (ii) Minneapolis. The News and Event section by Andrea Tulisi, proposes a selection of conferences on the topic of decision support tools where developed for supporting adaptation and mitigation policies at urban scale.

TeMA Journal of Land Use, Mobility and Environment

TeMA 3 (2017) 259-278
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5182

review paper received 22 June 2017, accepted 6 November 2017

www.tema.unina.it

How to cite item in APA format:
Gargiulo, C., Russo, L. (2017). Cities and Energy Consumption: a Critical Review. *Tema. Journal of Land Use, Mobility and Environment*, Issue Volume 10(3), 259-278. doi: http://dx.doi.org/10.6092/1970-9870/5182

CITIES AND ENERGY CONSUMPTION: A CRITICAL REVIEW

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ABSTRACT

The relationship between cities and energy consumption has been of great interest for the scientific community for over twenty years. Most of the energy consumption, indeed, occurs in cities because of the high concentration of human activities. Thus, cities are responsible for a big share of carbon dioxide emissions (CO2). However, the debate on this topic is still open, mainly because of the heterogeneity of published studies in the selection, definition and measurement of the urban features influencing energy consumption and CO2 emissions, as well as in the choice of the energy sectors to be considered, in the territorial scale of analysis, and in the geographical distribution of the sample. Therefore, the goal of this research is to systematize and compare the approach, methodology and results of the relevant literature on the relationship between cities and energy consumption over the last twenty years. Furthermore, this critical review identifies the knowledge gap between what is known and what is still under debate and, based on that, it proposes a conceptual framework that will help to outline a new direction for future research and support local policy makers in the definition of strategies and actions that can effectively reduce urban energy use and CO_2 emissions.

KEYWORDS:
Cities; energy consumption; CO_2 emissions; compact city; sustainability.

TeMA

有关土地使用、交通和环境的杂志

TeMA 3 (2017) 259-278
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5182

review paper received 22 June 2017, accepted 6 November 2017

www.tema.unina.it

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城市与能源消耗:一种批判性评论

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摘要

在 20 多年时间里，城市与能源消耗之间的关系一直是科学界关注的问题。大部分能源消耗的确是发生在城市中，因为在这里人类活动高度集中。因此，城市要为很大一部分二氧化碳（CO2）的排放负责。但是，围绕这个话题仍然存在争论，这主要是因为已经在已经发表的研究中，在选择、定义和测量能够影响能源消耗和 CO2 排放的城市功能时存在异质性，并且在选择要考虑的能源部门、在分析的地域范围、以及在样本的地理分布方面也有不一致。因此，本研究的目标是实现过去 20 年中有关城市与能源消耗之间关系的相关文献的途径、方法和结果的系统化和对比。此外，这项批判性评论还确定了已知内容与争议内容之间的知识差距，并据此提出一个概念框架，有助于概述未来研究的新方向，并支持本地政策制定者确定能够有效降低城市能源使用和 CO2 排放的战略和行动。

关键词：
城市；能源消耗；CO_2排放；紧凑城市；可持续性。

1 INTRODUCTION

Adopting the Paris Agreement in 2015, for the first time governments from all over the world agreed to "hold the increase in the global average temperature well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change" (FCCC, 2015). Local governments play a key role in the implementation of actions aimed at decarbonisation (OECD, 2014). According to IEA (2016), urban areas consume about two-thirds of primary energy demand and produce over 70 per cent of global carbon dioxide emissions (CO_2). Consequently "cities are the heart of the decarbonisation effort" (IEA, 2016) and can be the solution to climate change (Papa et al., 2014). However, urban growth shows no sign of slowing, and the energy and carbon footprint of cities doesn't seem to decrease. Therefore, energy efficiency improvements in urban areas are urgently needed to meet national and global ambitious sustainable goals (Barresi & Pultrone, 2013; Morelli et al., 2013).

To support local policy makers' decisions and foster the transition towards a low-carbon future, a growing body of international research has been studying the complex and multidimensional relationship between cities and energy consumption. These studies differ from each other in a wide variety of ways. First of all, they take into account different types of urban characteristics (e.g. density, household size, income, etc.) and consider different types of energy consumption (e.g. total, transport, or residential energy consumption). Additionally, the samples of cities analyzed differ in scale, size and geographical location. Therefore, it is no surprise that this heterogeneity in approaches and methodologies leads to a variety in results. Literature does not provide a comprehensive critical review highlighting the gap between what we know – and we all agree about – and what we need to know about how cities affect energy consumption and CO_2 emissions (Jabareen, 2006). So the aim of this paper is to critically categorize and compare recent interdisciplinary scientific literature on the relationship between cities and energy consumption to develop a conceptual framework to guide future research based on the resultant new knowledge.

The paper is structured as follows. In Section 2 we present the approach used for this review and sets the temporal and contextual limitations of this work. In Section 3 we describe the critical review of the relevant literature on the relationship between urban areas and energy use, comparing approaches, methodologies and results of the different contributions. Finally, in Section 4 we propose a conceptual framework that provides new understanding based on the integration of the results previously described, and helps stimulating the debate on this topic. This framework aims to help define a new direction for future research and support local policy makers in the definition of strategies, policies and actions that can effectively reduce urban energy use and carbon dioxide emissions at city scale.

2 APPROACH

The relationship between cities and energy consumption is multidimensional, especially because cities are complex and dynamic systems (Batty, 2008; Papa, 2009); therefore, a comprehensive review about this topic calls for a holistic approach that considers a wider range of urban factors – physical, functional, geographical, social, economic – influencing the energy and carbon footprint of cities. Moreover, an integrated approach rather than a sectorial one also allows the identification of the existing trade-off between different urban features and energy saving (Doherty et al., 2009; Lee & Lee, 2014; Papa et al., 2016; Battarra et al., 2016; Gargiulo & Lombardi, 2016), providing a broader and more complete framework on such a complex topic.

A good review on the relationship between urban form and travel patterns can be found in Stead & Marshall (2001), while a detailed review on the relationship between urban structure (construction, maintenance and

use of residential dwellings) and residential and transport related energy use can be found in Rickwood et al. (2008). However, urban form and structure are just two aspects of a bigger picture. In both reviews an integrated approach is missing, which takes into account the variety of urban factors affecting energy consumption and CO_2 emissions at city level.

Based on these considerations, this review combines interdisciplinary researches that investigate the multidimensional relationship between cities (in their complexity) and energy consumption. Using a holistic perspective, the critical review of these contributions revealed that different studies have considered different categories of urban features influencing energy consumption and CO_2 emissions. We have classified and summarized these features into four groups, each including a different number of variables: (1) physical features; (2) functional features; (3) geographical features; (4) socio-economic features. Giving that there is no single way of identifying different categories (Stead & Marshall, 2001), this classification is based on the General System Theory (von Bertalanffy, 1969) applied to the urban phenomenon (Gargiulo, Papa, 1993). In particular, according to the systemic principles, cities can be defined "as sets of elements or components tied together through sets of interactions" (Batty, 2008) and an urban system can be represented as a set of four subsystems: *physical subsystem; functional subsystem; geomorphological subsystem; anthropic subsystem* (Papa et al., 1995). The four categories of urban features previously introduced reflect the aforementioned four urban subsystems.

The first group of urban features – physical features – includes those variables measuring the *physical subsystem* of a city, which consists of the spaces/areas of an urban system that have been transformed in order to accommodate all different types of human activities. This set of variables describes the so-called urban form of a city. There is a little doubt that urban form – typically measured in terms of density – has been given a brighter spotlight within the overall scientific debate. Nevertheless, there are other physical factors whose influence on energy consumption and CO_2 emissions has been investigated by the reviewed studies, including those measuring polycentricity (Bereitschaft & Debbage, 2013; Chen et al., 2011; Lee & Lee, 2014) and fragmentation (Chen et al. 2011) as well as green areas (Banister et al., 1997; Gargiulo et al. 2016; Gargiulo et al., 2017; Holden & Norland, 2005; Ye et al., 2015).

The second group of urban features – functional features – includes those variables describing the type and scale of activities carried out in a given city and, therefore, it reflects the urban *functional subsystem*. Some examples of functional factors include the proportion of jobs in the city center (Camagni et al., 2002; Mindali et al., 2004; Newman & Kenworthy, 1989) or the mix of housing, business and services (Holden & Norland, 2005; Jabareen, 2006) within a specific area.

The third group of urban features – geographical features – comprises those factors that refer to the specific context of reference and describe the differences in geographic aspects such as topography – e.g. percentage of coastal area (Creutzig et al. 2015; Ewing & Rong, 2008) – and climate – e.g. heating/cooling degree days (Baur et al., 2013; Creutzig et al. 2015; Ewing & Rong, 2008; Kennedy et al., 2009). This group provides a characterization of the whole urban territory, so reflecting the city's *geomorphological subsystem*.

Finally, the fourth and last group of urban features – socio-economic features – reflects the urban *anthropic subsystem*, which consists of all of the city's inhabitants as well as those people conducting activities for a limited amount of time within the urban perimeter. These urban features describe both social and economic aspects: examples of social variables analyzed by the reviewed studies include the level of education (Brownstone & Golob, 2008; Holden & Norland, 2005) and the proportion of young population (Banister et al., 1997), while examples of economic indicators are the income (Baur et al., 2013; Clark, 2013; Creutzig et al., 2015; Ewing & Rong, 2008; Holden & Norland, 2005; Kennedy et al., 2009; Makido, 2012) and the number of vehicles per inhabitant (Banister et al., 1997; Brownstone & Golob, 2009; Mindali et al., 2004).

In addition to this first categorization, the review also allowed the identification of different categories of energy consumption and/or CO_2 emissions. Therefore, we have distinguished between: (a) energy

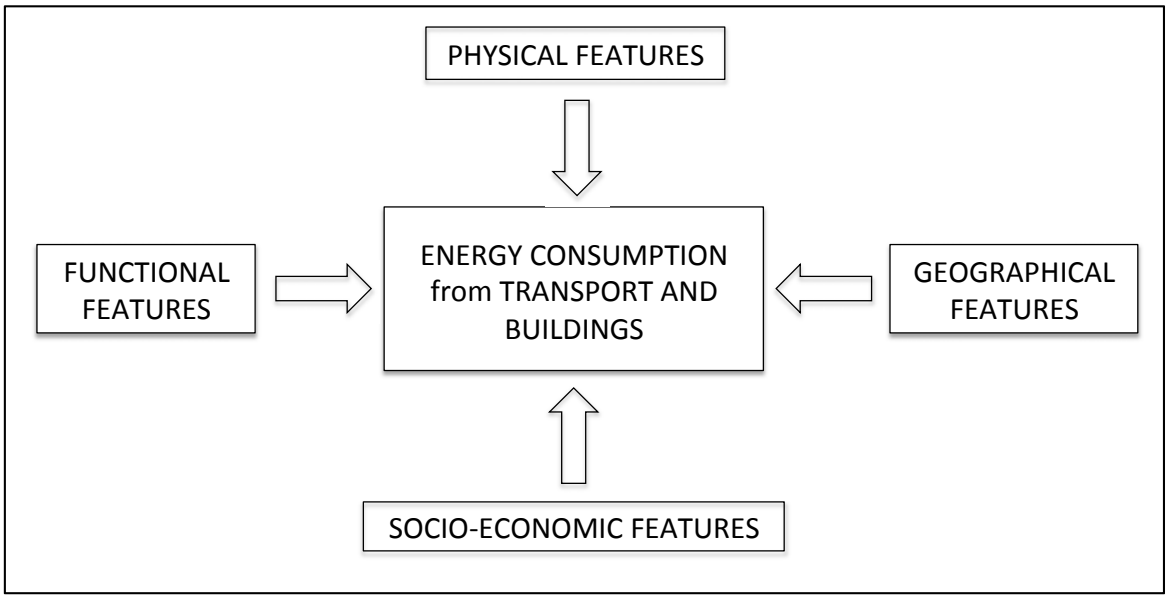


Fig. 1 Structure of the review

consumption/CO_2 emissions from the transport sector; (b) energy consumption/CO_2 emissions from the residential sector; (c) total energy consumption/CO_2 emissions. Based on this structure (Figure 1), we have developed a conceptual framework that integrates the different connections between urban features and energy consumption/CO_2 emissions that have been empirically evaluated by published studies.

In particular, this review includes empirical and modeling peer-reviewed studies that encompass a variety of cities samples, many of which located in Western Europe, in the United States and East Asia. Although some studies up to 2000 are reviewed, greater attention is given to those studies published after 2000. As to the scale of analysis considered in this paper, we limited our analysis to those studies that evaluate the connections between urban areas and energy use at urban scale. Table 1 presents a synthesis of the review. In particular, each article has been categorized based on the urban feature/s (axis y) and the type of energy consumption/CO_2 emissions (axis x) considered. This table helps identifying on what researchers' attention has mainly focused and where critical knowledge gaps concentrate.

3 RELATIONSHIPS BETWEEN URBAN FEATURES AND ENERGY CONSUMPTION

3.1 PHYSICAL FEATURES AND ENERGY CONSUMPTION

The aim of this paragraph is two fold: to shed light on the lack of a shared definition of urban form and to clarify the ongoing debate on the relationship between urban compactness and environmental sustainability.

Despite numerous efforts to define urban form, a shared approach for measuring the physical component of a city is still missing (Jabareen, 2006; Levy, 1999; Marshall, 2005; Newton, 2000). The complexity of connections between the city and both natural and anthropic activities makes the definition of urban form a challenging task that depends on multiple factors, which are often underestimated or even unrecognized (Lynch 1981). Nevertheless, there is a wide consensus of opinions that urban form – in all its definitions – can have an influence on energy consumption and CO_2 emissions, and consequently a great number of

studies have investigated this relationship. In this context, the dichotomy between compact and dispersed city appears to be a key factor in the identification of a sustainable urban form. However, although it has long been argued that sprawling cities tend to consume higher amounts of energy than compact ones (Banister et al., 1997; Clark, 2013; Ewing & Rong, 2008; Marshal, 2008; Newman & Kenworthy, 1989), there has also been some criticism (Baur et al., 2013; Brownstone & Golob, 2008; Echenique et al., 2012; Mindali et al. 2004). Therefore, the relationship between urban compactness and environmental sustainability is not straightforward, yet (Chen et al., 2008, Williams et al., 2000).

	CATEGORIES OF ENERGY CONSUMPTION / CO_2 EMISSIONS		
URBAN FEATURES	ENERGY CONSUMPTION / CO_2 EMISSIONS FROM TRANSPORT	ENERGY CONSUMPTION / CO_2 EMISSIONS FROM BUILDINGS	TOTAL ENERGY CONSUMPTION / CO_2 EMISSIONS
PHYSICAL	Banister et al. (1997) Baur et al. (2013) Bereitschaft & Debbage (2013) Brownstone & Golob (2009) Camagni et al. (2002) Clark (2013) Creutzig et al. (2015) Echenique et al. (2012) Holden & Norland (2005) Kennedy et al. (2009) Lee & Lee (2014) Makido et al. (2012) Marshal (2008) Mindali et al. (2004) Newman & Kenworthy (1989) Nuzzolo et al. (2014)	Chen et al. (2008) Chen et al. (2011) Echenique et al. (2012) Ewing & Rong (2008) Holden & Norland (2005) Kennedy et al. (2009) Lee & Lee (2014) Makido et al. (2012) Ye et al. (2015)	Baur et al. (2013) Creutzig et al. (2015) Echenique et al. (2012) Kennedy et al. (2009)
FUNCTIONAL	Banister et al. (1997) Camagni et al. (2002) Creutzig et al. (2015) Holden & Norland (2005) Mindali et al. (2004) Newman & Kenworthy (1989)	Holden & Norland (2005)	Creutzig et al. (2015)
GEOGRAPHICAL	Bereitschaft & Debbage (2013)	Ewing & Rong (2008) Kennedy et al. (2009) Makido et al. (2012)	Baur et al. (2013) Creutzig et al. (2015)
SOCIO-ECONOMIC	Banister et al. (1997) Baur et al. (2013) Brownstone & Golob (2009) Camagni et al. (2002) Clark (2013) Creutzig et al. (2015) Holden & Norland (2005) Kennedy et al. (2009) Makido et al. (2012) Mindali et al. (2004) Newman & Kenworthy (1989)	Ewing & Rong (2008) Holden & Norland (2005) Kennedy et al. (2009) Makido et al. (2012)	Baur et al. (2013) Creutzig et al. (2015) Kennedy et al. (2009)

Tab.1 Scientific researches categorized by urban feature and type of energy consumption / CO_2 emissions

When applying the general system theory to the urban phenomenon, and considering the physical subsystem, urban form should be measured in terms of housing density (i.e. the number of dwelling units in a given area) rather than population density (i.e. the number of inhabitants in a given area). Housing density, indeed, specifically refers to the built-up area of a city and provides a more precise idea of the physical urban development. However, most studies have considered population density a reliable and effective variable for the measurement of urban compactness (Breheny, 2001). Among these studies – both empirical and modeling – many agree that population density is negatively correlated with energy consumption and CO_2 emissions from transport and buildings. In particular, as far as the transportation sector is considered, Newman & Kenworthyy (1989) find a strong negative correlation between population density and annual gasoline use per capita for a global sample of 32 cities, using an analysis of correlation. Similar results are shown by Camagni et al. (2002) for the case study of Milan, that find a significant inverse relationship between population density and the index of mobility impact (which refers to the mobility demand generated in each municipality within the city's perimeter), using an analysis of regression. Same results are found by Banister et al. (1997) for five cities in the UK, that argue that "higher density urban areas may help reduce the need to travel", and by Kennedy et al. (2009), whose analysis of ten big cities in the world shows that GHG emissions from ground transportation fuels are negatively correlated with population density.

If the residential sector is considered, supporters of compactness are Holden & Norland (2005), who compare eight residential areas within the Oslo region and show that "in densely developed areas, residents use less energy than do residents in areas with lower-density housing. This is mainly the result of more efficient energy supply systems – such as remote heating systems based on heat pumps – than can be introduced in areas with a large number of housing units per area unit". In line with this argument, the study carried out by Chen et al. (2008) for a sample of 45 Chinese cities evaluates the relationship between population density and a set or urban environmental variables, including domestic electricity and natural gas consumption. Through an analysis of correlation, the authors find a weak inverse relationship between urban compactness and domestic energy consumption.

More recently, new support to the theory that compact developments are more energy efficient than dispersed ones came from Makido et al. (2012), Clark (2013), Bereitschaft & Debbage (2013), and Creutzig et al. (2015): Makido et al. (2012) use a correlation analysis and a multiple linear regression analysis to investigate the relationship between urban form and CO_2 emissions in 50 Japanese cities and find that higher population density is associated with less CO_2 emissions from the passenger transport sector; according to Clark (2013), "higher population density – particularly in core areas – correlates with lower levels of per capita travel, and transport-related energy consumption and carbon emissions in the United States", but it is also associated with diminished housing affordability and increased congestion; same geographical context – the U.S. – for the study carried out by Bereitschaft and Debbage (2013), that find for every standard deviation increase in residential density, CO_2 emissions from on-road vehicles decreases of approximately 1.9 million tons. On the other hand, Creutzig et al. (2015) find a strong negative correlation between population density and both transport energy use and GHG emissions for a sample of 274 global cities, using both a correlation and a regression analysis.

Along the same line of thoughts, however using a modeling approach rather than an empirical one, Marshal (2008), Lee & Lee (2014) and Nuzzolo et al. (2014) support the greater sustainability of denser urban areas, and quantify the impact of density on transport energy consumption and emissions. In particular, by comparing five U.S. urban growth scenario – high sprawl, business as usual (BAU), reduced sprawl, no sprawl, infill – Marshal finds that the reduced sprawl, no sprawl and infill scenarios decrease on-road gasoline CO_2 emissions compared to BAU, between 2005 and 2054, by 41%, 53% and 60% of a wedge

respectively. Weaker but similar results are estimated by Nuzzolo et al., who compare five different scenarios – compact, transit oriented development, sprawl, trend, and BAU – for the city of Rome, and find that the compact scenario reduces CO_2 emissions and energy consumption deriving from car use by 24%. Analogously, Lee & Lee estimate for 125 urbanized areas in the U.S. that a 10% increase in population-weighted density – "*estimated as the weighted mean of census block group level densities, with each block group's population being used as the weight"* – decreases CO_2 emissions from travel and residential energy consumption by 4.8% and 3.5% respectively.

Criticizing all findings previously described, a smaller but consistent body of literature doubts the inverse correlation between population density and energy consumption/CO_2 emissions from transport and buildings. In particular, Mindali et al. (2004) highlight the inconsistency of the data collection method used by Newman and Kenworthyy in the 1989 study and find very different results using the same sample and data set but a multivariate statistical approach: when cities are divided into clusters – one of North American and Australian cities and one of European cities – urban density has no effect on energy consumption from transport for both groups. Similarly, Baur et al. (2013) critic the robustness of the sample used by Newman and Kenworthyy, in terms of geographical heterogeneity and numerosity. Also for a group of 62 European cities of different size they find that "population density is not, per se, a strong determinant of greenhouse gas emissions (neither for transportation GHG emissions, nor for total urban GHG emissions)". Similar results, but limited to California, are shown by Brownstone & Golob (2009), who argue that higher housing density decreases household vehicle use and resulting CO_2 emissions, but the impacts are too modest in magnitude to be considered significant – i.e. a 40% increase in housing density corresponds to a 5.5% fuel use reduction. In line with these findings, Echenique et al. (2012) use different models to estimate the sustainability of four spatial options – compaction, sprawl, edge expansion, and new town – for three different English city regions. They find that compaction decreases vehicle distance travel, but only by 5% compared to the trend, and the associated CO_2 reduction benefits are too small compared to "the potential socioeconomic consequences of less housing choice, crowding, and congestion".

In addition to the studies just described, which measure urban form in terms of population density, other researchers considered more complex indicators for assessing urban compactness and the way it affects energy consumption. Ewing & Rong (2008) measure urban form using Ewing et al.'s (2003) county sprawl index, which is calculated based on population density as well as street accessibility and clustering of development. For a sample of 266 U.S. counties, the authors indirectly estimate that urban sprawl positively affects residential energy use and, therefore encourage compact development. Similarly, Ye et al. (2015) analyze the case study of Xiamen and propose a normalized compactness index (NCI) based on Thinh et al.'s (2002) metric, which measures urban compactness in terms of gravity or attraction of a specific urban area. They find a positive correlation between the NCI and residential energy consumption, and interpret these results suggesting "that a compact city with heat and energy conservation from less-exposed wall and roof areas per capita, and more multifamily houses sharing foundations and resources, has residential energy savings".

A plurality of indicators is used by Chen et al. (2011) and Makido et al. (2012), who describe urban form using five and four different variables respectively. In particular, Chen et al. (2011) adopt a panel data analysis to study the relationship between five landscapes metrics – total urban class area, number of urban patches, mean perimeter-area ratio, Euclidean nearest neighbor distance, largest patch index – and energy intensity in production and living, in five Chinese cities. They find that (1) bigger cities consume more energy; (2) fragmentation in urban development increases energy consumption; (3) connectivity between patches is negatively correlated with energy consumption; (4) the largest patches index is negatively correlated with energy consumption, which suggests that concentration of urban activities should be

encouraged, supporting the environmental sustainability of compact development. A similar approach is that employed by Makido et al. (2012), who consider three spatial metrics – the buffer compactness index (BCI), the compactness index (CI), and the area weighted mean patch fractal dimension (AWMPFD) – in addition to population density (measured in terms of urban area per capita and previously discussed), to estimate the relationship between urban form and CO_2 emissions from transport and buildings in Japan. Using a multiple linear regression analysis, the authors find that the BCI in the only spatial metric significantly correlated with energy consumption; in particular, increased BCI (i.e. increased compactness and monocentricity) decreases emissions from the passenger transport sector, but increases residential CO_2 emissions.

Although studies on the relationship between urban form and energy consumption mostly focus on the dichotomy between compact and sprawl development, some researchers include other physical urban variables in their analysis, such as house size, house typology, house age and availability of green spaces. In this context, it is shared opinion that bigger house size is associated with higher CO_2 emissions from transport (Lee & Lee, 2014) and buildings (Baur et al., 2013; Ewing & Rong, 2008; Holden & Norland, 2005), and that attached new houses are more energy efficient than detached old ones (Ewing & Rong, 2008; Holden & Norland, 2005). As far as green areas are concerned, results are not unanimous. In particular, Banister et al. (1997) find that the amount of open space in positively correlated with transport energy use in the case of Banbury and negatively correlated in the case of Oxford, while Ye et al. (2015) find that a greater connectivity and a weaker accessibility of green spaces is associated with higher CO_2 residential energy use. Furthermore, the study by Gargiulo et al. (2016), which specifically focuses on the influence of green spaces on urban microclimate, for the case study of Naples finds that there is a threshold value (i.e. 5.000 square meters) for green areas size that most effectively reduce residential summer cooling, and thus resulting CO_2 emissions.

To summarize, two main groups can be recognized in the debate on the relationship between urban form and energy consumption: those who support the compact city and those who question the relevance of its environmental benefits. While compact development advocates support the idea that people living in dense urban settlements are less automobile dependent, tend to live in multifamily houses, and thus consume less energy than do residents in sprawl areas, critics suggest that the energy savings associated with the intensification of land use are too small to be considered significant, and they may be associated with negative externalities such as congestion, higher housing price, and less availability of green areas.

3.2 FUNCTIONAL FEATURES AND ENERGY CONSUMPTION

Some of the studies on the relationship between urban form and energy consumption (described in the previous paragraph) also evaluate the energy and carbon footprint of a number of urban features that measure the functional organization of an urban system. It is of interest to note that the scientific literature does not offer any research that is exclusively focused on the relationship between urban functional features and energy consumption, but functional and physical features are always considered together. This may be because these two types of urban characteristics are very much connected to each other, and are both associated to the aforementioned compact city concept: in general, high-density and mixed-use development are typical of what can be defined a compact urban settlement (Burton, 2000), while the segregation of different land uses is typical of urban sprawl (Anderson, 1996).

In this context, the study carried out by Holden & Norland (2005) – earlier described for its results in terms of physical features and energy consumption – finds that the mix of housing, business and services does not have any significant effect on energy consumption from transport. Furthermore, the authors find a similar result for housing density, and suggest that “high density and high local mix must be combined with

proximity to a center offering everyday services to bring about a reduction in energy use for everyday travel". However, stronger results are those found by Camagni et al. (2002), which use the ratio of jobs to resident population to measure the functional mix of a specific urban area, and find that this indicator is significantly inversely correlated with mobility, thus showing that higher mobility impact is associated with residential areas rather than with mixed ones. Similar results are those of Banister et al. (1997), that also use the ratio of jobs to population as a measure of functional mix, and find that mixed developments consume less energy from transport if local jobs and facilities are appropriate for local residents.

The proportion of jobs in the city center – calculated as the percentage of jobs within the central business district (CBD) – is one more indicator that describes the functional characteristics of different urban development and that has been considered by the scientific literature for its impact on energy consumption. In particular, Mindali et al. (2004) divide Newman & Kenworthy's (1989) sample of 32 global cities in two groups (i.e. North American and Australian cities; European cities) and find a strong negative correlation between this variable and gasoline consumption for both groups. This result confirms Newman and Kenworthy results from 1989. However, Newman and Kenworthy also find no correlation between the absolute number of jobs in the city center and gasoline use for their sample of 32 global cities. The two results together suggest that the effect of the strength of the city center on gasoline consumption is not straightforward and that it may be that "it is largely the transportation policies applied to central cities that determine whether or not a significantly centralized work force is going to have a positive or negative effect on gasoline use" (Newman & Kenworthy, 1989).

Finally, it is of interest to also look at the indicator employed by Creutzig et al. (2015) for measuring the economic activity of the world cities included in their sample. The authors use the "center of commerce index" (Worldwide Mastercard, 2008), which classifies 75 leading urban centers based on their role in enabling commerce worldwide, and find a positive correlation between this proxy and the total final energy use. This finding highlights the role of production activities as key factors affecting the carbon footprint of urban areas.

In summary, there are relatively few studies that investigate the impacts of urban functional features on energy consumption. Although some results may appear contradictory, the general argument that emerges is that the positive effect of mixed-use development on energy saving from transport is not significant by it self, but becomes significant when combined with high density and supply of transit services.

3.3 GEOGRAPHICAL FEATURES AND ENERGY CONSUMPTION

Ewing & Rong (2008) are the first to consider topographic and climatic variables in their analysis on the relationship between cities and residential energy consumption. In particular, they find a positive correlation between heating degree days (HDDs) and energy use for heating, as well as between cooling degree days (CDDs) and energy use for cooling. Furthermore, they include data describing the topographic configuration of the 266 U.S. counties in their sample, but employ these two dummy variables – coast and valley – only to evaluate their relationship with climate. Thus, the authors don't provide any information about the way territorial geography may affect energy consumption. In this context, Creutzig et al. (2015) conduct a similar analysis by including HDDs, CDDs and coastal city location in their study of 274 global cities. Their analysis of regression shows that HDDs are positively correlated with both final energy and GHG emissions and "explain an important fraction of the energy use variability of cities", while CDDs and coastal city location do not significantly affect either energy use or GHG emissions. The positive effect of HDDs on residential energy use found by both Ewing & Rong (2008) and Creutzig et al. (2015) is further confirmed by Kennedy et al. (2009), who analyze 10 global cities and find that the amount of fuel used for heating and industrial

activities increases with HDDs. On the contrary, Baur et al. (2013) don't find any significant influence of HDDs on total GHG emissions for 62 European cities, possibly because their data on GHG emissions were previously corrected for seasonal variations, as specified by the authors. Similarly, in their analysis on urban form, air pollution and CO_2 emissions in 86 U.S. metropolitan areas, Bereitschaft & Debbage (2013) show that the two climate factors considered – temperature and moisture – are not associated with total CO_2 emissions, but only with O_3 concentrations and $PM_{2.5}$, VOC_s, and NO_x respectively. More controversial are the results of Makido et al. (2012), who use cities' average temperature instead of HDDs, and find a negative effect on residential CO_2 emissions. In this case, the authors admit the difficulties in interpreting such results and suggest the inclusion of HDDs rather than the average temperature in a future research.

To synthetize, the relationship between geographical features and energy consumption has been interpreted by the literature as that between climate – specifically HDDs – and energy consumption from buildings. In this context, it is widely argued that an increase in HDDs is associated with an increase in CO_2 emissions from heating. As far as the geographical location of cities is concerned, only one research finds that the proximity to the ocean does not affect energy consumption. Future research should further investigate the importance of these aspects as well as that of urban topography with respect to energy consumption.

3.4 SOCIO-ECONOMIC FEATURES AND ENERGY CONSUMPTION

Researchers have extensively studied the impacts of economic and social factors on energy use. As far as the economic features are concerned, most of the attention has been focused on the effects of three main variables – income, fuel price and car ownership – on transportation first, and on residential and total energy consumption later. In particular, Newman & Kenworthy (1989) find that these three indicators are responsible for about 60% of gasoline use, while the remaining 40% depends on urban form and land use factors. With respect to income, it is widely recognized that higher standard of living results in higher emissions from both transport (Brownstone & Golob, 2009; Clark, 2013; Holden & Norland, 2005; Newton & Kenworthy, 1989) and buildings (Ewing & Rong, 2008; Kennedy et al. 2009). In this regard, the results by Creutzig et al. (2015) are of particular interest. When considering the whole sample of 274 global cities, the authors find that final energy consumption is strongly positively associated with economic activity, but in the moment that they divide the sample in eight groups based on gross domestic product (GDP) per capita, density, fuel price, and HDDs, they find that "energy consumption for urban transport increases with GDP at low GDP levels, but decreases with GDP at high GDP levels". These findings give new insight into the question, and open up new avenues for future research. With regard to fuel price, Newman & Kenworthy (1989) argue that this economic factor is inversely correlated with transport energy consumption, and Ewing & Rong (2008) find a similar negative relationship between energy price and residential energy demand. More recently, Creutzig et al. (2015) find a negative relationship between fuel price and total energy use and emissions, thus supporting both previous results. Finally, if we consider car ownership, as reasonably expected, studies find that higher levels of car ownership are associated with higher energy use from transport (Banister et al., 1997; Mindali et al., 2004). As far as the social features of urban areas are concerned, the impacts of different social aspects on energy consumption have been investigated by the scientific literature, but weak consensus exists among researchers. According to Camagni et al. (2002), for example, population growth rate positively affects mobility, while on the contrary, Baur et al. (2013) find that this indicator doesn't significantly influence total GHG emissions. Similar contradictory results are found when household composition is investigated: while Brownstone & Golob (2009) show that in California fuel use increases with the number of children, Ewing & Rong (2008) don't find any significant relationship between residential energy consumption and either the number of children or the number of adults, in the

U.S. There is the same debate when the level of education is considered, because those who find that education positively affects transport energy use – "households headed by a respondent with a college degree tend to have a vehicle fleet with greater overall lower fuel economy than their less educated counterparts. This effect is accentuated if the household is headed by a respondent with a postgraduate degree" (Brownstone & Golob, 2008) – are criticized by those who don't find any significant correlation (Holden & Norland, 2005). One last social aspect considered for its potential impacts on energy consumption is ethnicity; in particular, both Ewing & Rong (2008) and Brownstone & Golob (2009) find that energy consumption varies by race, but this relationship needs more specific research to be fully understood.

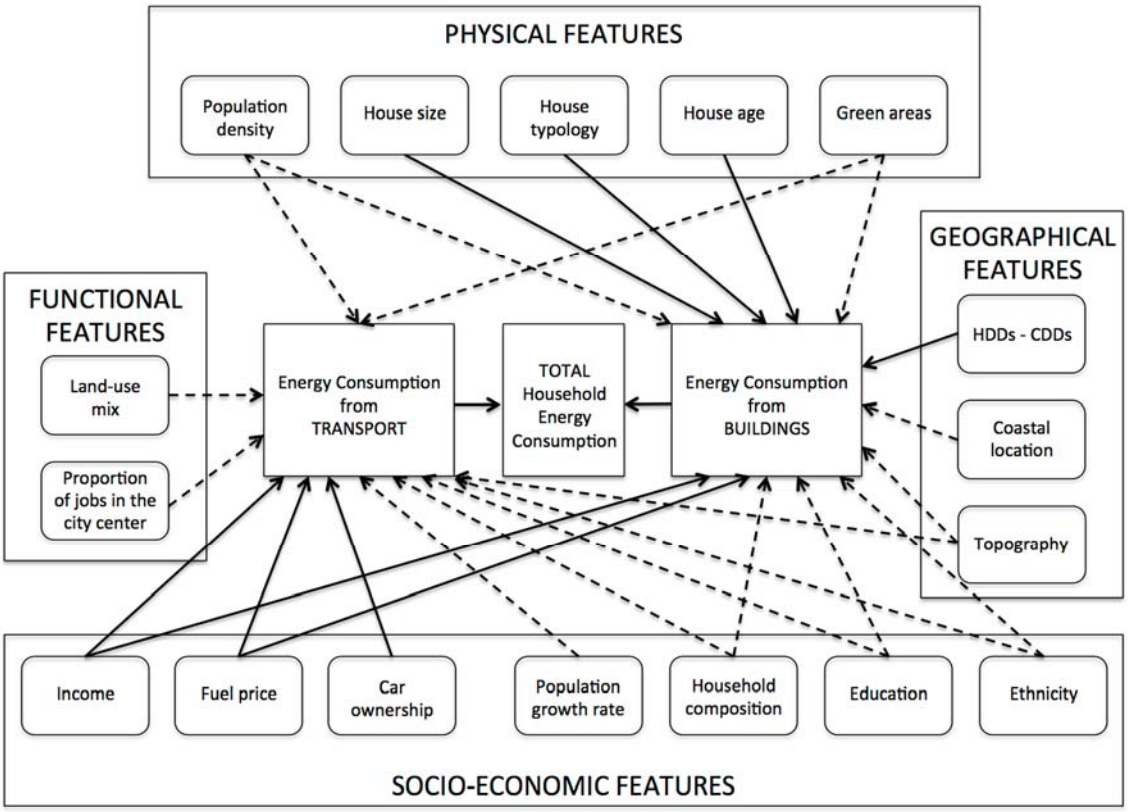
To summarize, it is widely recognized that social and economic factors affect energy consumption. However, while there is great consensus about the relationships between economic variables – income, fuel price, and car ownership – and energy consumption, there is far less agreement about the way social characteristics, such as demographic growth, household composition, education, and race may influence energy use.

4 A CONCEPTUAL FRAMEWORK TO GUIDE FUTURE RESEARCH

The review of the scientific literature on the relationship between cities and energy consumption allows the construction of a conceptual framework (Figure 2), which has two main goals: (1) to provide a state of the art summary on this topic, and (2) to suggest some directions for future research. The conceptual framework is built based on the integration of the findings previously described, and it takes into account the four categories of urban features that have been used to represent the urban system (according to the general system theory applied to the urban phenomenon). In particular, for each group of features, the main variables are specified and the relationships between these variables and the two types of energy consumptions – from transport and from buildings – are identified. Two different types of arrows are used: solid arrows represent those relationships for which there is a wide consensus within the scientific community, both in terms of "sign" (i.e. positive or negative relationship) and significance; on the contrary, dashed arrows indicate those relationships that require further investigation because of the conflicting results found in the literature so far.

At the top of the figure are the five physical features – population density, house size, house typology, house age, and green areas – that emerge from the literature review as key factors significantly affecting energy consumption at city scale. As far as population density is concerned, two dashed arrows connect this variable with both types of energy consumption; this is because, although there are numerous studies on the relationship between urban form and energy use, and the majority agree that population density is negatively correlated with both transport and building energy use, there is still a lack of consensus among researchers about the size of this correlation, and thus its significance. Similarly, further research is needed to explore the way green spaces affect energy consumption. On the contrary, the scientific findings about the relationships between the other three physical features – house size, house typology, and house age – and residential energy consumption are sufficiently reliable and widely shared in the literature, thus these arrows are solid.

At the left of the figure are the two functional variables – land use mix and the proportion of jobs in the city center – influencing energy consumption from transport, but in both cases the relationship is not straightforward, either because of the relatively small number of studies on this issue or because of the strength of these two relationships depend on other external variables (e.g. urban density and transit service), as previously described in par. 3.2. Therefore, embracing the complexity of the urban system, additional effort should be made to investigate the influence of the urban functional subsystem on energy consumption.



Note: Solid arrows indicate relationships that are shared by the scientific community; dashed arrows indicate relationships that are not shared by the scientific community, and thus require further investigation.

Figure 2. Conceptual framework and key relationships between the four groups of urban features and energy consumption

At the right of the figure are the three geographical features – heating and cooling degree days, coastal location and urban topography – that affect household energy consumption. In particular, a solid arrow connects HDDs/CDDs and residential energy use, because it is widely argued that climate conditions significantly influence fuel consumption for heating and cooling. On the other hand, with regard to the other two geographical features, too little research has been done in order to assess the impacts of coastal location on residential energy use and of topography on either residential energy use or transport energy use. Thus, three dashed arrows associate these two variables and the two types of energy consumption.

At the bottom of the figure are the seven socio-economic features – income, fuel price, car ownership, population growth rate, household composition, education, and ethnicity – that are in part responsible of both transport and residential energy use, according to the reviewed literature. While there is wide consensus on the relationship between economic variables and energy consumption, there is less of a consensus on the impacts of social factors on energy use. In particular, it is widely demonstrated that income and fuel price are correlated – positively and negatively respectively – with energy consumption, from both transport and buildings, and that an increase in car ownership results in higher transport energy use. On the contrary, more complex are the influences of the four considered social features on energy use, which may explain the dissimilarity in findings among studies. Future research, indeed, should focus more on the influence of household composition, education and ethnicity on energy consumption. Furthermore, more scientific attention should be paid to measure the consequences of demographic growth on energy consumption, especially today that urbanization processes are extremely pervasive.

4.1 RELATIONSHIPS AMONGST DIFFERENT URBAN FEATURES

Using a holistic approach (as previously described in Section 2), the conceptual framework proposed above does not provide a comprehensive picture of the complexity of the relationship between cities and energy consumption. Indeed, another group of interaction exists and significantly contributes to such complex relationship. This group includes the interactions amongst the four different types of urban features (physical, functional, geographical, and socio-economic). Differently from the relationships described in the previous paragraphs, these interactions indirectly affect energy consumption. Nevertheless, these indirect effects can be significant and should not be ignored.

However, only a small part of the literature reviewed in this paper considers these secondary interactions, which are synthetize in Figure 3. In particular, Holden and Norland (2005) are the first to find a significant interaction between two physical features, i.e. house typology and house age. They find that the difference in energy consumption between single-family housing, row houses and multifamily housing is lower when considering housing units built after 1980. In other words, the energy efficiency of multifamily housing compared to single-family housing has decreased in recent years. This means that the direct effect of house typology on residential energy consumption becomes weaker when the indirect effect of house age is considered.

Similarly, Chen et al. (2008) find a positive interaction between population density and density of facilities (land use mix), which means that densely populated cities in China also have higher concentrations of activities. On the same page, Brownstone and Golob (2008) find that population density is negatively associated with car ownership, income and the number of family components, and that "households which are solely Black, solely Asian, solely Hispanic, or mixed White and Hispanic, all tend to reside in higher-density areas". Population (weighted) density is also found to be inversely association with housing type (calculated as an ordinal variable: 0 = multi-family, 1 = single attached, and 2 = single detached) and housing size (using the number of rooms as proxy), according to the results obtained by Lee and Lee (2014) using a multilevel structural equation model (MSEM), which means that in denser populated areas there is a higher concentration of multi-family houses with a lower number of rooms.

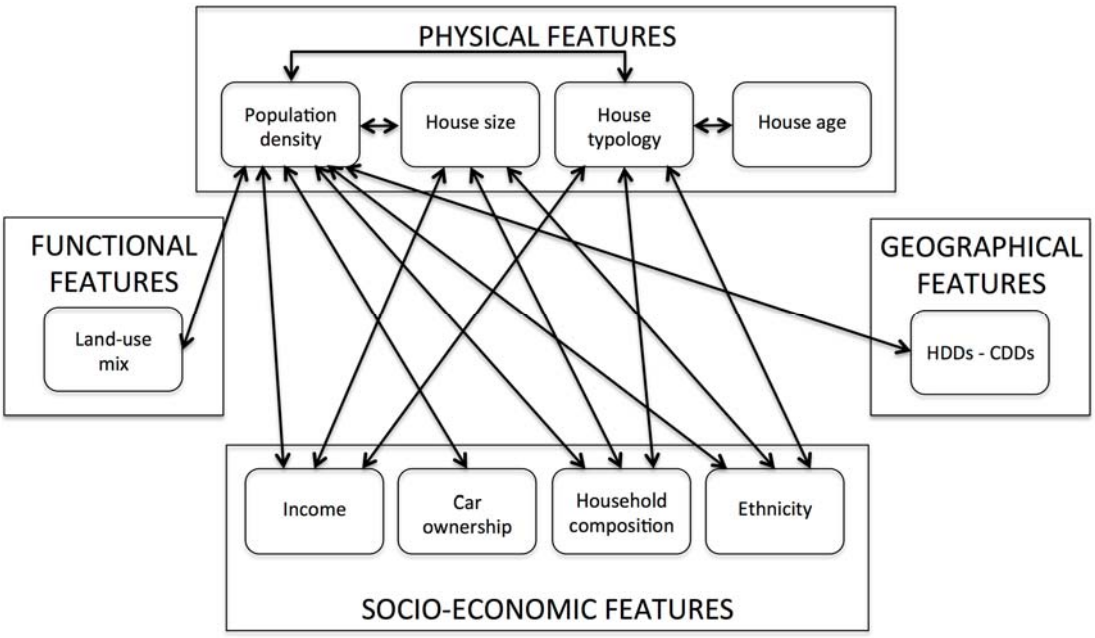


Figure 3. Key relationships amongst the four groups of urban features

Finally, Ewing & Rong (2008) devote much effort to analyze the way urban form can indirectly affect residential energy consumption through the housing stock and the formations of urban heat islands (UHIs). By using a hierarchical modeling, the authors find that house typology and house size are significantly associated with several socio-economic features. In particular, as the number of family members and income increase, both house size and the odds that the household will choose a single-family detached house increase. Analogously, also ethnicity is found to significantly affect the choice of both house typology and house size: White households are more likely to choose bigger single-detached homes than Black, Hispanic and Asian ones. Furthermore, Ewing and Rong also find that multifamily houses are associated with denser urban areas and that houses are significantly larger in sprawling counties than in compact ones. In addition to these results, the study shows that the effect of the urban heat island (UHI) is greater in compact developments, which implies that in denser areas "temperatures are higher that they would be otherwise".
Considered together, these results suggest that the indirect effects of these secondary interactions between physical, functional, geographical and socio-economic factors can significantly contribute to the increase and/or decrease of transport and residential energy consumption at urban scale. In other words, the correlations between different urban features and energy consumption found by the literature so far (and described in Section 3) cannot prove a causal relationship. Indeed, they may partially be the effect of secondary interactions between other variables. For example, a strong positive correlation between housing size and residential energy consumption may not be exclusively due to a direct link between these two variables, but it may also include the indirect effects of other physical (e.g. population density) and socio-economic (e.g. income and ethnicity) variables. However, it is very difficult to identify and untangle all the direct and indirect effects from different urban features on transport and residential energy consumption. Therefore, the task of establishing independent links between cities' characteristics and their energy and carbon footprint remains very challenging (Rickwood et al., 2008) and requires further investigation.

5 DISCUSSION AND CONCLUSIONS

This paper puts together and compares the relevant literature on the relationship between cities and energy consumption over the last twenty years. Two main energy sectors have attracted the interest of the scientific community – transportation and residential sectors – and a large number of urban features have been analyzed. In particular, as we have distinguished between four different categories of urban features (physical, functional, geographical, and socio-economic), the review shows that a great body of the literature has focused on the relationship between urban form (i.e. physical features) and energy consumption, while fewer researches have also investigated the effects on energy use and CO_2 emissions of other urban characteristics, such as those describing the functional, geographical and socio-economic aspects of a city.
Despite the great interest of the literature on this topic, a consistent number of interactions between urban features and energy use at urban scale still lacks of consensus. One of the main open questions is about the relationship between population density and energy consumption.
While it is widely argued that density is negatively correlated with both transport and residential energy use, there is less agreement about the scale (and significance) of this correlation and whether this inverse association can be generalized or whether it exists only for particular density ranges and specific clusters of cities. In addition to this open debate, the impact of social factors on energy use still requires further investigation. In particular, the effect of some social factors such as the level of education or the ethnicity on households' travel behavior and residential energy use.
Furthermore, several studies previously reviewed (Baur et al., 2013; Creutzig et al., 2014; Mindali et al., 2004) show the importance of sample clustering when different cities from around the world are considered

together: some urban features, such as house typology, travel behavior and ethnicity, indeed, can significantly differ between countries, due to different historical background and socio-economic development; therefore, the impacts of such urban characteristics on energy consumption can hardly be generalized. Overall, three main limitations to the studies included in this review have emerged. The first issue concerns the approach used to analyze the relationship between cities and energy consumption. Many studies employ a sectorial approach rather than a holistic one. Consequently, they only consider direct effects of a number of urban factors on energy consumption or CO_2 emissions, without taking into consideration the possible indirect effects associated with the interactions that may exist amongst the different urban factors. As previously mentioned, these indirect effects may be significant and cannot be ignored if we want to explore the relationship between cities and energy consumption in its complexity and multidimensionality.

The second limitation concerns the methodology used by the different researches reported here and is strongly related to the first limitation previously described. The most frequent statistical techniques employed to study the type and significance of relationship between different urban features and energy consumption/CO_2 emissions are two: the analysis of correlation and the multiple regression analysis. Both methods do not allow the identification of a causal link between the variables considered. In other words, a strong correlation between two variables does not imply a direct link between these variables but it could be the results of an indirect interaction that involves other variables.

Finally, the third issue concerns the limited data availability. As highlighted in many of the reviewed studies, the lack of a comprehensive dataset about cities' energy consumption and CO_2 emissions by sector represents a significant limitation, which has been overcome by merging different data sources or by collecting data using questionnaires, whose reliability could be questionable. Similarly, many of the described researches report as a limit that they have considered just a restricted number of urban variables while others, which may be equally important, could not have been captured.

Given the findings of the studies presented above and taking into consideration the limitations previously described, this review proposes a conceptual framework to guide future research on the relationship between cities and energy consumption. The proposed framework presents the main urban factors influencing the energy and carbon footprint of a city and illustrates clearly the key relationships between these features and both transport and residential energy consumption, highlighting those relationships that are not straightforward and require therefore further research (Figure 2). Most importantly, this framework also illustrates a second group of relationships – i.e. those amongst the four categories of urban features (Figure 3) – which may significantly affect energy consumption but are often ignored by the scientific literature, thus providing a more comprehensive picture of the complex and interconnected interactions between cities and energy consumption. This wider picture could represent a new starting point for future research on this topic. Indeed, further research is needed in order to evaluate the extent to which urban characteristics influence transportation and residential energy consumption. Only if these impacts are clearly understood, urban planning policies can effectively improve energy saving in cities and reduce urban emissions.

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Fig. 1,2,3: created by the authors

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TeMA Journal of Land Use, Mobility and Environment

TeMA 3 (2017) 279-298
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: http://dx.doi.org/10.6092/1970-9870/5245

review paper received 11 April 2017, accepted 12 November 2017

www.tema.unina.it

How to cite item in APA format:
Katsavounidou, G. (2017). Implementing ITI for urban development locally. *Tema. Journal of Land Use, Mobility and Environment*, 10(3), 279-298 doi: http://dx.doi.org/10.6092/1970-9870/5245

IMPLEMENTING ITI FOR URBAN DEVELOPMENT LOCALLY

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ABSTRACT

In the current Programming Period (2014-2020) the European Commission has introduced a new strategic instrument, the Integrated Territorial Investment (ITI), which shifts the decisions on allocation of funds to the local level and, most importantly, enables drawing of funds from several priority axes and from several European Structural and Investment Funds. Greece is one of EU member countries that has committed on using ITIs as a tool for urban development. In August 2016, in the Region of Central Macedonia, urban authorities with a population of over 10.000 inhabitants were invited by the Managing Authority of the Regional Operational Programme to submit a Strategy for Sustainable Urban Development (SUD), through the mandatory implementation of the ITI tool. The paper focuses on one of these municipalities, the city of Veria, where the ITI approach has been implemented for the design of an ITI of urban scale (ITI-SUD). The integrated approach prescribed by regional authorities forced Municipalities to adopt government approaches uncommon until now: to involve multiple stakeholders in the entire process, from strategy development to project selection and implementation. The paper describes the benefits and challenges of the new approach as applied in the local context, showing the vertical and horizontal connections of urban development strategies. Most importantly, in the context of 'procedural learning' happening in Europe in the field of territorial cohesion, it offers an insight on how European cohesion policy strategies and tools are tested at the local level.

KEYWORDS:
Sustainable Urban Development; Integrated Territorial Investment; European Cohesion Policy; Greek Cities; Veria

TeMA

有关土地使用、交通和环境的杂志

TeMA 3 (2017) 279-298
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: http://dx.doi.org/ 10.6092/1970-9870/5245

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实施ITI推进城市发展

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摘要

在当前的计划时期（2014-2020 年），欧盟委员会提出了一项新的战略工具，即综合领土投资（ITI），将资金分配决策转移到地方一级；最重要的是，通过该工具，可以从几个享有优先权的轴心国和几个欧盟结构基金和投资基金提取款项。希腊是曾致力于推行将 ITI 作为城市发展工具的欧盟成员国之一。2016 年 8 月，在马其顿中部地区，管辖内居民超过 1 万人的城市管理当局应区域行动计划的管理当局之邀，提交了一份关于通过强制执行 ITI 工具来实现可持续城市发展（SUD）的战略规划。本文重点讨论上述城市之一——维利亚，该市已经实施 ITI 方法来设计城市规模的 ITI（ITI-SUD）。由于区域当局所规定的综合办法，各市镇到目前为止必须采取不寻常的政府对策：从战略制定到项目选择和执行，让多个利益攸关者都参与到整个过程中来。本文介绍了新方法在地方环境中应用所体现的优点和面临的挑战，展示了城市发展战略的纵向和横向联系。最重要的是，在欧洲的领土凝聚力领域正在出现的“程序性学习”的背景下，这一方法为我们提供了关于如何将欧盟凝聚政策战略和工具在地方一级进行尝试的见解。

关键词：
可持续城市发展；综合领土投资；欧盟凝聚政策；希腊城市；维利亚

1 INTRODUCTION

In the current (2014 - 2020) Programming Period, a notable change is taking place in the financing of territorial development programmes across the European Union (EU). Actions on sustainable urban development co-financed by the European Structural and Investment Funds (ESIFs) are now channelled via the Regional Operational Programmes through the voluntary application of Integrated Territorial Investment (ITI). As its name implies, ITI is an instrument to implement territorial strategies in an integrated way. It is not an operation, nor a sub-priority of an Operational Programme. Instead, ITI allows Member States to implement Operational Programmes in a cross-cutting way and to draw funding from several priority axes of one or more Operational Programmes to ensure the implementation of an integrated strategy for a specific territory. As such, the existence of ITI both provides flexibility for Member States regarding the design of Operational Programmes, and enables the efficient implementation of integrated actions through simplified financing (European Commission, 2013).

The scope of this paper is to present a case study regarding the implementation of the ITI approach in an urban context, and specifically that of a town district: the design of the Sustainable Urban Development Strategy (ITI-SUD) of the city of Veria, a medium-sized urban agglomeration in the Region of Central Macedonia, Greece. Alongside other localised analyses of ITI use in various spatial and administrative scales (Gaman, 2015; Krukowska & Lackowska, 2017) and in parallel to systematic overviews of the process of ITI implementation across Europe (CEMR, 2014; CEMR, 2015; Van der Zwet. & Mendez, 2015; Van Der Zwet, 2015), the present paper is a 'report from the field,' based on first-hand experience, as the author was involved in the local ITI, as a city employee working for the Division of Planning and Development of the Municipality of Veria, i.e. the Division which handled the Veria ITI-SUD throughout the process of its design, and continues to supervise its implementation.

On one hand, therefore, there is a pragmatic aspect in this paper: to contribute to the body of documentation of how ITI, a new policy tool for territorial development, originally a theoretical and then a strategic concept, is applied in the urban scale, in the form of a 'user's guide' handed down to local authorities (Municipalities) as to how an urban renewal strategy is to be drawn and financed by ESIFs. On the other hand, the paper aims to also link this practical process to two more theoretical issues often intertwined with each other: a) the reformed urban agenda of the EU in the current Programming Period and b) the advances regarding urban renewal within the discourses of Urban Design and Spatial Planning. In regard to the first issue, it is significant to stress out that ITI was introduced in the Europe2020 Strategy as a reform towards place-based approaches (Barca, 2009; Barca, McCann & Rodríguez-Pose, 2012; McCann, 2015), as the opposite pole of spatially-blind approaches. Acknowledging this theoretical influence, what does the comparison of the local ITI process with previous models for urban renewal applied in the specific local and national context tell us? Can we discern beneficial changes in the current process, transformations that bear 'place-based' characteristics? Regarding the second issue, we first need to place the ITI process as an urban renewal strategy in the historical and social background of the specific city and of Greece in general, taking into account the reluctance to institutional change which characterises Greek political system (Diamandouros, 1994) and also the 'accommodation' model of adjustment to European policies (Börzel & Risse, 2002), which is an attribute of Greece's relation to the EU. Can we find indications in the 'local milieu' (Governa, 1997) that the implementation of the ITI process (at the beginning viewed as another, though much more complicated, form of getting funding from the EU), has produced incremental changes in the local government and/or local society towards a better understanding of the concept of integrated sustainable development? These questions will permeate the presentation of the Veria ITI-SUD itself, and hopefully will be answered partially through observations and reflections on the case study.

2 THE ITI TOOL FROM EU POLICY DOCUMENTS TO NATIONAL DIRECTIVES

As a tool for territorial policy, ITI was introduced in Article 36 of the Common Provision Regulation (CPR, 2013), which constitutes the legal basis for its use. The Article further prescribes that all details about how the ITI will be used and how it will correspond to the allocation of funds from each priority axis, will be in the hands of the relevant Operational Programme(s). The openness of the ITI is clear by the statement that Member States are to designate the specific bodies (local authorities, regional development bodies or non-governmental organisations) which will carry out the ITI (CPR, 2013). However, the final clause of the Article stresses out the intricate horizontal/vertical relationship between the territorial approach and EU-wide strategic goals: "The Member State or the relevant managing authorities shall ensure that the monitoring system for the programme or programmes provides for the identification of operations and outputs of a priority contributing to an ITI" (CPR, 2013). It is noteworthy in this text that, from its inception, the ITI approach is not legally-binding, but is offered as a general framework for each Member State to develop its own policy. As McCann & Varga (2015) point out, in the highly heterogeneous, both economically and institutionally, space of the EU, any policy that spans this complex arena needs to be sufficiently flexible in order to adapt to the local context, but also "it needs to maintain a solid core in terms of its logic, objectives and management systems so as to ensure that the policy is used for correct purposes and is targeted at the intended recipients" (McCann & Varga, 2015, p. 1255). That is much the case in how ITI was introduced in EU policy documents and is indicated in the many different ways ITIs have been used so far (Gaman, 2015; Krukowska & Lackowska, 2017).

To entertain this flexibility but also to ensure the true-to-purpose use of the ITI tool, in the years following its official adoption of the CPR in December 2013, several formal and informal guidance papers have been offering examples of practical implementation of ITIs. Such a document is the Directorate-General for Regional and Urban Policy report on "Scenarios for Integrated Territorial Investments" (De Bruijn & Zuber, 2015). This report provides a quite thorough understanding on how ITI is 'translated' from the theoretical and strategic spheres to the implementation level. De Bruijn & Zuber (2015) provide four 'scenarios' for the use of ITIs, in four different scales: Metropolis, Sub-region, District and Twin Cities. Despite the differences in these four contexts, differences not only in spatial scale, but also in administrative, macro- and micro-economic, social and even cultural and anthropological levels, the four scenarios developed in this report provide us with an important clarification of how the ITI instrument differs from other strategies for delivering funds:

- It is 'place-based,' meaning that it springs from a detailed analysis of local conditions, challenges and advantages, thus leading to a plan of actions and a funding scheme unique to the specific implementation area. A major setback of previous Programming Periods has been that distribution of funds was done in a 'spatially blind' or 'place neutral' manner (Barca, McCann & Rodríguez-Pose, 2012), meaning that decisions about prioritisation were made horizontally, frequently failing to address local problems;
- It addresses sustainability through all its three pillars – environment, economy, society. In the ITI Action Plan, it is highly advisable to include measures and actions drawing from multiple Thematic Objectives and more than one Structural Fund, and to target different categories of challenges, ranging from social inclusion to demographic decline to unemployment to climate change, in order to coordinate a truly sustainable Strategy for the implementation area;
- It involves the active participation of local stakeholders – such as community organizations, NGOs, local professional and entrepreneurial representatives, other public bodies – in all phases of the ITI, from the preliminary meetings to forming an overall Strategy to drawing up proposals for specific actions. In the urban scale, specifically, previous experience from this kind of local involvement has been gained across Europe in such EU pilot projects such as URBACT, where this local involvement has been secured in the form of Local Support Groups;

- Last but not least, the ITI tool emphasizes on the use of measurable data on the various characteristics of the implementation area, which support the Strategy and will be followed upon after the actions have been materialized, thus putting emphasis on results.

Admittedly few reports have come out in the course of the first three years of the current Programming Period regarding the progress of the implementation of ITIs across Europe (CEMR, 2014; CEMR, 2015; Van Der Zwet, 2015). By 2015, among the Member States using ITIs, some were significantly more advanced, as in the case of Poland, the Czech Republic, Finland, France and Italy (Gaman et.al., 2015; CEMR, 2015), primarily for areas already designated and foreseen in their Partnership Agreements. On the other hand, many countries such as Austria, Bulgaria, Denmark and Estonia have declined to use ITI tool altogether, while others have used the tool only partially (CEMR, 2015). As mentioned before, due to the vagueness of CPR mandates, the application of the ITI in the local level is actually a field of experimentation: none of these processes/activities are in fact streamlined. Only the mid-term (2017) report on EU Cohesion Policy will provide literature for substantial comparative analysis and drawing of conclusions. In the case of Greece, there was a significant delay in the offset of the 2014-2020 Programming Period due to political reasons and specifically because of the uncertainty caused by repeated national elections and changes of government. This delay also affected the adaptation of EU guidelines regarding the implementation of ITIs into state policies. The National Coordinating Authority for European Structural Funds, which is part of the Ministry of Economy and Development, issued the first Explanatory Circular on the design, implementation and monitoring of ITIs in July 2015 (Greek Ministry of Economy and Development, 2015), but the document contained few guidelines and emphasized on the general criteria for choosing an area for an ITI, albeit without clarifying how, and through what administrative schemes, ITIs would be formed and agreed upon. No real advancement was made until the following April (Greek Ministry of Economy and Development, 2016), when another Circular provided more detailed instructions about the choice of intermediate bodies and the delegation of functions among the national, regional and municipal levels of government. The 2016 Circular prescribed the use of ITIs as a mandatory tool for the distribution of funds on Sustainable Urban Development via the Regional Operational Programmes (ROPs) of the thirteen Regions of Greece. On the national level, no actual preparation or strategic regional analysis as to how and why ITIs were needed, and for which areas, preceded this regulation. Instead, there was an ad hoc decision on the mandatory implementation of the ITI tool specifically for urban development, a decision which in essence transferred all the 'burden' of its materialisation to the Managing Authorities of the Regional Operational Programmes and, from then on, to local authorities (Municipalities). Financially, the funds to be allocated for Urban Development via the ITI process represent only a fraction of the total European Regional Development Fund (ERDF) budget of each Region: they correspond to the minimum quota (5%) earmarked for Sustainable Urban Development according to Article 7 of the ERDF Regulation (European Commission, 2016). In the case of the Region of Central Macedonia (see Figure 1), the funds earmarked for all ITIs (5% of the Regional budget in the 2014-2020 Programming Period) equals to 99.081.645€. If we compare this amount to the funding for Sustainable Development prescribed in the 2007-2013 budget of the ROP, which was 1.079.000.000€ (Greek Ministry of Economy and Finance, 2007), it becomes clear that the intention has not been to adopt ITI on a wide scale for the scope of urban development financing, but rather to pass on only a small portion of EU funds to the discretion and responsibility of local authorities. On top of the general scarcity of ITI funds, Thessaloniki's metropolitan area was selected to be treated as an ITI on its own and a generous 79% of the total ITI budget (78.275.000€) was earmarked for urbanities in and around Thessaloniki. For the distribution of the remaining 20.805.645€ to the eight urban districts of the Region outside Thessaloniki, there was a decision of make the call to Municipalities competitive – which meant that each town or city in the Region had to design its own ITI and submit its own Sustainable Urban Development Strategy (ITI-SUD), in order to enter the evaluation process.

Fig. 1 Map showing the Region of Central Macedonia with its seven Prefectures. In-set map at the lower left shows the region's location in the map of Greece

The Managing Authority of the Regional Operational Programme of Central Macedonia issued this competitive call in August 2016, and addressed it to urban authorities (Municipalities) of urban districts with a population of 10.000 and over. Although the size of these towns may seem small for European standards (the biggest, Serres, has a population of 58.287, while the smallest, Alexandria, a population of 14.821), they are all important urban centres for their respective sub-regions, and most of them Prefecture capitals. Among these eight Municipalities, the case of our study is Veria, the capital of the Prefecture of Imathia, a medium-sized city for Greek standards, with a town population of 43.158, while the municipality population is 66.457 according to the 2011 census,[1] located about seventy kilometres to the west from the capital of the Region, Thessaloniki (see Map 1). However, before proceeding to the presentation of the ITI-SUD of Veria, it is important to place the specific process in a more general context, that of a) the theoretical concept of place-based policy and b) the local and national political culture, especially in relation to past experience of urban renewal projects funded by EU programmes. Both these issues become instrumental so as to allow us to reflect on the application of the ITI approach in the specific urban context.

3 THE ITI APPROACH AS BOTH AN URBAN RENEWAL STRATEGY AND A PLACE-BASED POLICY

With around three quarters of its population living in urban areas, Europe is the world's most urbanised continent; cities in Europe play a major role towards sustainability, in response to both the reality of climate

[1] Censuses in Greece are held every ten years, and the last one took place in 2011. Unfortunately, no more recent population data is available.

change and the pursuit of territorial cohesion. However, the same attributes that make urban living preferable (proximity to employment, vibrant and diverse everyday life, economic benefits) are the ones that put increasing challenges to environmental and social sustainability (Czischke et al., 2015). Therefore, it is precisely in urban areas that a holistic approach, dealing simultaneously with the physical, social and economic parameters of space is very much needed, in order to pursue the goals of the European Territorial Agenda (Böhme et al., 2011).

Urban renewal has been – for many years already – an extremely popular policy in many European and American cities and globally, and has its own history (Kafkalas et al., 2015). We can discern three generations of planned interventions in cities (Carmon, 1999): a) from the end of World War II until the end of 1960's the approach to urban regeneration was based on physical determinism and generally put emphasis on the demolition of old and degraded housing reserve; b) the 1970's was the decade that was characterised by a social turn, towards a more synthetic approach that aimed to regenerate neighbourhoods and took into account socioeconomic factors, too; and c) the entrepreneurial approach from 1980 onwards, in which the main issue at stake seems to have been how to attract investment in vacant urban districts. From the new millennium onwards, and under the prism of sustainability, urban regeneration as viewed in the EU is definitely a holistic concept and acknowledges the multiple factors related to urban renewal. As Roberts (2000) points out, four major changes contribute to urban regeneration: a) economic reconstruction and changes in employment; b) social and community issues; c) natural ageing and need in new land and buildings, and d) sustainable development.

As explained in the previous chapter, for the scope of Sustainable Urban Development, it was the Greek government's choice to make cities, both as physical spaces and as institutional and governance spheres, the testing field of the new ITI tool. This policy choice, conscious or not – given the limited funds earmarked and the lack of preparation in the introduction of the ITI as a tool for urban development, it seems like a rather half-hearted decision –, appears *a posteriori* to have been at the same time *appropriate* and *challenging*.

From the viewpoint of urban renewal, the integrated approach is *appropriate* for urban development, especially if we take into account Greece's situation after the 2008 global financial crisis and the impact this crisis had (and continues to have) on its urban economies. Philip McCann proposes that the geographical impacts of the 2008 global financial crisis is one of four issues shaping the debates regarding the reforms to European regional and urban policies – the other three being advances in academic thinking, the diversity and heterogeneity of the EU and shifts in European growth perspectives (McCann, 2015). In Greece, we can say that the factor of the 2008 crisis is influential on both accounts: both as an issue provoking changes in the European level of policy and as a pragmatic reality that shakes established notions and habitual ways of thinking, in search of new solutions to the 'urban crisis' it currently faces.

Greek urban centres have indeed been 'hit hard' by the financial crisis that has been evolving from 2008 onwards. Urban poverty has risen to the effect that an estimated 26.6% of children live in poverty conditions. The spatial effects of poverty and unemployment are also visible, especially in downtown areas, which by now are characterised by many abandoned buildings, closed shops and a decline of population. Energy poverty is also present, and already has put a toll on the environment, since, due to high prices of central heating, there is a very high percentage of use of polluting sources (individual heaters operating on wood, oil and even coil), affecting the air quality in cities.

All these circumstances create a situation of emergency for the environmental and social sustainability of Greek cities and towns. In the case of Greece, during the previous Programming Periods, although adequate funds were prescribed and distributed for urban regeneration projects, hardly any structural problems – such as unemployment, poverty, underdevelopment of local assets – were addressed. Urban renewal was restricted

to mere 'beautification' projects, handled solely by the local authorities,[2] and did not include any of the changes suggested by Roberts (2000) such as economic reconstruction, promotion of employment or resolve of local social problems. According to a recent analysis on the urban regeneration projects in western Thessaloniki from the 1980s onwards (Kourti, 2017), all too often the term 'integrated' was included in the title, but the projects themselves were downscaled to fragmentary interventions of a purely physical-spatial character. The social and economic parameters of urban development were left out, for reasons related also to the fact that immaterial, non-physical interventions have no immediate, visible and tangible results that can be used as leverage for re-election of local politicians.

Indeed, a major source of 'resistance' or 'disobedience' to EU philosophies, as exemplified in the case of urban renewal, has to be traced in the Greek ambivalent political culture, in which, as Diamandouros (1994) has claimed, two opposite ideologies strive for dominance: on one hand, the modernist, reformist one and, on the other, the 'underdog,' populist ideology, which is responsible for the backward practices of clientelism, individualism, lack of meritocracy and dysfunctionality. In the literature of Greek politics, the 'underdog' political culture is not only widely considered to be one of the main ideological entities of the modern Greek political system since its inception, but also the main source of resistance to the processes of modernization, Europeanization and globalization (Ntampoudi, 2014). According to Börzel & Risse (2002), Europeanization can cause three different degrees of domestic change: absorption, accommodation or transformation. 'Accommodation' is defined as the situation in which member states accommodate Europeanization pressure by adapting existing processes, policies and institutions without changing their essential features and the underlying collective understandings attached to them (Börzel & Risse, 2002). Significantly, from the 1990's onwards, many sociologists and political theorists have emphasized that the Greek model of adjustment to EU mandates falls into the category of 'accommodation' without a real transformation taking place (Kourti, 2017). Nonetheless, as Borzel & Risse point out, this is not necessarily a negative only aspect: whether we study policies, politics, or polities, a misfit between European-level and domestic processes, policies, or institutions constitutes the necessary condition for expecting any change.

It is exactly this ambition (intentional or not) that things can change that is underlying the current 'imposition' of the ITI approach as a prerequisite for the funding of urban renewal projects. The new approach indirectly aims to address the setbacks of past Regional Operational Programmes: the exclusively physical character of the intervention, the predominance of the Municipality as the only stakeholder and the lack of cooperation with other local agents. According to the August 2016 call for ITI-SUDs, the main novelties compared to past Programming Periods (presented as 'obligations' or 'evaluation criteria') were for the Municipalities to include social and economy-related actions in their Action Plans, to involve as many local stakeholders as possible and to form a Strategy following a consistent public consultation with the local community. These obligations were perceived by local authorities as a *true challenge* both for their technical experience and for their administrative capabilities.

From a technical point of view, the accompanying guide made it clear that the proposed cross-sectoral package of actions of the ITI-SUD had to be the outcome of a strategic analysis of the existing condition, taking into account the multiple characteristics of the area (demographic, economic, social, environmental, climate-change related), followed by a SWOT analysis and finally by the drawing up of a Strategy, a programmatic

[2] A telling example is that of the "urban renewal' project that was financed by the EU during the last Programming Period (2007-2013) in our case study, the city of Veria. The project, entitled "Regeneration of Urban Landscape," with a budget of almost ten million euros failed to connect to any developmental goal or strategy. To begin with, the choice of the area where this investment took place was in essence made without any strategic criteria: it was actually a residential district, with no developmental assets. The intervention on the physical landscape stood on its own, with no other actions of social, cultural or entrepreneurial character, adding nothing towards a long-term urban development. The urban 'regeneration' itself was downscaled to the replacement of pavement slabs and the provision of new urban furniture.

'vision' for the Implementation Area. Within this strategic vision, proposed actions had to address several sectors (physical, entrepreneurial, social), but also had to cooperate with each other towards achieving the strategic goal. Faced with such complexity, local authorities, characterised by a dependency on national policies, and so far accustomed to be a passive receiver of EU funds, were thus quite unprepared to draw up an ITI-SUD, especially the ones with no or little experience in the field of Strategic Planning.

From a governance point of view, ITI-SUD presented yet another problem. The process as proposed in the guidelines prescribed another novel role for the Municipalities, that of coordinators of local delegation. Civic authorities found themselves 'forced' to consult with local stakeholders, and act as mediators of opposing views and interests. These local agents ranged from other public bodies accountable to the central government – overseeing special fields such as education, culture, natural environment–, trade chambers, non-government organizations, citizens' initiatives, representative of local enterprises etc. Due to a highly centralized bureaucratic organization of the political affairs, Greek culture of local government is not particularly oriented towards cooperation; therefore, the consultation phase of the ITI-SUD was also a testing field for a more open dialogue of the Municipality with non-Municipal entities, as we will see in the case of Veria, and a search for a 'middle ground' between presumed 'opponents.'

4 THE ITI-SUD OF VERIA

4.1 BACKGROUND

One can definitely claim that the discerning characteristic of Veria [*Βέροια*, in Greek] is the impressively dense and imposing presence of historical traces in its urban tissue (Kalogirou, 1990). Its continuous habitation, from at least 6th century B.C. (Veria is mentioned by the ancient historian Thucydides) until our days, has left a series of monuments dating from Greek, Roman, Byzantine and Ottoman periods, dispersed in the historic centre of the town, thus creating a true palimpsest of history (see Figure 2).

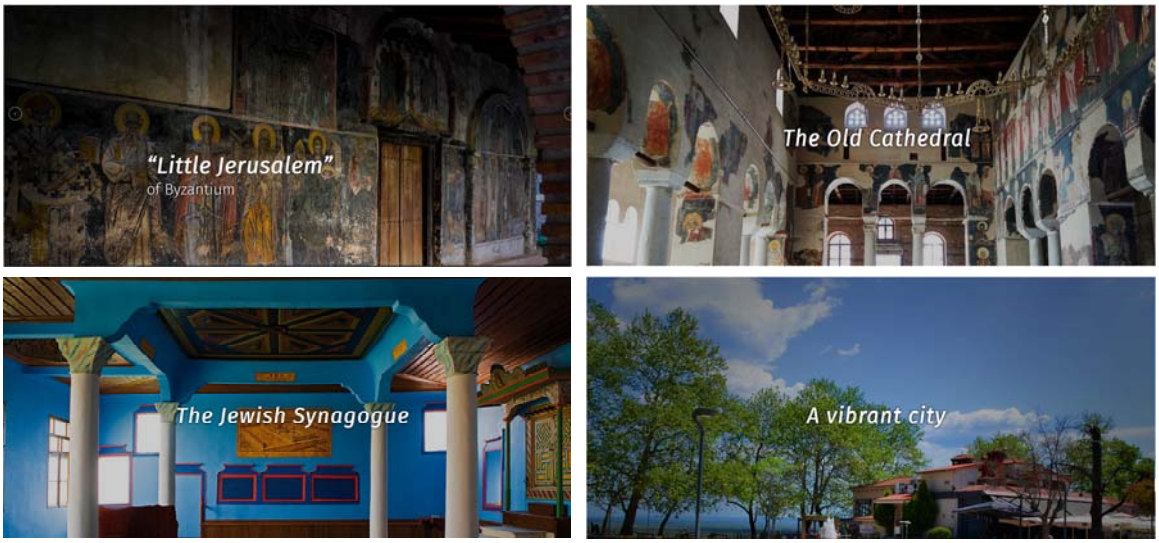

Fig. 2 Veria's monuments from Greek, Roman, Byzantine and Ottoman periods are dispersed in the vibrant centre of the city

Until recently, Veria was more known as a 'Byzantine town,' due to the fact that in 1912, the year of its annexation to the Greek state, no fewer than seventy-two byzantine and post-byzantine churches, adorned with impressive frescos, were surviving. In the following years, and especially in the first two post-World War II decades, the demolition of historic buildings, and even churches, in order to allow for new urban plans and modern rebuilding, destroyed the continuity of the urban fabric of this 'Little Jerusalem.' Nonetheless, four

listed neighbourhoods in the city centre still preserve much of their original character. A total of forty-eight, out of the seventy-two, churches are still standing; amongst them, stands out the monumental 11th century Old Cathedral, paradigmatically restored by the local Ephorate of Antiquities. The recently restored Jewish Synagogue and the proposed restoration and reuse of the Twin Ottoman Baths (see Figures 3, 4), are important signs of a shift towards acknowledging also the Ottoman and Jewish heritage of the city.

Fig. 3 Veria's Twin Baths, a 16th century monuments dating from the Ottoman period, surrounded by the contemporary urban tissue

Fig. 4 Typical house of the Jewish Quarter, dating from mid 19th century

According to Gospodini (2007) and the categorisation of European cities she offers in her discussion of how their spatial qualities relate to their developmental oppotunities, Veria belongs to the sub-group of middle-

and small-sized cities of the periphery of Europe, which are endowed with endogenous natural and cultural developmental resources. In this sub-group, urban space in itself is the major attraction for visitors as well as residents; therefore the role of urban design is connected to the implementation of novel policies in issues of the protection of natural environment and the protection and promotion of cultural heritage (Gospodini, 2007). Alberto Magnaghi (2011) offers yet another interpretation of how heritage relates not simply to history but to the development of a territory. In his "Draft of the Territoralists' Society Manifesto," Principle 6, he writes: "Establishing the right balance between the opening and closure of a local system makes identity much more than a fixed construction whose inheritance is to be passed on unaltered. On the contrary, it should be seen as *a long-term dynamic reality which is projected into the future*. […] Local identity which looks towards the future is more important than one which simply looks back in time [emphasis in the original]" (Magnaghi, 2011). Contrary to these theoretical models, the city of Veria has far from followed a pattern of development based on its unique local identity. The city seems to consider its cultural heritage more like a 'burden,' disproportionally heavy for its everyday happenings, than its most dynamic asset for future development. A walk around the centre reveals beautiful spots where the historic character blends with the natural environment (see Figure 5) but also exposes the degradation of the public space surrounding important monuments, a lack of quality infrastructure for pedestrians and the problematic state of the listed neighbourhoods, in terms of preservation (see Figures 6, 7).

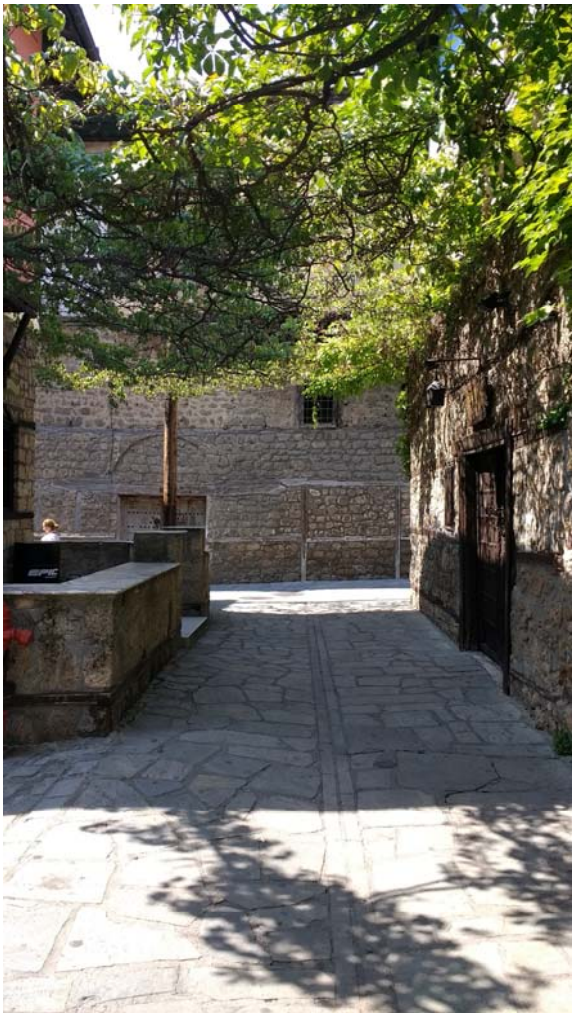

Fig. 5 View of a pedestrian street in the neighbourhood of Kyriotissa, one of the listed areas of Veria

Fig. 6 A street in the neighbourhood of Panagia Dexia

To add to this, the strict rules imposed on all construction and urban intervention because of the protected status of the areas around monuments and of the entire neighbourhoods, have created a negative image for the local Ephorate of Antiquities, which is the gate-keeper for the implementation of Greek Antiquities Law.
A few months before the beginning of the ITI-SUD process, a group of local entities (including the Municipality and the Chamber of Commerce, as well as many trade unions) opposed the proposal of the Ephorate of Antiquities to declare the entire city a protected archaeological site. During the discussion of the issue in the Municipal Council, the President of the city council claimed that "no state entity can put handcuffs to the Municipality" (Smyrni, 2016a), implying that, if the proposal was approved, adhering to archaeological laws would halt municipal public works. Meanwhile, the Chief of the Ephorate of Antiquities maintained: "Veria is a sensitive area, with many archaeological traumas, an area where there has been a slaughtering of monuments. We cannot leave the monuments to the mercy of the bulldozer. It is an honour for a city to be saving its monuments" (Smyrni, 2016b). The opposition climaxed with harsh statements from both sides, as well as posters – sponsored by the Municipality and put up in prominent public spaces – that declared "NO to the plans of the Ephorate, NO to the decay of the city!"

Fig. 7 A pedestrian passage in the historic centre of Veria, in the Old Market area. Source: Irene Kampouroglou

4.2 THE SUSTAINABLE URBAN DEVELOPMENT STRATEGY OF VERIA

The August 2016 Call for the submission of ITI-SUDs found the city of Veria in the midst of this unresolved confrontation.[3] The guidelines provided by the Managing Authority of the Regional Operational Programme (ROP) were clear enough: the Strategy had to be based on a strategic analysis that would conclude to a definition of a sub-district of the city (Implementation Area or IA), which had to meet a list of criteria for a 'degraded area.' Therefore, the model of ITI applied in the Region of Central Macedonia (for there are substantial differences among the 13 ROPs in Greece in the way ITIs were implemented) is an adaptation of the third 'scenario,' as described in the guidance provided by the Directorate-General for Regional and Urban Policy (De Bruijn & Zuber, 2015), that of the implementation in a "District: A Deprived Urban Area" within a city. For anyone, with even a little knowledge of the city, reading this list of criteria, the choice of the district would be quite easy: the historic centre of the city, lined with monuments and degraded neighbourhoods, together with the neighbourhood of Prometheus on the other side of the river that runs through Veria, met almost all of them (see Table 1).[4]

FORMAL CRITERIA (MINISTRY OF ECONOMY AND DEVELOPMENT, 2015)	CHARACTERISTICS OF THE SPECIFIC AREA
Presence of acute economic problems	The area includes the commercial centre and the historic Old Market, which, since the economic crisis, shows signs of major decline (1 out of 4 shops are vacant)
Presence of acute social problems	A) Very high ageing index in the historic neighbourhoods (2,65 compared to 1,17 median city index) B) High percentage of population in danger of social exclusion (several NGOs already in operation to support vulnerable groups)
Degradation of the natural and built environment	A) The infrastructure of public spaces in the listed neighbourhoods is in bad shape and does not provide quality for residents and visitors B) The district lacks organised green areas, despite the presence of the river
Lack in basic infrastructure for universal mobility	Lack of provisions for sustainable urban mobility, especially in the immediate proximity of schools in the area (absence of school zones and of infrastructure for pedestrians)
Lack of sufficient connection with the surrounding area	The neighbourhood of Prometheus, which is on the other side of the river from the historic centre, is not organically connected with it and shows signs of seclusion
Areas characterized by a noteworthy cultural aspect	The area includes three of the four listed neighbourhoods, and 180 of the 240 listed buildings of the city of Veria
Urban districts that were the field of study during previous programs, such RFSC and URBACT	The historic centre was an area of study in the URBACT II LINKS program ("Low tech Inherited from the old European city as a key for performance and Sustainability)

Tab. 1 Matching the characteristics of the district with the formal criteria for choosing an area as Implementation Area for the ITI-SUD. Source: Municipality of Veria (2017). Sustainable Urban Development Strategy of Veria

To support this choice, the analysis of the existing situation had to provide specific quantitative data on five major categories of characteristics: demographics, social, economic, environmental and related to climate change (see Figure 8). The SWOT analysis concluded that the specific area condenses the demographic,

[3] The situation regarding the re-definition of Veria's archaeological sites is still (October 2017) unresolved, since the Ephorate's proposal is still being discussed at the Ministry of Culture and no official decision has been made.

[4] The population of this specific area (16.674 people, according to the 2011 census) is about one third of the total population of Veria and it covers an area of 179 hectares, of which 34 hectares are protected environmentally as areas of "special natural beauty," namely the river and banks.

economic, societal and environmental challenges for Veria, while at the same time it includes the most dynamic elements for its future growth.

Following the definition of the IA and the detailed analysis of its present condition, the crucial phase was the formation of the overall Strategy, and, to this end, what proved to be instrumental was the involvement of local stakeholders and communities-of-interest. As it turned out, the publicity guidelines of the call and the mandatory public consultation 'forced' upon the Municipality, was not at all 'a waste of time,' as it is usually perceived locally, but made a great service into formulating an inclusive and effective Action Plan.

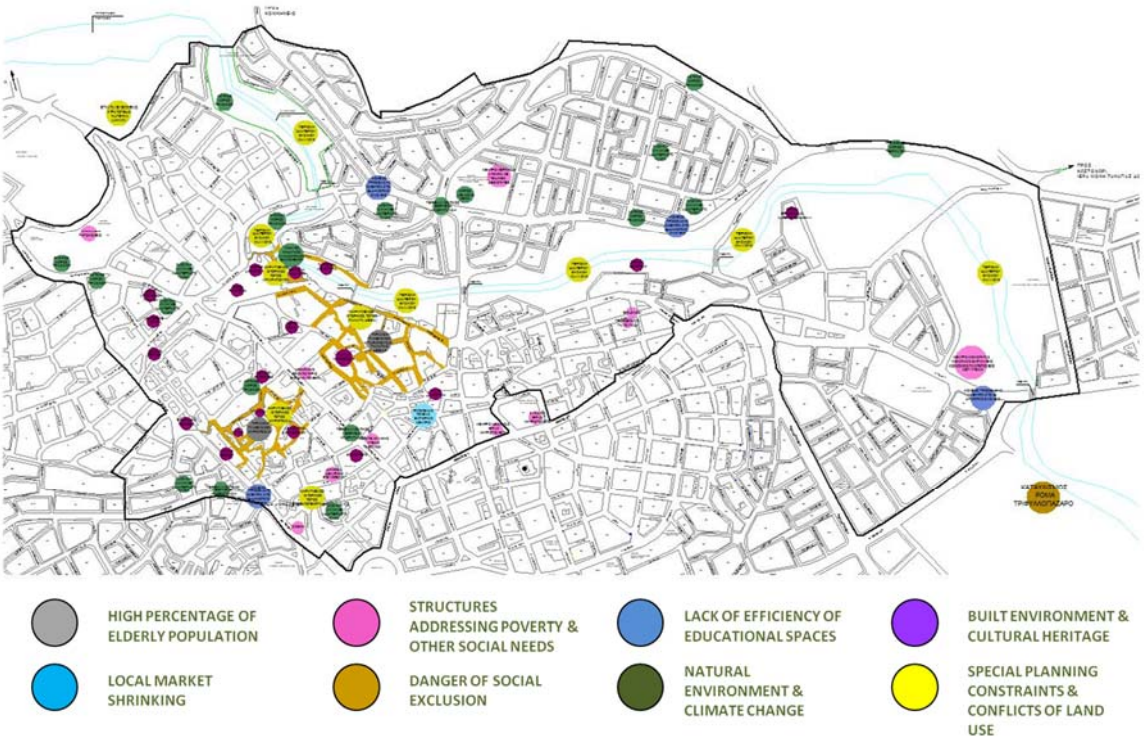

Fig. 8 Map of Veria showing the outline (continuous black line) of the Implementation Area and the concentration of various types of characteristics (colour dots). Source: Municipality of Veria (2017). Sustainable Urban Development Strategy of Veria

Apart from the digital forum, fourteen meetings were organized in a period of two months with many local entities, such as the Chamber of Commerce, the Veria Public Library, which was honoured with Bill & Melinda Gates Foundation's 2010 Access to Learning Award, non-governmental organizations operating in the social sector, community initiatives, and, most importantly, the local Ephorate of Antiquities. Precisely *in the course of the consultation phase*, it became clear that any proposal regarding the physical space of the listed neighbourhoods, intended to be included in the ITI-SUD plan, had to be discussed and agreed upon between the Municipality and the Ephorate of Antiquities. Urban design projects in the listed neighbourhoods had to have the approval of the Ephorate, and, on the other hand, the Ephorate could benefit from the ITI-SUD to get finance for works inside the IA, fostering the first Strategic Objective (SO1), that of promoting the cultural repository of the city.

The focus on heritage as developmental resource also meant that actions in other Strategic Objectives (such as SO3: support of local SMEs and advancement of employment through smart specialisation) had to have a cultural heritage orientation, too. For example, it was the Ephorate's idea to include in the ITI-SUD an action of adult education courses in the field of preservation of monuments and excavation techniques for unemployed individuals, since the Ephorate is always in search of specialised and skilled workers among local

residents. The final ITI-SUD of Veria focuses on the triptych "Nature – History – Hospitality." It addresses all three pillars of Sustainability (Environment, Economy and Society) and is structured under four Strategic Objectives (SOs), which correspond to the Thematic Objectives (TOs) of the current Programming Period. The funding of the Action Plan is via ERDF (79%) and the rest through European Social Fund (ESF), as shown in Figure 9, corresponding to several investment priorities of the Regional Operational Programme. In detail, Strategic Objectives, Actions, Beneficiaries and funding of the ITI-SUD are shown in Table 2.

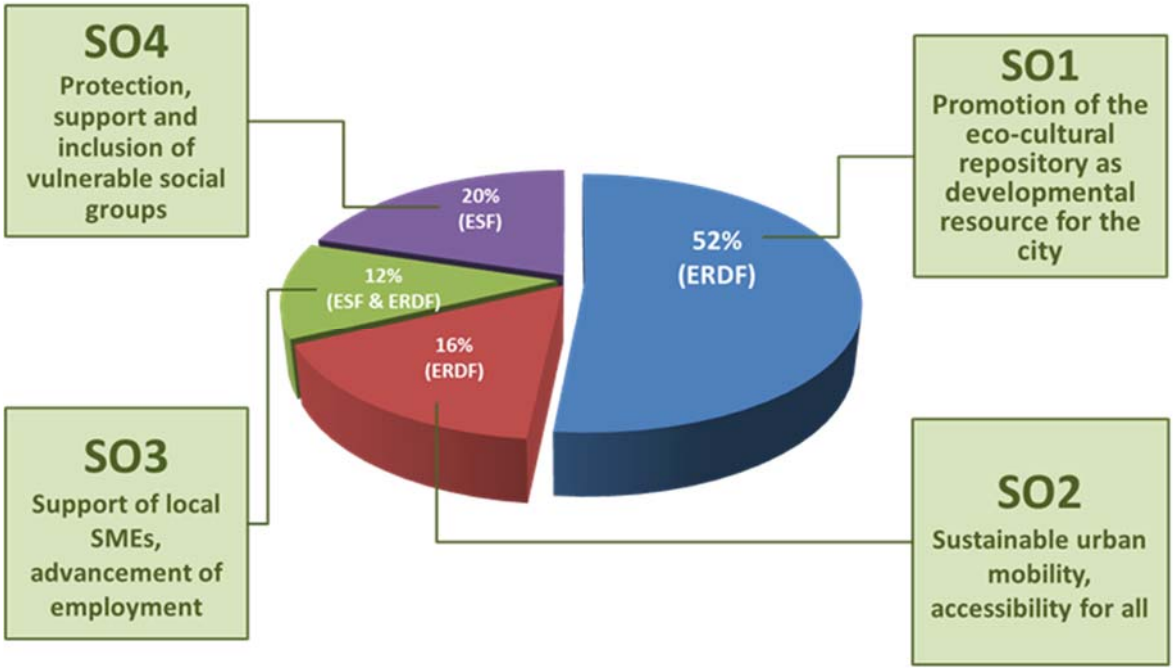

Fig. 9 Funding scheme of the Veria ITI-SUD: Distribution of the budget in the four Strategic Objectives (SOs) and ESIF funding

7 DISCUSSION

The case of the Veria ITI-SUD offers an opportunity to reflect on how a theoretical concept is applied in practice, especially in the constrained context of Greece, with its multiple problems regarding bureaucracy and resistance to transformation (Diamandouros, 1994). First of all, it is important to stress out the directive role of the Managing Authority of the Regional Operational Programme (OP) in the whole process. The guidelines given to Municipalities responsible for preparing the ITI-SUDs put emphasis on the integrated character of the Strategy, through all of its phases, following closely the relevant EU directives:

- In the documentation phase, data related to the demographic, social, economic and environmental challenges in the specific area had to be provided;
- In the analytical phase, challenges in the various sectors had to be interrelated with opportunities, based on local capital, to ensure that the revitalisation of the specific district has an overall developmental effect on the entire city;
- In the proposal phase, an integrated vision for the sustainable development of the specific area had to be presented, taking into account the cross-sectoral challenges, and setting specific strategic goals in accordance to the Priority Axes of the Regional OP preselected for the ITI-SUDs;
- Especially in the prioritisation of actions and distribution of funds, although the Municipality maintained its coordinating role, the consultation phase had to involve local stakeholders (NGOs, business consortia, other public bodies), which were also possible beneficiaries of actions included in the ITI-SUD;

We can notice several differences between the scenarios provided in the guidance paper of the Directorate-General for Regional and Urban Policy (De Bruijn & Zuber, 2015) and the process as it materialised in the local context.

- The Regional Managing Authority chose to pass the responsibility of defining areas for the ITI-SUDs on to the local Municipalities, without a concrete and detailed comparative analysis of its own about the entire Region; the eight Municipalities thus had to compete with neighbour cities, often sharing the same geographical characteristics, and also common problems;
- The ITI scenario presupposes a multiannual urban development strategy, springing from national legislation, but in the case of Greek cities such a development strategy is not compulsory.

STRATEGIC OBJECTIVE	ACTIONS INCLUDED	BENEFICIARIES	THEMATIC OBJECTIVES OF EUROPE2020	BUDGET
SO1: Promotion of the eco-cultural repository as developmental resource for the city	Creation of a network of "green paths" connecting places of interest in the historic neighbourhoods	Municipality of Veria	TO6: Preserving and protecting the environment and promoting resource efficiency (ERDF)	€2.401.000
	Creation of a new public square next to the Twin Ottoman Baths	Municipality of Veria		
	"Nature goes to school": Green infrastructure for schoolyards	Municipality of Veria		
	Restoration of the fortification walls and the tower of the Acropolis	Ephorate of Antiquities of Imathia		
SO2: Sustainable urban mobility, accessibility for all	Interventions in school zones to promote safe and sustainable urban mobility	Municipality of Veria	TO6: Preserving and protecting the environment and promoting resource efficiency (ERDF)	€617.000
	Public bike-hire system	Municipality of Veria	TO4: Supporting the shift towards a low-carbon economy (ERDF)	
SO3: Support of local entrepreneurialism, advancement of occupation	Creation of an "open mall" in the district of the historic Old Market	Local Merchants' Guild	TO3: Enhancing the competitiveness of SMEs (ERDF)	€489.000
	Training of technicians specialising in conservation of monuments	Local Adult Education Centres	TO8: Promoting sustainable employment and supporting labour mobility (ESF)	
	Training and consulting for increasing employment skills	Veria Public Library	TO8: Promoting sustainable employment and supporting labour mobility (ESF)	
	Training for young entrepreneurs in creative and cultural economies	Chamber of Commerce of Imathia	TO3: Enhancing the competitiveness of SMEs (ERDF)	
	Digital promotion of the city and City Branding	Municipality of Veria	TO2: Access to Information and communication technologies (ERDF)	
SO4: Protection, support & inclusion of vulnerable social groups	Protection and support of victims of family violence, individuals with special needs, , disadvantaged children etc.	Six NGOs of the social sector operating within the IA	TO9: Promoting social inclusion, combating poverty and any discrimination (ESF)	€697.000
		Total budget of the ITI-SUD		**€4.204.000**

Tab. 2 Strategic Objectives, Main Actions and Financing of the ITI in Veria. Source: Municipality of Veria (2017). Sustainable Urban Development Strategy of Veria

- The ITI scenario also prescribes that, in the local Action Plan, the EU-financed actions are complimented by actions funded by other sources, such as national OPs, municipal budgets etc. This is not the case in the ITI-SUDs in Central Macedonia, where the local OP earmarked quite limited funds from ERDF and ESF for the ITIs, but no complimentary funds from horizontal OPs, or other sources. With the municipal budgets being very restrained, barely sufficing for operational costs and basic maintenance, the resulting very limited total budget of the ITI-SUD does not pragmatically correspond to the strategic aims set by it;
- No technical assistance was provided to the local authorities, despite the widely recognised complexity and novelty of the instrument.

Another way to view the Veria ITI-SUD is through the lens of 'procedural knowledge.' According to the report commissioned by the European Commission (De Bruijn & Zuber, 2015), the ITI has a so-called 'added value,' causing parallel effects in multiple scales. De Bruijn & Zuber's (2015) report follows on the steps of Barca's (2009) proposition that a place-based policy "promotes the supply of integrated goods and services tailored to contexts, and it triggers institutional changes" (Barca, 2009). Undoubtedly, the main scope of the ITI-SUD according to De Bruijn & Zuber (2015), that of preparing integrated strategies where they do not exist, was fulfilled, thus providing valuable knowledge and experience to the Municipality, which will be better prepared for future calls. Another aspect of the ITI, its mandatory coordination with other local, regional and national strategies, served towards a much better understanding of the rationale of EU funding. The ITI-induced promotion of partnerships was another strong element and the one most likely to open new platforms of dialogue for other projects, too. Especially the municipal authority, usually viewed as the handler of physical environment, was forced to see itself as one of many agents in the 'local milieu,' (Governa, 1997), this complex aggregate of actors.

An attempt to interpret the local ITI-SUD process from the perspective of political culture is perhaps the most difficult one. An important observation is that the 'underdog' culture (Diamandouros, 1994) still holds very strong in Greek society; while all this process was going on, many external partners, but also city officials, expressed a strong doubt whether the ITI-SUD Action Plan would actually be evaluated with objective criteria. Beliefs in clientelism continue to persist; even clear and diaphanous processes as this one, were judged as 'suspicious' for micro-political manipulation and interception.

Further research is needed regarding several issues of the Veria ITI-SUD, but probably the most important one is its comparison with ITIs of similar scale, within the Region, within Greece and across Europe, a comparison that could lead to an overview of what constitutes good practice and where Veria stands in that respect. Especially in regard to the distribution of roles between the Regional Managing Authority and the Municipality, a critical aspect of the local ITI implementation is becoming to come to surface: the high bureaucratic burden taken on by the local authority throughout the materialisation phase. Following the approval of the Action Plan of the ITI-SUD, the Municipality is now an 'intermediate body' (Region of Central Macedonia, 2017), a role attributed to it without taking into account the lack of expertise, personnel and resources that characterise most Municipalities of the Region.

Despite these shortcomings, the aims of the ITI approach have been, at least partially, met. The Action Plan for the Veria ITI-SUD was indeed produced by local stakeholders. It was based on a diagnosis and an analysis of local territorial assets, and shared with the public. As a place-based policy, it may have been 'imposed' upon the Municipality by exogenous powers (ranging from the Managing Authority to the Ministry of Economy & Development to the European Commission), however it was actualised by endogenous agents, who had to put their oppositions aside and agree upon a common strategy. One could say that the process adheres to the 'territorialist' approach, proposed in the mid 1980s by Italian geographers Dematteis, Turco and Quaini, socialist Bagmasco, economists Becattini and Latouche and urban planner Magnaghi (2011), who views the

territory as "a common good with its own historic[al], cultural, social, environmental and productive identity" of which the landscape is "its visible manifestation" (Magnaghi, 2011). Instead of conceptualising spatial problems as a multi-sectoral agglomeration of physical, social and economic characteristics, conventional definitions of 'space' are replaced by the Territorialists' concept of SLoT, or Local Territorial System, defined as "an aggregate or a local network of agents that, according to their specific relation among them and with the specific territorial framework, act as a collective actor" (Berzi, 2017). Compared to urban renewal projects of previous Programming Periods, the ITI-SUD has been an optimistic change towards a more open-ended – and significantly, more effective – handling of EU funds. The up-to-now hegemonic, exclusive role of the Municipality has started to be replaced by a team of partners, all operating in the same territory. If, in the future, such a co-operation develops towards a sharing and contributing towards the same vision for the future development of the area, it would be a pragmatic concretisation of the SLoT concept.

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IMAGE SOURCES

Fig. 1: www.mapsofworld.com. Fig. 2: www.discoververia.gr. Figg. 3, 4, 5, 6, 9: Author. Fig. 7: Irene Kampouroglou. Fig. 8: Municipality of Veria (2017). Sustainable Urban Development Strategy of Veria.

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TeMA
Journal of
Land Use, Mobility and Environment

TeMA 3 (2017) 299-323
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5171

review paper received 22 May 2017, accepted 26 September 2017

www.tema.unina.it

How to cite item in APA format:
Punziano, G., Terracciano, A. (2017). Urban Voids: renewal and regeneration experiences in Naples. *Tema. Journal of Land Use, Mobility and Environment*, Issue Volume 10(3), 299-323. doi: http://dx.doi.org/10.6092/1970-9870/5171

URBAN VOIDS:

RENEWAL AND REGENERATION EXPERIENCES IN NAPLES.

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ABSTRACT

City and society, by definition unstable, constantly redefine the relation between places and actors, generating frequently critical circumstances that are addressed by only temporary solutions. The unexpected and uncontrolled social conditions and lifestyles build new geographies and centres. The activities of dismantlement, degradation, reuse, abandonment, and land use, continuously blend materials and relationships and requires rethinking the methods of describing the city and defining a new grammar of representation closer to the contemporary space, materials, actors, and relationship.
Focusing on experiences of renewal, regeneration and recycle, the objective of this exploratory study is to investigate their different impacts in a well-known complex urban system as Naples. The study emphases on the urban and social dimensions, favouring a descriptive and visual perspective from those who experience life in the city, considering the processes implemented by local actors and the reactions of inhabitants to these processes. In fact in Naples, despite its critical conditions, it is possible to trace signals indicating small informal practices of re-use in vacant or ruined areas, as well as existing small-scale clustering processes to re-adapt single buildings or spaces for new uses. So, this study uses an innovative methodology to investigate this emerging implied writing as a set of latent questions and needs expressing renewal, regeneration and recycle phenomena. Through this technique, we will focus on the images of the city and its development trajectories.

KEYWORDS:
Regeneration; brown-field; social-field; city vision; implicit writing.

TeMA

有关土地使用、交通和环境的杂志

TeMA 3 (2017) 299-323
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5171

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城市空墟：

P那不勒斯（NAPLES）的复兴与重建经验

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摘要

城市和社会由于其定义上的不稳定性，不断重新定义地点与行动者之间的关系，经常会产生只能通过临时解决方案来解决的紧急情况。意外的和不受控制的社会条件和生活方式打造了新的地理和中心。拆迁、退化、再利用、废弃、以及土地利用等活动不断混合材料与关系，要求我们重新思考描述城市时使用的方法，并定义一种更接近于当代空间、材料、行动者、以及关系的表述语法。

这份探索性研究聚焦于复兴、重建和再循环经验，目的是在那不勒斯知名的复杂城市系统中研究它们的不同影响。研究重点是城市和社会层面，偏好那些经历城市生活的人提供的描述性和可视化视角，并考虑本地行动者实施的流程以及居民对这些流程的反应。实际上在那不勒斯，虽然这里情况严峻，但仍然能够追踪到信号，这表明空置或荒废区域中小型的非正式重新利用实践，以及为了让单一的建筑或空间重新适应新用途而进行的现有小规模集群过程。因此，本研究使用一种创新方法，探究这种作为一组潜在问题和需求而出现的隐含写作，表述复兴、重建和再循环现象。通过这种技巧，我们将聚焦于城市图像及其发展轨迹。

关键词：

复兴；棕色地带；社会地带；城市愿景；隐含写作。

1 INTRODUCTION: CONCEPTS AND OBJECTS IN RENEWAL, REGENERATION AND RECYCLE PROCESSES

The debate on the *policies* and development trajectories for an urban system take on very different meanings in urban and social studies depending on the involved object and on the kind of recalled actions. Assuming that every metropolitan city has high levels of complexity and exception points (Mumford, 1961), the object here considered[1] takes into account the study of a particular urban system, *Neaples* as *de facto city* (Calafati, 2013), this time invoking renewal and regeneration actions. In general, these actions are not easy for those who administer, live in, or study the city. Indeed, Ada Becchi (1989), in one of her famous articles, recalled the image of Naples as an *embarrassing mosaic*. On the one hand, the city evokes a sequence of problems; on the other hand, it intertwines identities, activities, spatial conformations, and changing/storage dynamics. In fact, Naples is a city that cannot be captured in a single city model but must be understood as both an economic and a social system (Cento Bull & Jones, 2006; Dines & Dines, 2012). Naples is not a structured city; it is not only an industrial city; it is not even just a market town; it is not the capital; it is not only the administrative, financial, or cultural center. Naples is the result of a contradictory multiplicity that justifies the most irreconcilable interpretations. It is the sum of several cities, one inside the other, and balance is found through the ability to capture the new identities while keeping the well-adjusted socially static nature. It has a sort of *pathological immutability* that reproduces itself in the ideal ambition to never fill the *useful void*[2] that can assume different meanings, depending on the situation in which it is recalled. In the same way, Luciano Brancaccio (2017) in a most recent online editorial, highlight this character of the city through what the scholar defines a binary representation: on the one side the apocalyptic vision of “the land of fires”, camorra, corruption, on the other side the oleographical silhouette of its culture, the *neapolitanity* with its folk connotation. Affected by problems such as tumultuous, speculative construction, sometimes implemented in the absence or against regulatory plans, that has extracted from economic value and social utility large areas of prestige - historical and archeological, agricultural and naturalistic - breaking the functional and structural continuity of the landscape by returning a territory saturated of urban life. And yet, the submerged economy, the organized criminal groups, the affirmation of pieces of political class with a low perception of the moral costs associated with corrupt exchange. A shaky labor market, the inevitable demand for rationalization of the territory’s productive factors, the structural shortages, degradation, abandonment, are just some of the many other problems that the city lives. To counterbalance this situation, the non-secondary roule of the infrastructure could be highlight (Mazzeo, 2010). Transport in particular, although requiring a system-wide and not a few investment, is a good basis for restarts (Gargiulo, 2008). These may allow in a not too far future to break the percentage of private travel in the metropolitan area, benefiting the environment, quality of life and economic functions (Beguinot & Papa, 1995). Noteworthy are the sea links for cruising and goods handling, some manufacturing productions such as the fashion sector (footwear and textile industry), agro-food production, industrial manufacturing with leading companies with public participation. However, there are many knots, atavistic problems, inadequacies to be solved such as the cases of abandoned industrial areas in Bagnoli, to the west of the city, and Naples East (Brancaccio, 2017). In these areas, today under decommissioning processes, are currently being the most important challenges for the transformation of the city but the planning process are in very different phases. Bagnoli, abandoned for a long time due to the

[1] This paper result from the integration of two previous works of the authors in the project "Society, Economy and Space in Naples" whose preliminary results are already published in Punziano, G. (ed.). *Società, economia e spazio a Napoli. Esplorazioni e riflessioni* [Society, economy and space in Naples. Esplorations and refelctions]. L’Aquila: GSSI Social Sciences Working Papers n. 28

[2] The ‘urban voids’ are interpreted by the author as spaces of the city that remain empty of function and of meaning, but that if properly outfitted by identity and functional traits can return fully to be considered spaces that are inside, belonging, and useful for the city.

inefficient reclamation, have recently been the subject of a hard dispute between the central government and the local administration for territorial competence; while, the recovery and urban regeneration objectives within the perspective of integrating the area with the city and its geographical and landscape context, for Napoli Est, are regulated by the General Variant of the PRG (General Regulatory Plan) of the city of Naples and the Implementation Plan (or Masterplan) PUA "Ambito 13 – Ex refinery" (2009). Currently, in this area are ongoing a multiplicity of programs and projects, because the eastern area of Naples is strategically placed at the intersection of major mobility infrastructures that give access to the city, in fact next to the site, there are the Capodichino airport and the Naples central railroad station, which ensure the national and international connections, as well as the highway junctions connecting with the national road network (A1 Napoli-Milano, A3 Napoli-Pompei-Salerno, Tangenziale di Napoli), and the stations (Traccia and Stadera) of M3 and RFI lines of the metropolitan rail connections. This makes the area a fundamental logistic hub in the entire metropolitan area, and actually, the regeneration of its part will be done in the context of a larger urban regeneration project named "Urban Redevelopment of Napoli East port area" granted by the ERDF 2007-2013 - Priority VI "Urban development and quality of life" Operational Objective 6.2. This large project proposes to create a systematic and integrated public intervention on existing roads, as well as new functions at the east side the City of Naples. The project aims to gradually retrofit and redesign the urban infrastructure to improve basic services for a new development of the area, aiming to increase social inclusion, access and availability of green open spaces[3].

Consider that, as well described by Mazzeo (2009), Naples is the third Italian city, the centre of a very wide metropolitan system, and the larger city in the South: it embraces great social, economic and cultural contradictions and it is an 'example of the contradictions between a superb geographical location and a widespread condition of social and economic crisis' (2009, 363). The city presents peculiar processes of social exclusion and polarization, living a restructuration of the economic base while fighting with some problems generated by its past and its previous development path (this in line with the situation that characterize many other cities of Southern Italy – Vicari, 2001). This is reinforced by the relevance of some negative factors that act on the city, such as factors related: to the environment, landscape and urban space; to the efficiency of administrative structure; to the self-image of Neapolitans (Mazzeo, 2009); to the socio-economic condition of disparity in the spreading of GDP per capita (12.755€, in view of a national mean of 18.000€), in unemployment rate (27,76%), especially of the youth population (59,6%), in the presence of NEET[4] (42%) or inactive population (33%), in the household relative poverty rate (44%)[5]; but also to the presence of criminality, degradation and the speedy growth of illegal constructions in the peripheral areas just surrounding the historic and ancient centre of the city.

However, Naples, for its characteristics, its shape and its history and, in particular, for its complexity and the clear coexistence of a variety of typical situations of degraded urban contexts, can be understood as a privileged laboratory in the study of urban development (Russo, 2012) and economic and social evolution. The particular blend between complexity of the urban and social fabric gives rise to the idea of giving a shape to the renewal and regeneration actions put in place in the city, re-conceptualised by the processes that are triggered and the responses to them. First of all, it is of fundamental importance to define the meaning of renewal, regeneration and recycle processes in the complex scenario of an urban system. These three concepts tend to be identified in the common language as synonyms, while their definition in the academic use is much

[3] Data on all plans and projects mentioned can be found on site of Municipality of Naples in the Urban Planning Section www.comune.napoli.it

[4] Not (engaged) in Education, Employment or Training people.

[5] The data presented concern the elaboration of Prometeia on 'Scenari per le economie locali e previsioni', October 2016 and 'Rapporto Urbes', 2015, datasets on the city of Naples, the Regional and the Metropolitan area diffused by Istat, Svimez and Istituto Tagliacarne.

more complex and convoluted, so their evolution tends to tie them directly to urban and social transformations. As exposed by Evans & Shaw (2004), although in an embryonic manner with respect to the definitions of which the current literature is full, the concept of *renewal* can be understood as the transformation process of a place, usually with a residential, industrial or public destination, in which phenomena of environmental decline, and therefore of physical character, but also more strictly of social and/or economic nature, are evident. As a consequence of that, the transformation processes acts on the local quality of life and at the same time involves economic, social, and environmental systems. This could be understood as a multidimensional definition which shows a close connection between the concept of renewal and the development dynamics aimed at reducing economic and social differences in certain territorial units. The principles outlined in this definition end to substantiate the transition to the vision of urban *regeneration* proposed by Roberts, Sykes & Granger (2016) which is interpreted as a process that develops when public investment over a given area can trigger significant economic benefits in terms of scale economies. As a result, it will be possible to structure shared concerted and properly oriented regeneration procedures, in collaboration with the private investments. That means referring to a multitude of actions and actors involved in a common process of territorial growth. Esposito, De Vita, Trillo & Oppido (2013), instead, remark the prevalence of the social dimension in the regeneration processes of the city space with regard to those processes of revitalization of inner areas of the consolidated city, historically destined to productive functions and exchanges and now in decline and isolation, emptied of their traditional identity and local social capital, even after conversion operations and the reallocation of duties. These processes are conceived as integrated with public-private partnership tools in a participatory approach that involves also citizens, inhabitants, the third sector and urban and social movements. In the same direction, Bull & Jones (2006), defining regeneration processes, refer to guided and self-powered actions that point to integrated physical requalification of spaces, and a socio-economic revitalization of the urban and social fabric, able to outline shared visions, strategies, and actions (Leary & McCarthy, 2013). In this sense, *recycle* combines closely with the legacy of the past, but researching in such legacy or "tradition" seeds of the future, in favour of new evolutionary processes" (Bocchi, 2016) as, in the recent studies carried out by Unit of Naples within the 3-year national research project P.R.I.N. 2013/2016 “Re-cycle Italy. New life cycles for architecture and infrastructure of city and landscape”, in which this research project has provided a theoretical framework, geo-mapping methods and meta-projects to re-define the case study sites (Litorale Domitio Flegreo, Napoli Est, Piana del fiume Sarno) in terms of “new life cycles”[6].

According to these definitions, the concepts used in this study could be positioned along a *continuum* between a form of *renewal, regeneration and recycle.* The renewal is founded on territorial development, aiming to fill the *urban voids* or, at least, to reconvert pieces of the city (with interventions that lead to a spatial transformation from a physical prospective). The regeneration, however, absorbs the sense of relationship and the request for the improvement of life quality—intrinsic to the urban system dimension—aiming to an integrated and integral development process (with interventions that aim at fundamental change in ways of living in the space and into the space that involve a spatial transformation from a social perspective). The recycle, as a multi-scale project, stress the need to hold together in time and space, and through forms of multi-level and multi-stakeholders’ governance, the local dimension of the tactics - fragmentary and diffuse - with the centrality of adaptive and resilient systemic strategies, for a wider development trajectory. This new

[6] A first summary of the output of this research is readable in the publication Pavia R., Secchi R., Gasparrini C. (eds) (2014), *Il territorio degli scarti e dei rifiuti* [The territory of waste and waste], Collana Re-Cycle Itlay, n. 8, Roma: Aracne Editrice, which collects the theoretical reflections, the interpretations and the first design explorations developed in the first two years of PRIN from University of Rome “La Sapienza”, University of Naples “Federico II”, University of Chieti-Pescara “G. D’Annunzio” and Polytechnic of Bari. The results of activities by research unit of Naples is readable in the publication Gasparrini C., Terracciano A. (eds) (2016), *DROSSCITY. Metabolismo urbano, resilienza e progetto di riciclo dei drosscape* [*DROSSCITY. Urban metabolism, resiliency and drosscape recycle project]*, Barcellona-Trento: ListLab

paradigm also urges the search for rules, addresses and updated forms of representation for the innovation of plans and projects, with reference to compatible uses, temporary or long-term, diagrammatic simulations, parameters to "measure" the effectiveness of project proposals, and the activation modes of direct and indirect resources (Gasparrini, 2016).

In these cases, despite an explicit reference to direct interventions in urban locations—whether intended in their physical, relational, or social sense—these concepts relate to the need to intervene on *urban voids*, understood as places in which the identity and functional connotation have gradually eroded, while these places are configured as public spaces (what Milun defined empty space – 2013). It is probably for this reason that the top-down urban renewal and regeneration actions are not free from particular resonances, often generating conflicts and oppositions, as they go beyond the effective range of a single policy and the individual interventions (Harvey, 2012). They bear a *strong symbolic value* that involves locations that are related to the sphere of the everyday life, and are thus incorporate ways of life and personal biographies.

This particular connotation of the space can be enhanced by a further distinction between different types of areas of renewal and regeneration processes, characterized by the emptying of functions, identity, property, and people, resulting in full-title *urban voids*:

- *Urban blight* in *brownfields land* is the result of an industrial past such as an old industrial site, or of specific functions with a great impact on the environmental quality of the urban system, such as a landfill. These locations need environmental 'de-contamination' and new functional destinations that can be 're-used' for generating new social and economic impacts.
- *Abandoned and derelict areas* are *social fields*[7] that are socially and physically deprived, areas where social functions (local administrative offices) and gatherings (schools and parks) were formerly located, or sites with historical, economic, and cultural significance; these locations have persisted despite neglect, physical deterioration, and an altered identity. The link between the place and people is severed, resulting in a changed character. Together, these factors generate disaffection and rejection and can erase the place's symbolic importance.

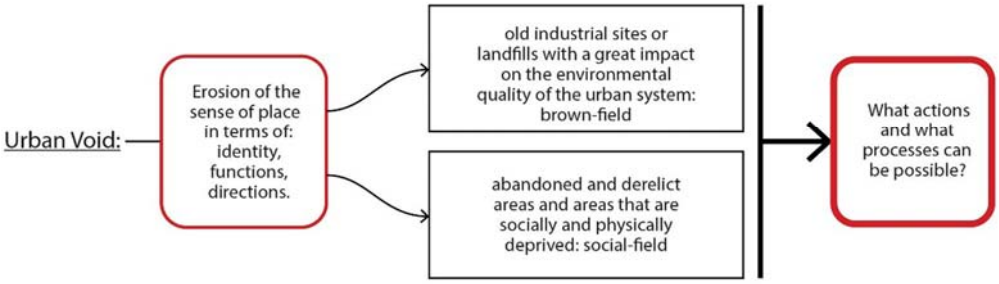

Fig. 1 Urban voids and different kinds of areas

Declining these definitions on the specific case of Naples [8], reconstructing the processes of *renewal*,*regeneration and recycle* means referring to both *top-down* and *bottom-up* interventions. The former, understood like *top-down* public or mixed public-private partnerships, refers to operations of *urban renewal*

7 While it is undeniable that the term social field refers to narrowly limited areas, they can be conceived as an aggregation of urban voids characterized by function with a mainly social character (former schools, hospitals, administration offices, etc.).

8 It is primarily for this reason that most of the references used follow come from Italian studies and authors who have worked on the urban and social question by holding the focus on the city of Naples.

that aim at changing territories by producing economic and productive impacts on *brownfield* land (for instance the port area, the ex-refinery, and the industrial-manufacturing areas in East Naples (Lucci & Russo, 2012; Galderisi & Ceudech, 2010; Amirante, 2009; Forte, Iannone &cMaisto, 2009), the former steel factories in West Naples, the Bagnoli (Iaccarino, 2007; Cavola & Vicari, 2000), Pisani, or Chiaiano's landfills in North-West Naples, and the physically deprived areas of the Old Town). However, these operations have frequently neglected the issues concerning their impact in terms of territorial and social development, leaving space for actions on the physical locations to others operations that are not guided by the local administration but are instead born out of the work of committees (of citizens and within the industrial sector) and neighbourhood organizations (from associations' movements to coalitions – Vitale 2007). These *bottom-up* processes not necessarily politicized or funded, which clearly shows the wide margin of action that the city generates itself. In this paper these actions are called *urban regeneration*. *Social regeneration,* however, involves actions that are *bottom-up,* mostly self-organized and self-managed, such as actions implemented by grassroots urban and social movements through direct interventions to address social problems[9] (La Trecchia, 2013).

It aims to change urban locations that are primarily identified as *social fields*. In this sense, in Naples it is possible to identified two mainly social fields: the Old Town, understood in a broad sense, is increasingly in trouble because of the degradation; the North Naples area—including the urban suburbs of Secondigliano, Scampia, and Miano—was affected by an undoubtable physical decay, but even more by a cultural degradation consisting of a lack of security and legality. However, because of the particular state of decay and degradation which constantly threatens, these two areas are also the subject of interventions designed and conducted by the local government and the private social sector in a more typical top-down style. The complexity of the local realities made it difficult to immediately perceive and understand the impacts related to territorial development that aimed to act primarily on the quality of life, not only in terms of economic and productive development but in a broad sense (Gentilini, 2007; De Vivo, 2007). Therefore, these types of actions assume the connotation of *social renewal*. The intervention strategies can be divided by priority (Transformative intervention on physical and spatial fabric and Transformative intervention on social fabric) and implementation styles (guided and top-down processes and self-managed bottom-up processes), as summarized in figure 2[10].

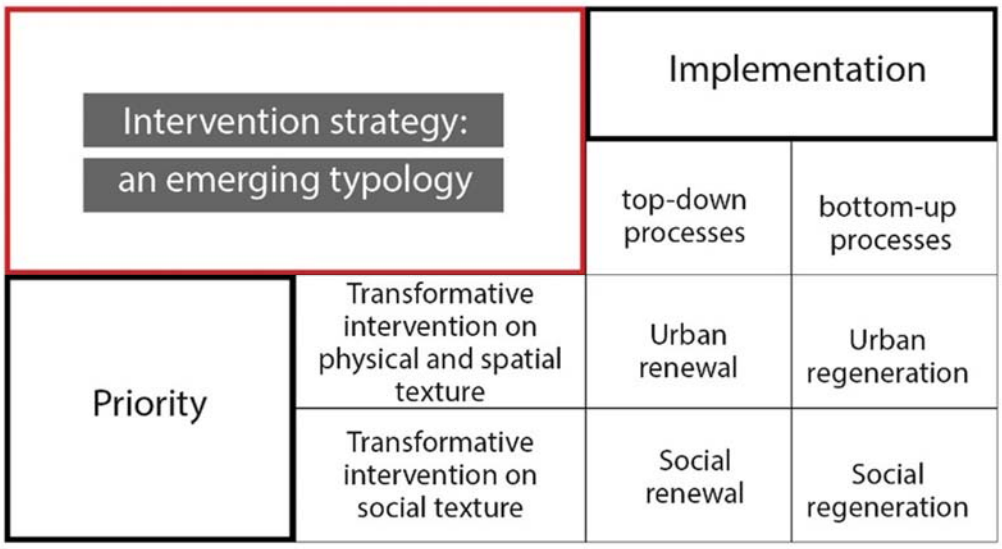

Fig. 2 Intervention Strategy: an emerging typology

[9] Like housing, social exclusion, integration, education, culture, but also legality, safety, and socio-spatial degradation
[10] For a more detailed explanation see Punziano, 2016.

This paper is devoted to the exploration of the way in which the multiplicity of existent dynamics (the expression of a different meaning and use of the open and public space) is able to indicate possible development trajectories for these territories. The drawing becomes both the instrument and method by which we try to represent the questions that are posed by the city in its current form. The objective is therefore to trace the implicit writing in the places that reassemble new configurations, giving new information to new images. The composition mode involves the decomposition and re-composition of places in order to re-compose other content and new meaning.

2 THE IMPLICIT WRITING OF A CITY

Our reflections try to read the relationship between the spatial forms and the generated phenomena in the renewal and regeneration processes occurring in the city of Naples. A duality between the morphology of the spaces and the urban processes produces an increasingly elusive metabolism that inevitably interacts with other issues; this brings our discourse to a more general urban question (Secchi, 2009 a, b; 2011): how it could be possible to design a coherent representation of a city by definition pervaded by changeable phenomena and dynamic and interactive processes that products new forms and materials in the city space?
The Western world's economic, social, and moral crisis of the last decade has produced a condition in which globalization is offset by the growth of new inequalities: development produces a huge amount of waste, growth damages the environment, and emerging metropolitan cities have a multiplicity of localism, sustained by new identities, lifestyles, and economies (Amendola, 2000).
The themes mentioned, and many more, can return to us many endless configurations of the city space. The contribution proposed here is basically methodological; it explores how *possible trajectories* for contemporary territories can be traced among the multitude of uses and roles that the space of the city (public or of public use) assumes for the effect of the actual dynamic. The complexity of contemporary territories also requires a change in the ways in which knowledge is acquired. The construction of a problematic background—in which it is possible to bring out not discounted or not immediately perceptible information—inevitably involves the intersection of different survey methods. The observation of the places, the interviews, and the acquisition of data through computer platforms and digital tools, all help to provide substantive responses to the research objectives. Changing the forms of knowledge acquirable from different tools returns different points of view that are, at the same time, synergistic and not interchangeable.
It is, therefore, important to exploit the different relationships between the methods, tools, data, and land forms in order to build a collection of updated, shared, and transferable knowledge. The design becomes a tool and a method of investigation and narration. In this way, it is possible to trace the seemingly indecipherable writing, which still exists and is *implicit* in the structure of the places (Boeri, 2010; Koolhaas & Foster, 2016). A sort of *latent design* is created by the spaces and the required use of the space as they are reconciled in new configurations; this suggests fertile areas for future projects. It is in this process of crossing all the spatial, social, and economic scales of the city that it is possible to experience the modes of production and transformation of its spaces that are involved in renewal and regeneration processes.
The first step was to build designs capable of expressing the character and configurations that the renewal and regeneration actions (being they urban or social, of top-down or bottom-up type) assume in the city of Naples. At first glance, the metropolitan area of Naples appears to be a shaded spots landscape, whose figure is constructed from the addition and combination of a reduced range of solitaire products (Terracciano, 2016). The extraordinary objectivity of an overhead perspective allows us to see, with great clarity, a hardly knowable territory; data mappings from different databases also allow us to view a remarkable quantity and diversity of information. However, this does not necessarily equate to a good understanding of the area. Forms of mimetic representation, including the mapping data, are not enough; a different *strategy of attention* is needed (Secchi,

1992). The intent of this process (fig. 3) is to bring out certain characteristics that guide the search for interpretative forms of representation. These forms are able to condense urban phenomena from a spatial and social point of view around dense and proposal images, just because some images of reality are conceptualized as they have the ability to influence the world.

Referring to the renewal and regeneration processes, in a sort of *elementarist abstraction* (Viganò, 1999), we tried to recognize, qualify, and name these processes. These have been superimposed on the consolidated physical space of the city, composed of both settlement points and locations that have been become *urban void*. The former can be connected to the shapes of *filaments*, *chessboards*, and *villages*; widespread creep leads to a sprawl that consumes places, including the *old town*, which is still recognizable as a dense and compact core, an outpost of a past that resists. The second consists of production and commerce fences, former systems of production, buildings or public spaces in a state of abandonment or degradation, and even greenhouses, quarries, and landfills; these locations are fully included in the city plan, and they map signs and footprints of new morphologies, producing etchings and alterations in the spatial structure and continuity of the places. The urban explosion, while consuming space and soil, builds generic and equivalent landscapes. These landscapes are homologous, because the explosion reduces the area to an elementary grammar of *enclaves* built next to others. This is a condition that reflects a society in which individualism forgets the collective space and fragments very different territories, making everyone equal (Boeri, 2010). The design reconciled the forms, grasping the shape of the city in its essential trajectory, and re-calling its condition through synthetic images.

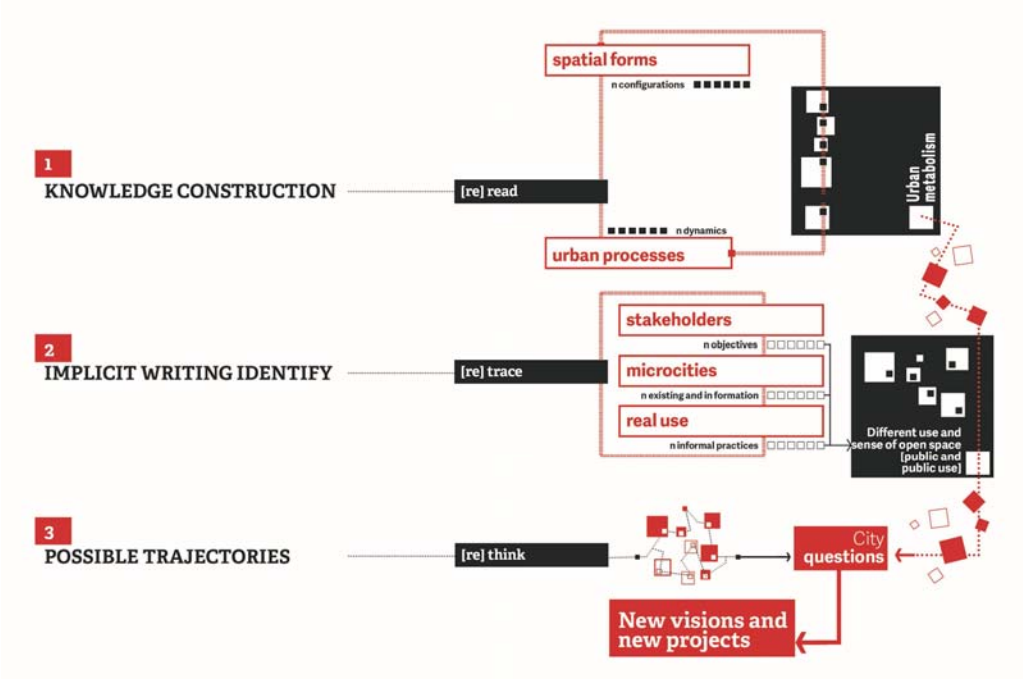

Fig. 3 Methodological research scheme

A theory of space that passes through different visions and is pervaded by processes that leave tangible manifestations is suggested in Naples (consider, for example, the occupations of space for various purposes or projects that invade the enormous brownfields located at the extremes of the city).

Contemporary urban dynamics have invested in the cities, both large and small, breaking the positional value system and the traditional relation of opposition between town and periphery, while generating a variety of

physical forms, substantiated from new economies and new use practices and lifestyles (fig. 4)[11]. A different community geography has embryos of new cities in which the habitability can have many possible variations. The phenomena must be observed from a variety of perspectives in order to recognize actual, daily, identifiable, and experienced cities or places (Gabellini, 2010). Today more than ever, in most Italian urban areas, people coexist together despite different ideas, stories, needs, and ways of life that result in different and conflicting practices of production, use, and appropriation of spaces and places (Amin, Thrift, 2002). This was recognized through the information retrieved in interviews and the direct mapping of the locations, which was done to reconstruct the collection of actors and uses of the space.

In addition to the physical space of the city, there is the virtual space. This space allows for the development of participatory practices and real processes with direct impacts on the city. Cities today are complex environments that stimulate the activities of the informal actors starting from the new possibilities offered by *social networks.* Modern cities also constitute a political space for excluded people by the logic of national political power and lobbying (Sassen, 2005). It means delimiting the spatial density of these relations in the city according to its narrations (Calafati, 2009). A multiplicity of social actors (including those that are more or less institutional and more or less collective) act on the places which, at the same time, are increasingly the subject of informal appropriation and reuse practices. The legality of some of these reuse practices is questionable. The complexity and variety of conditions require drawing another city, almost comparable to the physical one, but perhaps more real.

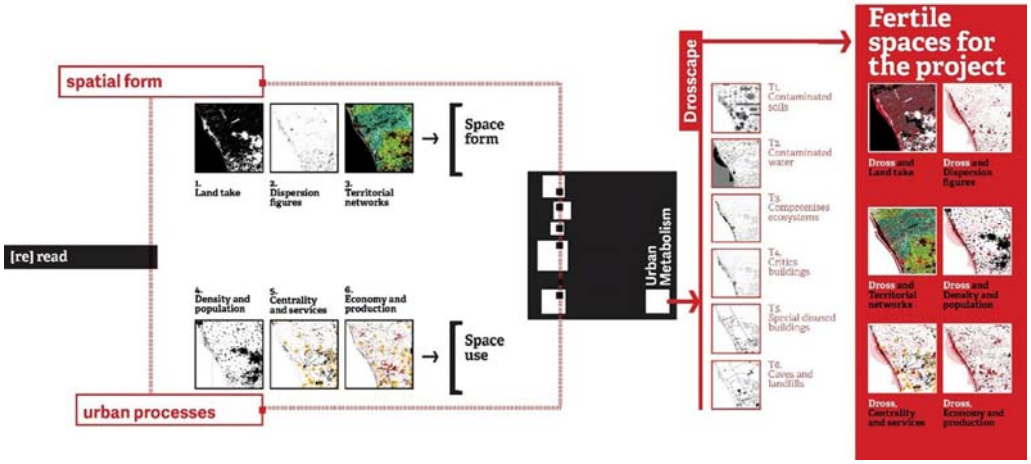

Fig. 4 Knowledge construction scheme

In a society where differences are increasing, research on the city space and its use cannot be limited to the appropriation or claims of the existing city. Very often the city space is the result of overlapping social statuses and stratifications, diverse backgrounds and identities that demarcate the material or symbolic border. Thus, new tracks, signs, and symbols from every perspective populate the city. Places in which *insurgent planning practices* (Sandercock & Lysiottis, 1998) and *resistance practices* to imposed models are used demonstrate the existence of unresolved urban policies and indicate that the city is still far from the profound social and spatial transformation that it needs. The goal is therefore to represent the contemporary condition of Naples, in all its complexity. In addition to building a method of looking at the city, this contribution gives a dimension and a representation to otherwise unexpressed questions regarding new policies and a new urban vision.

[11] Cfr *Atelier International du Grand Paris* at http://www.ateliergrandparis.fr/12clefs/

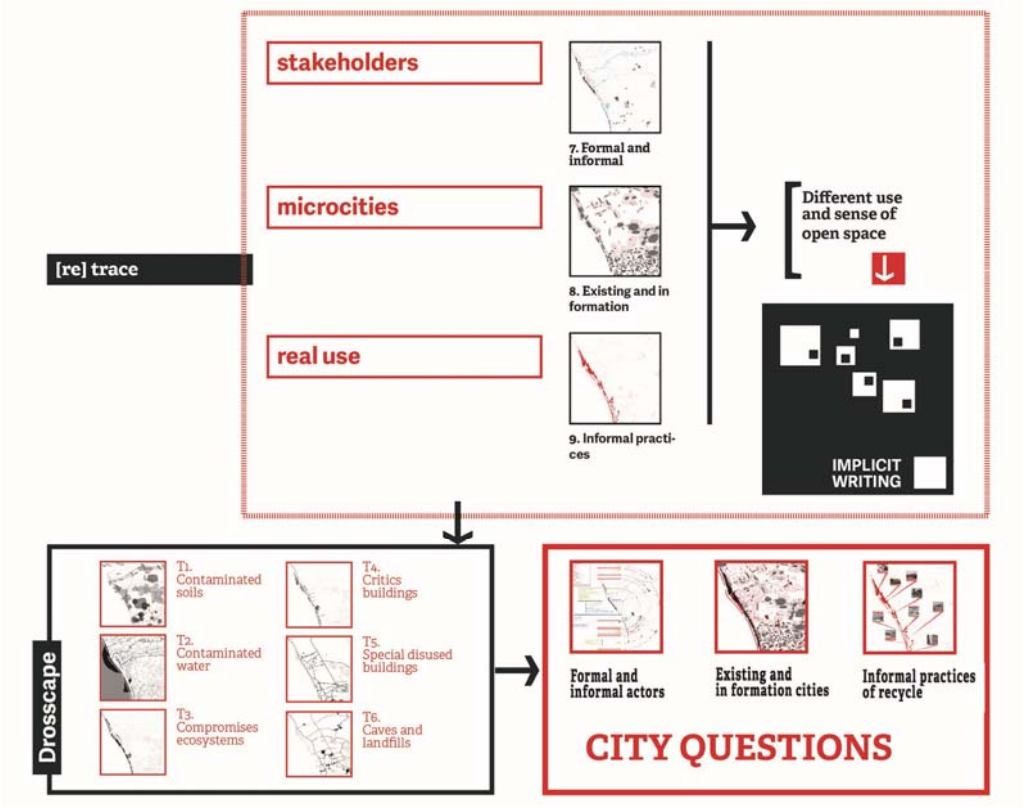

Fig. 5 Implicit writing construction structure

3 METHOD AND TOOLS

In order to trace the *implicit writing* of the city, a first operation was conducted on the city space. It was divided in five different sections. That have to be understood as homogeneous areas for the set of phenomena that pervade them, both for the types of spaces on which it insists deterioration and abandon then for the types of responses given to the existence of these urban and social voids[12]. In terms of types of design that insist on the city, taking up the PRG (Master Plan) of the city of Naples, and in particular the General Variant of the PRG (June, 2004) and the Western Variant, it is possible to highlight a sectorial division of the general city with its western part (hereinafter referred to as Western Naples), and a further breakdown by area of intervention in a section dedicated to parks (hereinafter referred to as the Landfills and the Urban Parks Areas), one dedicated to the Old Town, one dedicated to the eastern zone (hereinafter referred to as Eastern Naples), and one dedicated to the vast peripheral area (in this study identified with the area of Northern Naples)[13].
For each of the sections the information about renewal and regeneration experiences was collected through:

— *Participant and pro-active observations* in collective discussion events about the city[14];

[12] See the distinctions between brown and social fields and the intervention strategies described in paragraph 1.
[13] See paragraph "Napoli rifiuta i piani [Naples rejects plans]" inside essay of Piscopo C. (2012), *Aree dismesse e architetture* [Abandoned areas and architecture]. In M. Russo, R. Lucci (Eds.), *Napoli verso Oriente* [Naples to the East] (pp. 235-250). Napoli: Clean Edizioni, in which we can find a critical reconstruction of the relationship between the complexity of Naples city and planning processes during the 20th century.
[14] Among others: 'Critical Mass: get the hands on the city', a series of group discussion events on cities that have taken place during 2016, as well as the open assemblies of municipalities as 2 (Avvocata, Montecalvario, Mercato, Pendino, Porto, San Giuseppe), 9 (Pianiura, Soccavo), 10 (Bagnoli, Fuorigrotta).

- *Unstructured and in-depth interviews with key informers* involved in both urban and social renewal and regeneration processes. These sources were from the local administration (top-down processes), urban and social movements, citizens and inhabitants, associations, organizations, and third sector cooperatives (bottom-up processes)[15].

Due to the complexity of the involved issues and the fact that often we had to deal with experiences at the limits of legality (think for example of to the squatting public buildings and spaces as well as of existing planning projects never started in the practice), it was not possible record interviews or produce field notes during the observation. The only tool, which distinguishes the collection of information in both methodological moments, approved by the parties involved was the use of sectorial maps of the city (a total of five maps, one for each identified field). These maps were originally made for previous projects and have gradually been enriched with the information collected from the field until they were saturated with indications on renewal and regeneration processes and on the actors involved. Key informers were asked to draw their own vision, reasoning in a spatial and visual way, of what happens in the city; this was made possible through the use of the elaborated sectorial maps. It is for this reason that the article does not refer to canonical urban planning instruments for the institutional government of the territory to illustrate the interventions involved in the top-down and bottom-up processes of renewal and regeneration. In fact, following an "urban and social" address, the conducted research establishes a similar relationship between the various initiatives, in particular by highlighting the social component and the fact that the interventions recalled by the interviewers derive from the vision that they have in mind when they are called to draws on our maps the "latent text" of the city and the deriving implicit writing we are looking for. This result was reached by asking the interviewers to reasoning about a specific element of the consolidated city, the urban voids. In turn, these voids become the unifying elements of the interventions that are reversed in the mappings with the aim of giving conceptual and physical consistency to the plurality of data collected, also providing implicitly an aid to the non-simple reading of the urban phenomena in Naples. In achieving this goal, surely it is possible to confuse the boundaries among centre and peripheries perceiving them as somewhat homologated. This is not true, in fact, what result homologated are the representation elements as spaces free of particular connotations. Similarly, it is possible to say about the ownership of these spaces defined as urban voids, a feature which is of little importance in this phase of the research carried out, since what matters is that these spaces are visible in the perceptions of those who live and who administers the territory in order to become possible objects for top-down or bottom-up actions. Therefore, what will be presented below are not just results accompanied by interview excerpts or ethnographic notes, but rather a reasoning on how the information collected on a spatial and visual perspective can be integrated with the vision emerging through this information.

4 THE MAPS OF THE CITY BETWEEN RENEWAL AND REGENERATION EXPERIENCES

Using the four intervention strategies defined above (urban renewal, social renewal, urban regeneration, and social regeneration), the areas subject to these strategies (*brownfields* and *social fields*), and the methods discussed for uncovering implicit writings of the city, it is possible to classify the findings in the context of

[15] Specifically, they were interviewed for the top-down processes: some of the responsibles for urban planning at the City of Naples (three in total); prominent members of project as 'Bagnoli Futura', 'Urban Renewal of Naples East Sea Port Area', 'Old Town UNESCO World Heritage Site', 'Naplest' (one interviewer for each project, four in total); exponents of municipalities as 7 (Miano, Secondigliano, San Pietro a Patierno), 8 (Piscinola, Marianella, Chiaiano, Scampia) and 9 (Pianura, Soccavo) (for a total of three interviewers). For bottom-up experiences, however, it have been interviewed: representatives of the major groups of pressure and collective action that have led to squatting actions of public spaces and buildings (for a total of ten interviewers, two for each section of the city detected and belonging to different action groups or movements), representatives of neighbourhood committees of the landfill and urban parks area (three interviewers). All the interviews were conducted between January and May 2016 and in neutral places with respect to membership of the persons interviewed so as to guarantee anonymity, privacy and freedom of expression.

Naples. This not only highlights what happens in specific sections or contexts of the city, but also overlaps the different strategies. Two general maps of the city were produced. The first laid out the areas of interest where the renewal and regeneration initiatives promoted by the public administration were focused. These included abandoned and degraded areas, in a socio-spatial sense, and sites of historical, economic, and cultural interest. The following five areas were particularly important:

- *Western Naples* (fig. 9) is a typical example of *brownfield*, where the main redevelopment projects are located, such as the ex-Italsider of Bagnoli and the area that hosted the offices of NATO and Mostra D'Oltre Mare (a site of economic and cultural interest). Many projects promoted by the local government and interventions by the public sector (framed as *urban renewal strategies*) are focused in this area. These projects include reclamation, conversion, and re-functionalization of these pieces of the city.
- The *landfills and the natural and urban parks areas* (fig. 10), also these identified as *brownfields*, stretch from Pianura to Chiaiano, passing through the natural reserve of the Crater of Astroni and the Urban Park of Camaldoli. The local government has planned few renewal actions here, although this area is problematic due to environmental quality issues and to a strong urbanization linked especially to the never evaded phenomenon of unauthorised development. These areas require a strategy halfway between the *urban renewal and regeneration strategies*
- *Northern Naples* (fig. 12) is a *social field* that includes the areas most affected by neglect and physical and social degradation. Scampia, Secondigliano, and Miano are such areas. The local government has several projects in these areas related to legality, security, mobility, infrastructures, housing, and renewal actions on the physical and social sides. These are framed as *urban regeneration strategies*
- The *Old Town* (fig. 13) is a *social field* (which is understood in this context in an enlarged way as a site of historical, economic, and cultural interest). The local government is working on renewal projects that involve several lenders, such as the Old Town UNESCO World Heritage Site, historic building (Sirena) recovery projects, and the redevelopment of specific pieces of the city (the Cardarelli area, the Hospital of the Poor, Piazza Mercato, etc.). These are framed as *urban renewal strategies.*
- *Eastern Naples* (fig. 11) is another *brownfield*, on which the focus returns to being that of ex-industrial diminished areas, but unlike Western Naples, the intervention of the private sector and business associations is more marked. The interventions planned for this area include reclamation, conversion, and re-functionalization mainly through Implementaion Plans. There are also projects promoted by the local government, such as the Urban Renewal Naples East Sea Port Area. These are framed as *urban renewal strategies,* according with PUA "Ambito 13 – Ex refinery" (2009) that adopts these structural choices: (1.) the construction of dense road network and the integration with the subway network in order to overtake the area's isolation; (2.) The design of streets and open spaces as means for the progressive constructions of the park; (3.) The central role of water and energy in the urban regeneration process.

  ut, how will the city react to these top-down methods? To answer this question, a second map was drawn to include the spontaneous *bottom-up* regeneration interventions. Overlapping the previously highlighted five areas with the responses given by the social substrate, three macro classes emerge:
- (1) In the two areas classified as former industrial areas, or brownfields, the focus is on the actions developed by two coalitions that locally improves actions of squatting with socio-cultural purposes, sometimes in a position of open opposition to local government. In Western Naples, these are strongly linked to problematic territorial conversion; in Eastern Naples these are more linked to the general

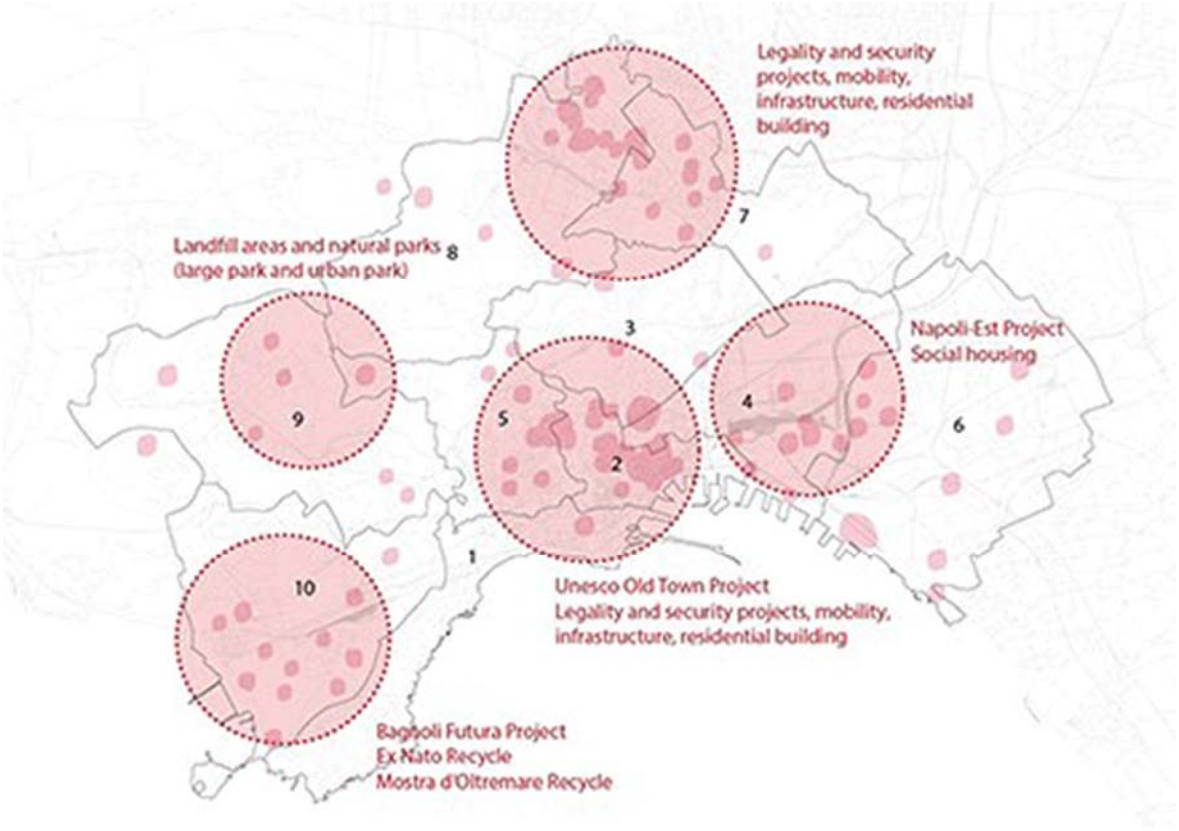

Fig. 6 Renewal and regeneration initiatives promoted (or co-participated) by the public administration. The little-red points on the map indicate the various mapped experiences giving an indication on its spread in the city space. The big-red circles indicate an homogeneous area. The numbers identify, instead, the ten Neapolitan Municipalities

- problem of neglect and physical and social degradation. Moreover, in this area are it can be identified the actions of entrepreneurial committees that are at the heart of the design in Eastern Naples, because they determine the development direction much more than public actors. In Western Naples, instead, these private committees operate in cooperation with the public administrative project and do not replace it. (This is framed as a strategy between social renewal and regeneration.)
- (2) In the area of Northern Naples and in the landfills and the natural and urban parks areas (the first identified as a social field and the second as brownfield), regeneration actions are promoted and carried out by citizens' committees, cultural associations, social promotion organizations, and other third sector actors. Projects often combine the volunteer work of committees with the more structured work of associations and are often funded with public funds. This action mode consolidates the relationship of these actors with the territory on which they operate. It involves wide and shared participation projects that are not only devoted to the improvement of the city, but also to determining the measures that are most appropriate for it. (This is framed as a strategy of social renewal.)
- (3) In the Old Town area (a social field) the actions of regeneration are very different from those in the rest of the city. Here the focus is on disused, neglected, and degraded spaces. Urban and social movements are therefore the main actors in the implementation of regeneration actions that on the release of these spaces based a good part of their struggle (framed as a social regeneration strategy). However, these movements conduct squatting with socio-residential, socio-cultural, and artistic purposes, claiming the right to the city and various other social rights which a large part of the city's inhabitants were gradually deprived (households, income, common goods, the quality of the spaces, etc.).

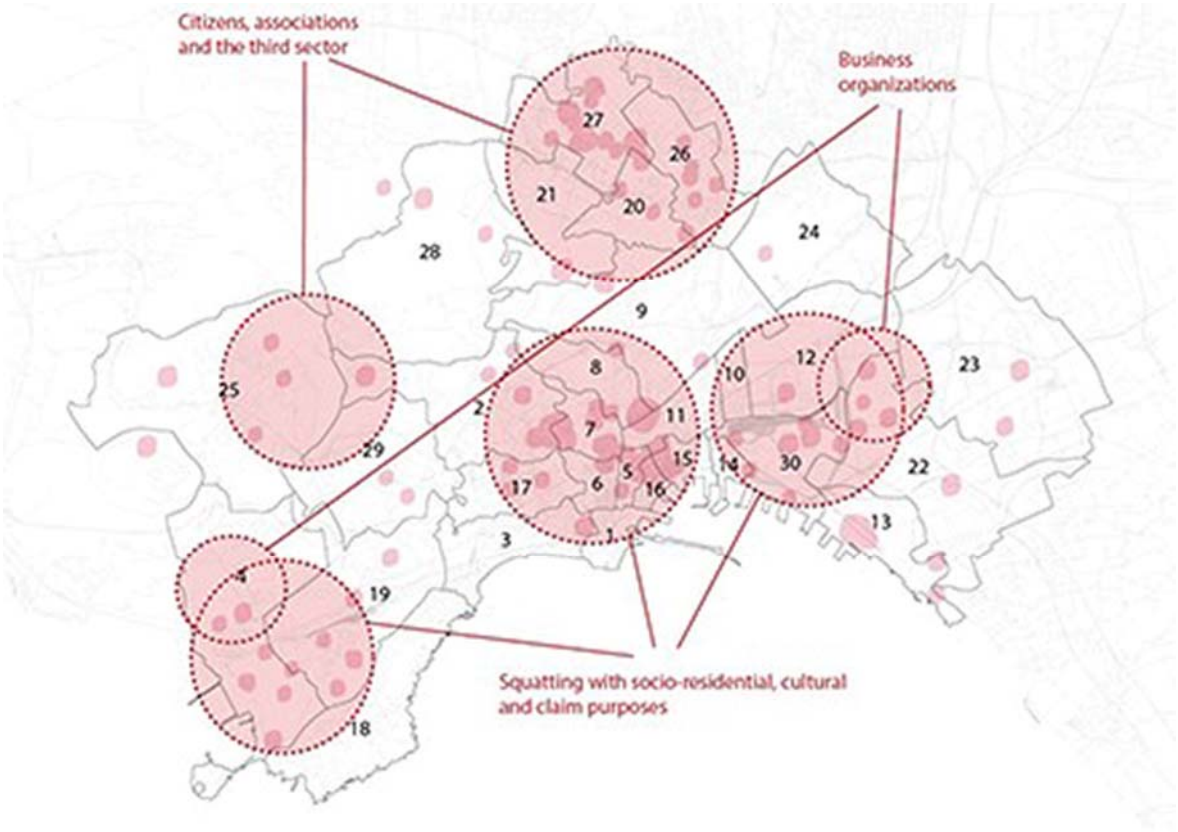

Fig. 7 Bottom-up and spontaneous regeneration processes. The little-red points on the map indicate the various mapped experiences giving an indication on its spread in the city space. The big-red circles indicate an homogeneous area. The numbers identify, instead, the 30 Neapolitan Neighbourhoods

When the representations of future directions for the city are all considered—including top-down and bottom-up processes, actors, areas of interest, and interventions—it is possible to see differences in the deployment of *renewal* and *regeneration* operations. While cities change, they simultaneously create in themselves new spaces and places that do not arise from large urban projects, but arise from the folds of everyday life. The purpose of this research is to investigate the existing conditions in order to identify possible development trajectories and thus orient the direction of progressive and inevitable change. Therefore, these representations are the *travel maps* and the *routes* that *introduce different geographies from the past* (Viganò, 2013), because they demonstrate the direction of larger changes that go beyond the immediately observable and perceptible spatial conditions.

In addition to the map of the city of Naples, five sectorial maps of the investigated areas (which also correspond to the maps used in data collection) were elaborated in order to trace the pictures of emerging city and its possible future trajectories.

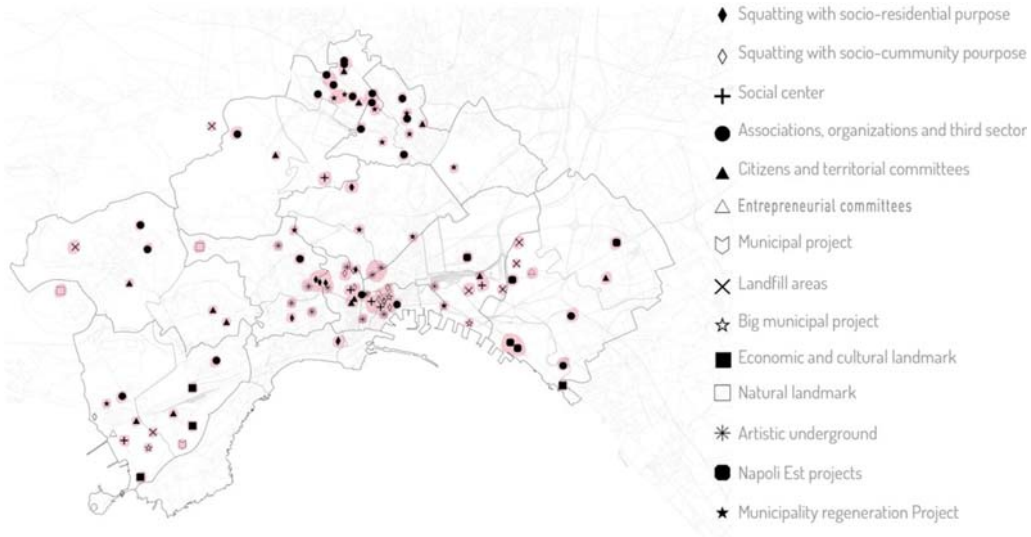

Fig. 8 Overlapping between renewal and regeneration intervention maps of the interested urban areas

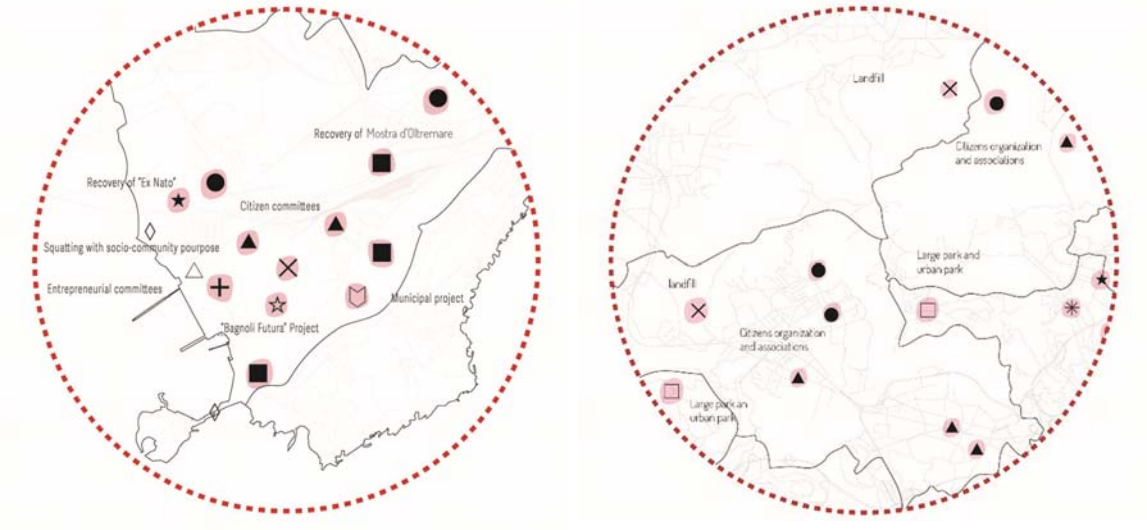

Fig. 9 - 10 Overlapping between renewal and regeneration intervention maps with zooms of the Western Naples area (on the left) and landfills, the natural and urban parks areas (on the right)

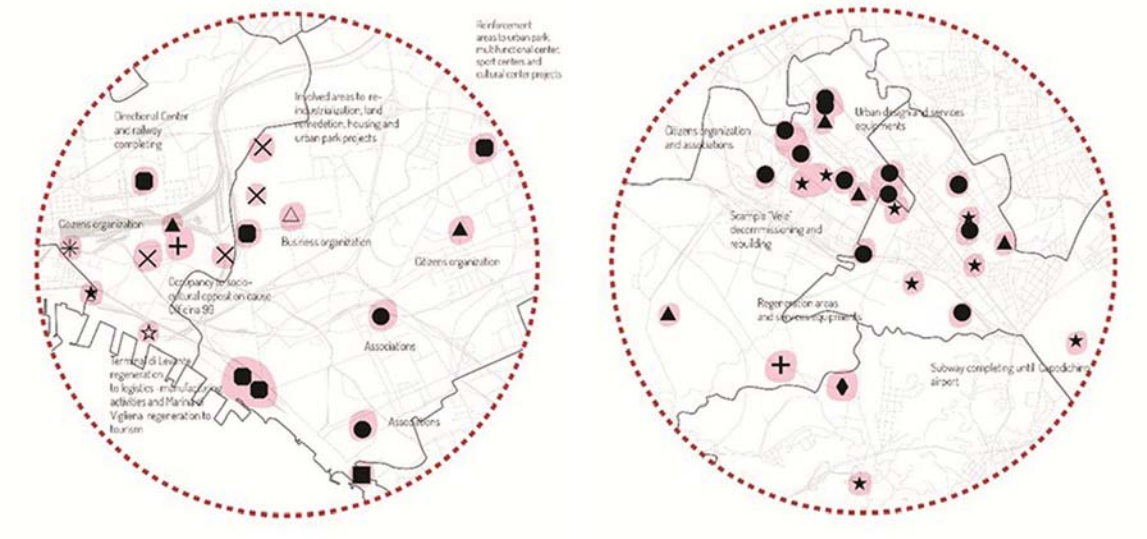

Fig. 11 – 12 Overlapping between renewal and regeneration intervention maps with zooms of the Eastern Naples area (on the left) and Northern Napleas areas (on the right)

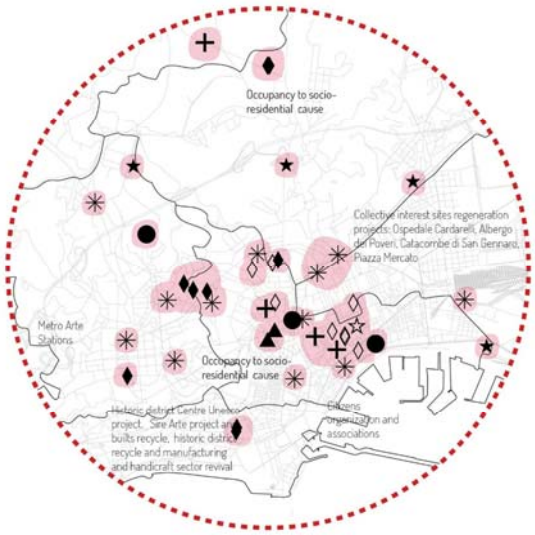

Fig. 13 Overlapping between renewal and regeneration intervention maps with zooms of the Old Town

5 DISCUSSION: WHAT PATHS OF DEVELOPMENT ARE THERE FOR THE FUTURE OF NAPLES?

This study suggests the need to develop a wider policy discourse on *Naples*. In the processes implemented by local actors, in the citizens' responses to these processes, and in the local governance structure of renewal and regeneration processes it is possible to trace elements that will be useful in understanding the trajectories and emerging strategies for each identified area. In fact, in the analysis of the interactions between renewal and regeneration processes, five trajectories emerge:

- Urban and Social Revitalization for Western Naples requires a concerted and shared growth that is led by the public actors but that also listens to inhabitants, citizens, coalitions, and urban and social movements. A new social narrative that can enhance the identity of the area must be constructed.

Such an identity must include not only productive vocations, linked to the former industrial sites, but also those related to a culture of the sea (which has been removed from the memory of the city), and those related to the exhibition and artistic culture. The emerging sophisticated strategy is that of a participatory and integrated local development, where the private sector can accompany and contribute to the public projects and address the demands expressed by the social substrate, since what this piece of city need is above all a strengthening and, only after, a raise strategy;

- Territorial regeneration and social re-activation for the landfills and the natural and urban parks areas need an identity and physical redefinition that can create a sense of affection among the people who live there and will motivate a community of sharing. The absence of public programming, the persistence of illegal activities, the lack of services, and the predominant activation of the third sector, suggest that the strategy for this part of the city should be linked to relational development and to a general reactivation of institutions and inhabitants to build a local critical vision;
- Awakening and social and institutional empowerment for Northern Naples can be used in designing the future image of this area to link forms of empowerment and moral duty. The public design, which is markedly territorial and lacks a proper focus on recipients, must also listen to the local volunteer sector that works to build forms of active citizenship. The long history of difficult situations, degradation, and entrapment in that part of the city has all resulted in a situation that needs significant social recovery. A strategy of development and social transformation may make it possible to remove the causes of disaffection due to the physicality of this area for who live there, working also on the recovery of places identity and openness to new possibilities for both places and people;
- Re-spatial-attention and urban empowerment should be used in Eastern Naples, where the development projects will most likely be controlled by private interests. The interventions are aimed at the transformation of the physical nature of the sites in order to increase competitiveness and attractiveness, making a vast and progressively depersonalized space the new growth engine of the city. This economic and territorial development strategy would be driven by the private sector and attended by the public sector. Here, regeneration and renewal have to contend with complex integration and social problems that remain closed in places and that still don't have adequate forms of expression in the city;
- Re-appropriation, claim, and social innovation are suggested for the Old Town. Here the focus is split between the construction of an attracting shop window, with an essentially physical recovery and re-appropriation by those who live there. The inseparability of urban and social renewal and regeneration processes is obvious in this part of the city. Cooperation between public and private, civil society and politics, is necessary here and it is shown in the some implemented interventions. The strategy that emerges is that of a multi-directional and multi-actor development in which each actor has their own share of responsibility, leading to growth and exchange paths that are also collective, synergistic, and inclusive, open to different interests and ideas.

These five trajectories reveal five ideas of the city which it could be associated five ideas of general recipients of renewal and regeneration actions. These are, respectively: a City of Inhabitants for Western Naples; a City of the Associations for Landfills and urban and natural parks areas; a City of the Citizens for Northern Naples; a City of the Entrepreneurs for Eastern Naples; and a City of the City for the Old Town.

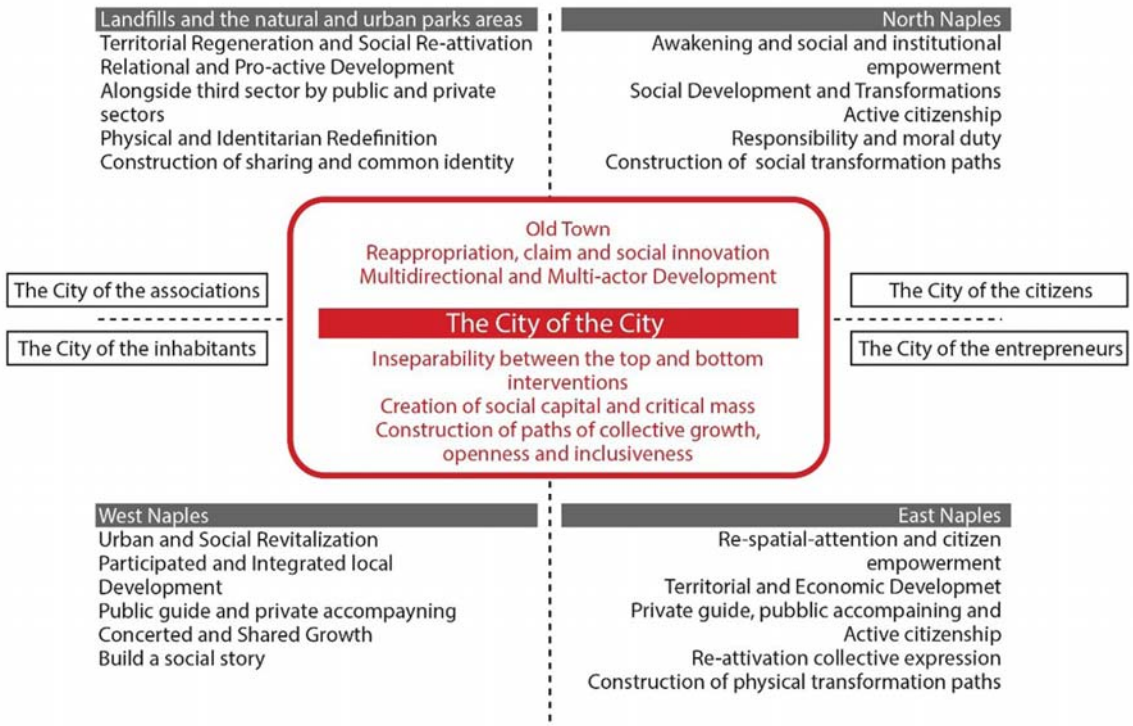

Fig. 14 Development models for the city

6 CONCLUSION

Naples was an emblematic case in order to highlight differences between the possible types of renewal, regeneration and recycle interventions on specific problematic areas (whether brown or social fields), as well as to test the explanatory power of territorial maps as tools used both for collecting and constructing the analysed data. However, a non-organic response growths from the analysis of the city space and confirms the impossibility of reasoning on a single trajectory of development. Naples has been—and remains—elusive and changeable, but perhaps it is precisely these characteristics that will shape its future. The people in the analysed territories have expressed their needs. It is clear that although these areas are currently urban voids, they cannot be considered empty. *Brown* and *social fields* require different interventions, but what matters is not how these interventions start, but rather the projected destination. Therefore, to return the voids to the urban system they must be filled with objects, bodies, meanings, identities, people, actions, and experiences of life. They must be used as public and physical spaces. Urban transformation must be intertwined with social transformation, each influencing the other to create experiences of daily life that slowly settle and grow in memory. A collective identity and ideas that substantiate the possible trajectories of development will eventually emerge. It is clear that a single unique image of the investigated urban system is impossible, as well as impossible to trace it in every metropolitan city. Furthermore, there is a substantial overlap and integration of brownfields and social fields. Think out interventions in only one direction are, therefore, inadmissible. Actors and actions of renewal and regeneration that are focused on the physical transformation of either the urban dimension or the social one must work together. A successful effort requires synergy and a system that shifts the attention from individual objects or areas to the more inclusive concept of development declined on the total urban system.

There remains fundamental open questions to which only a part of the answer can be found in this research with whom, instead, we have been tried to providing a guide to the knowledge of a complicated urban scenario

as the Neapolitan one. The questions are: how would it be possible to "twist and merge" the social to the urban aspects in renewal, regeneration and recycle processes that pervade the city? What is the potential role that the presented research results could have as a decisive tool for public administrators and local government? Outlining five city images with its various models of urban and social renewal and regeneration trajectories, as well as with its recipients, has undoubtedly heuristic value as well as a high explanatory feature to answer the questions just formulated. East and West Naples recall that season of urban renewal policies, typically business led, of neoliberal matrix from the early 1990s. North Naples and the area of landfills and parks recall the need to give relevance to the social aspects of local regeneration as it did in the early twentieth century by European policies, putting social cohesion as a key objective of urban politics. The Old Town, however, carries the densest meanings of the concept of "territorialization" as a local, participated and integrated development process (Battaglini, 2014). It cannot ignore a perfect combination between territorial capital and social capital as well as among emerging forms of degradation and their embankment through forms of conflict. Here is the multidimensional character of urban problems that intertwine economic, environmental, spatial and social aspects of decline and that require new policies to be addressed: "to respond to this complexity, regeneration calls into question an integrated approach of intervention, or propose it, as a fundamental objective of simultaneously intervening along the different dimensions of the problems that are at the origin of the deprivation situations on which they intend to operate" (Fioretti, 2015: 65). More often, the concept of renewal continues to be linked to a purely urban type of operation in which the physical component is predominant. The peripheries are generally the places of intervention and the social aspect is confined in building spaces for sociality, creating containers without attention to content, actors and processes within them; containers destined to a new process of transmigration to new urban voids. So, what really leads to social and urban interweaving? Most likely, the actors, those we have highlighted as recipients or agents in renewal and regeneration processes, with their progressive trend towards local governance, with the emergence of the third sector (such as in the landfill area or in North Naples) and of a conflicting component of civil society and its inhabitants' active participation (such as in the Old Town or in the East and West areas of the city), in line with the current social policy trend. Despite meeting a few limitations, these two trends have been the real engine of the intertwining between urban renewal and social regeneration processes in Naples. It is in the combination of the local dynamics between actors and actions that a new urban planning season can know new life. A season that does not disabuse but activates the public actor as the private one, the third sector as the citizens. A season in which the change of paradigm is evident and can be seen from the exploitation of undervalued public assets and the social redistribution of the surplus value generated by the transformation efforts aimed at creating new centralities in the consolidated city. Also in the national and international contexts, this change of paradigm is evident as result of the urgency of addressing the common problems across all contemporary cities (affected by contamination, urban decline, inequality, etc.). It appears clear in the exemplary references from local and global Good Practices and in the implementation of EU environmental policies[16] that confirm that there is an intention to re-think the relation between community and city, overcoming the sector-specific limitation toward a multi-disciplinary approach for the urban planning. Therefore, the reading provided through the trajectories of the five pieces of the city in this paper, in order to give a response to the questions asked, require bringing all five systems to convergence, because it is in each of them that a possible answer is elaborated, and in each of them a way to stem the limits is developed. This makes the same process of regeneration a way of intervening on urban situations with projects that aim at an economic and social result as well as a physical transformation of the city, promoting a dynamic balance

[16] Cfr. Regione Campania (2011), Relazione sui Grandi Progetti del POR Campania FESR 2007-2013 [Relations on Big Projects of POR Campania FESR 2007-2013], Napoli. More informations about POR Campania FESR 2014-2020 are availabe on web site: http://porfesr.regione.campania.it/it/por-in-sintesi/programma-operativo-b8q8/grandi-progetti-6pcg?page=1

between its components and the profound transformations that have taken place in it: the economic crisis, the changing of demographic conditions and a different demand for sociality, the need to curb soil consumption with an increasing focus on environmental sustainability of interventions. This makes the traditionally intended urban planning tools limited and to be overcome in order to define a hierarchical system of urban tissues, centralities and territorial features referred to it, measuring the new sustainability budgets in relation to the entire urban system that the actual city determined (Fioretti, 2015). This hierarchical system can be deduced through the provided territorial representations aimed at putting into communication top-down and bottom-up interventions by providing a different grammar of representation, or the implicit writing, that does not reside in the projects but in the process. The basic elements of this new grammar of representation, the urban voids, become the elementary units from which restart and, as configurable elements—taken individually and in their aggregate form—provide to the elaborated maps—understood as representation tools but also as tools for reasoning and planning—the ability to adapt to the dynamic and complex, but also contradictory, Neapolitan urban reality as well as the one of complex urban systems in general. Indeed, on the urban voids it is possible to directly intervene by enhancing them both from the point of view of urban standards as for their recovery, reuse and the realization of open spaces for new urban centralities, thus changing their character, identity and function also in the social sense. This is because implicit writing is by definition dynamic and non-static as well as the processes it intends to represent and it offers a way to think about how information collected on the field in a spatial and visual perspective can be integrated together with emerging development trajectories in different parts of the city. Therefore, reasoning about the contribution of this spatial representation tool to the decision-making functions of the public administration and the local government, it is impossible to deny the importance to move from the policy-design to the logic of 'doing' and 'done' (and therefore the renewal and regeneration processes) on defined elements (such as urban voids). This can give a different picture of the city, in some ways more complex and complete, on which local actors are required to planning and to implement territorial government actions.

More generally, this paper reflect about a perspective in social and urban research aim to be integrated in urban planning instrument and governance, providing with these innovative methodologies and experiences, a set of tools, models and procedures to support and act incremental, cohesive and place-based processes for renewal, regeneration and recycle cities and derelict sites through the possibility of new flexible agreements and cooperation between the large institutional and economic players and the new social and economic actors also associated to the innovative sectors as cohesive commitment to urban regeneration. This is, in fact, the most significant and interesting field of work for the inclusive urban regeneration of degraded spaces, even through alliances and new pacts that reveal and give strength to the informal or bottom-up potentials, connecting them with the economic, financial and social parties.

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IMAGE SOURCES

Images are edited by authors.

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Post-doctoral Research Fellow in Social Sciences and Urban Studies. She holds her Ph.D. in Sociology and Social Research at the University of Naples Federico II with a thesis on social research methodology in particular on the comparative study of welfare systems and territorial inequalities in Europe. Her research interest goes from methods for the analysis of social policies (like social and territorial cohesion, social inclusion, urban development); social change in welfare systems; processes of Europeanization and European Integration; impact of the economic and financial crisis on decision making; convergence and autonomy as responses of the local context in welfare building; resilience and civil society's organization in post-disaster context; risk and disaster through the media and social media discourse; cities in transition (Rome, Naples, L'Aquila); the development of Italian Inner Areas and the National Strategy Framework. Among her recent pubblications: I MixedMethods nella ricerca sociale, Carocci Editore, Roma, with Enrica Amaturo; The European Social Model Adrift, Routledge, London, with Serena Romano.

Anna Terracciano

Architect and PhD in Urban Design and Planning at the Department of Architecture (DiARC) - University of Naples Federico II (UNINA), where she is currently a Research Fellow in Urbanism. Her research focuses on the evolution of tools, methods and languages to visualize the complexity of the urban phenomena and contexts in the contemporary city. She has attended numerous national and international conferences, seminars and workshops about the transformation and regeneration of the city and has worked in several research teams of DiARC-UNINA. The results of her researches are presented in articles and papers such as "Design of Plans amid allusiveness, rules and programmes" in Urbanistica n.154 (2014), "Napoli recycling and re(land)scaping the drosscape" in "Re-cycle Italy Atlante" by Fabian L. and Munarin S., LetteraVentidue Eds. (2016), and books with Carlo Gasparrini such as "DROSSCITY. Urban Metabolism, resilience and drosscapes recycle project" ListLAB (2016), "Rome-Resilient Osmotic Metabolic Ecological 20-25", ListLAB (2017). During her career, she took part in the drafting of many plans, urban projects and contests.

ACKNOWLEDGEMENTS AND FUNDING

This work was supported by the Gran Sasso Science Institute (GSSI), L'Aquila, Italy, under the project 'Society, Economy and Space in Naples' conducted by a multidisciplinary research group of young Italian researchers who conducted systematic reflections on the city of Naples and its metropolitan area. The project was coordinated by Gabriella Punziano, the first author of this paper, actually Post-doctoral Research Fellow at the GSSI. She is a sociologist with particular interest on territorial issues, urban questions and methodological frontiers. Anna Terracciano was one of the young researchers that take parts into the whole project, an architect with a Ph.D. in Urbanism and second author of this paper.

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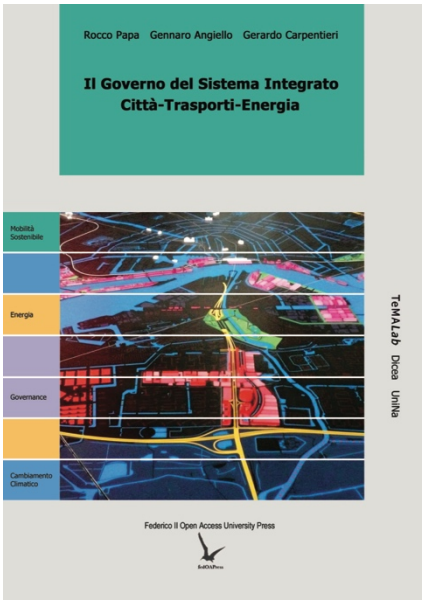


Rocco Papa, Gennaro Angiello e Gerardo Carpentieri

Il Governo del Sistema Integrato
Città – Trasporti – Energia

Smart City, Urban Planning for a Sustainable Future

ISBN-13 (15)
978-88-6887-013-3
doi: 10.6093/978-88-6887-013-3

http:
www.fedoabooks.unina.it/index.php/fedoapress/catalog/book/53

Abstract

Theories about the origins and developments of modern cities seem to agree, without exception, to a point: the city is the place of maximum concentration of exchange. Activities, in fact, are located into urban and metropolitan agglomerations to minimize the resources needed to meet the growing need for relationships and exchanges with other activities. In recent years, the concentration and specialization of these activities have led to an extraordinary increase in intensity and quality of exchange needs, with the obvious consequence of congestion in most metropolitan areas with predictable consequences on the sustainability of urban areas, on the quality of life of its inhabitants and on the energy consumption associated with the growing demand for mobility. As a result, in recent years, several authors have argued for greater integration between urban planning policies, mobility management and energy efficiency. In this context, this volume aims to provide a contribution in this direction and presents the results of a research project aimed at the development of an integrated city-mobility-energy governance model.

Abstract

Le teorie sulla nascita e lo sviluppo della città moderna sembrano concordare, senza eccezioni, su un punto: la città è il luogo di massima concentrazione dello scambio. Le attività, infatti, si insediano all'interno degli agglomerati urbani e metropolitani per minimizzare le risorse necessarie a soddisfare le crescenti necessità di relazione e di scambio con le altre attività localizzate sul territorio. Negli ultimi anni la concentrazione e la specializzazione di queste attività hanno comportato un aumento straordinario, per intensità e qualità, delle necessità di scambio, con la ovvia conseguenza di avviare alla congestione la maggior parte delle aree metropolitane con prevedibili conseguenze sulla sostenibilità delle aree urbane, sulla qualità della vita dei suoi abitanti e sui consumi energetici associati alla crescente domanda di mobilità. Come conseguenza, negli ultimi anni, diversi autori hanno sostenuto la necessità di una maggiore integrazione tra politiche di assetto urbano, gestione della mobilità ed efficientamento energetico. In tale contesto, il presente volume intende offrire un contributo in tale direzione e presenta i risultati di un progetto di ricerca, finalizzato alla messa a punto di un modello di governance integrato città-mobilità-energia.

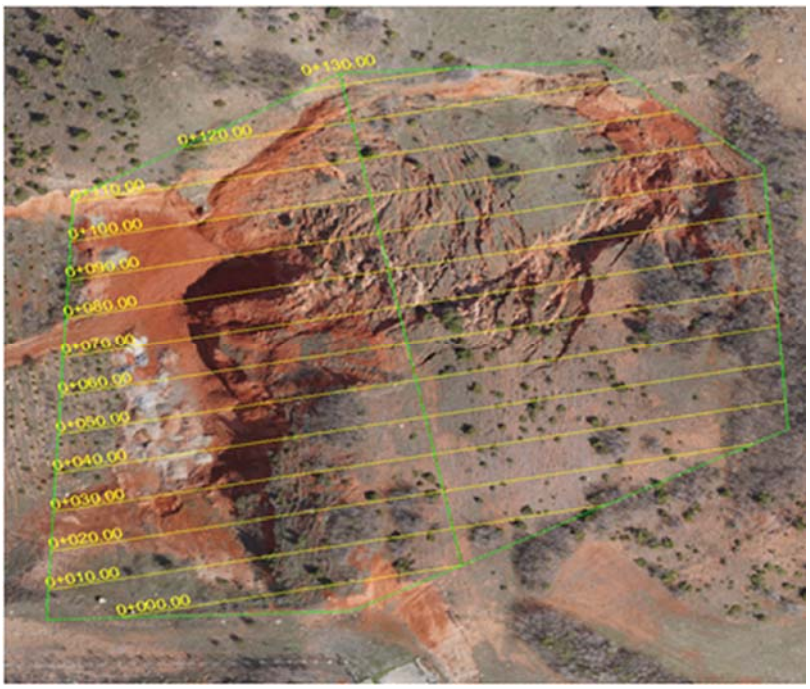
TeMA
Journal of
Land Use, Mobility and Environment

TeMA 3 (2017) 325-338
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5278

review paper received 12 September 2017, accepted 12 September 2017

www.tema.unina.it

How to cite item in APA format:
Yaprak, S. (2017).UAV based landslide monitoring. *Tema. Journal of Land Use, Mobility and Environment*, Issue Volume (Issue Number), 325-338. doi: http://dx.doi.org/10.6092/1970-9870/5278



UAV BASED LANDSLIDE MONITORING

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ABSTRACT

Unmanned Aerial Vehicle (UAV) is finding a wide application field in areas such as map production, land survey, landslide, erosion, agricultural activities, and forest fires monitoring. In this study, an UAV equipped with SONY 6000 camera was used. The flight plan was prepared from 100 m height, and having 80% overlap and 60% sidelap rates. GNSS geodetic receivers and Ground Control Points (GCPs) were observed. GNSS signals were processed with LGO V.8.4 software to receive precise location information. 291 photographs for 50 hectares of landslide area were taken by UAV. All photos were processed by PIX4D software. In the field of the landslide area, 8 GCPs were included in the evaluation.

3D model were produced with pixel matching algorithms. Six period flights in different months were made for the landslide area and ground movements between the periods were observed. During this time interval , the volume of moving soil was determined. At the end of the study, RMSE for soil movement was obtained ±1.79 cm for landslide area. This study demonstrates that UAV-based high resolution orthophoto, 3D terrain model and point cloud data sets can be used to monitor the landslide, especially in micro small areas. It also was revealed that this method has some advantages over other traditional geomatics methods.

KEYWORDS:
UAV Remote Sensing, Pix4D, image processing, orthomosaic and landslide monitoring.

TeMA

有关土地使用、交通和环境的杂志

TeMA 3 (2017) 325-338
print ISSN 1970-9889, e- ISSN 1970-9870
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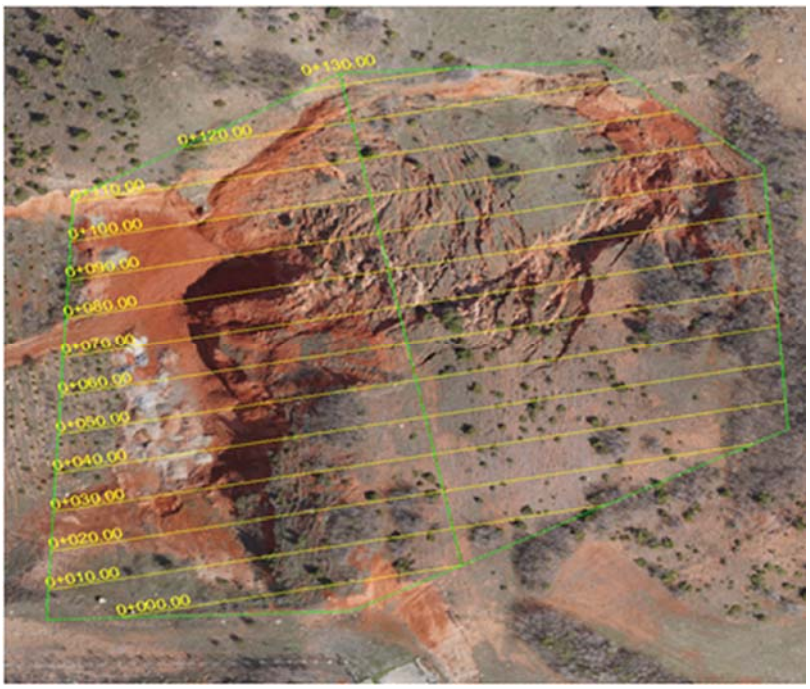

基于无人机的农业规划和滑坡监测

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摘要

无人机（UAV）正在地图制作、土地测量、滑坡、土壤侵蚀、农业活动、以及森林火灾监控等领域中有着广阔的应用范围。本研究使用了一台配备索尼 A6000 相机的无人机。准备的飞行计划起点是 100 米高，并有 80%的重叠以及 60%的侧向重叠率。GNSS 大地测量接收器和地面控制点（GCP）。GNSS 信号用 LGO V.8.4 软件进行处理，从而接收精确的位置信息。无人机为 344 公顷农业土地拍摄了 985 张照片，为 50 公顷滑坡区域拍摄了 291 张照片。所有照片都经由 PIX4D 软件进行处理。在农业领域，评估包含了用于滑坡区域的 25 个 GCP 和 8 个 GCP 。

利用像素匹配算法制作了 3D 模型。为滑坡区域进行了 5 个周期的飞行，并且在周期之间可以观察到地面运动。在这个过程中，确定了活动土壤的量。在另一个研究区域中，根据土地模型和横截面确定了是否有灌溉农业，并为农业区域准备了最优利用规划。在坡度和过敏性方面不合适的区域则被规划用于其他目的。在评估结束时，滑坡区域获得了±1.8 米的 RMS 评估，农业区域是±5.4 米。本研究展示出，基于无人机的高清晰度数字照片、3D 地形模型和点可以用于监控滑坡，尤其是在较小的区域中。它还揭示出，与其他测绘方法相比，这种方法拥有一定优势。

关键词：
无人机、遥感、农业土地规划、图像处理、滑坡监控。

1 INTRODUCTION

Landslides are one of the most widespread natural disasters in the world, which not only threaten human life but also cause economic losses (Davies, 2015; Regmi et al., 2015). Landslides usually appear in the spring after long rains or after snowfall. Landslides cause major changes in the landscape; causing great damage to settlements and infrastructure, and can cause huge economic losses. It is impossible to estimate the timing and speed of the soil flow caused by the ground clearance. Tracking changes on the surface and in the topography is very important. For this reason, it is of great importance to monitor landslide risky areas, to develop monitoring systems and to study landslide behavior. Landslide monitoring and analysis involves both spatial and temporal measurements and requires continual assessment of landslide conditions, including changes in surface topography, as well as the extent and speed of resettlement.

Landslide and ground motion movements are monitored by ground based and geomatics measurement techniques. Ground based landslide monitoring approaches are usually performed using geotechnical or geophysical techniques such as piezometers, pore pressure sensors, inclinometers and electrical resistance tomography (Chidburee et al., 2016). Ground-based techniques consist of the placement of sensors in the landslide area and the entire technical spectrum, which requires the use of locations to be measured at different times. These techniques have proven to be sensitive (0.2 - 2 cm) to track ground movements, but these techniques have some disadvantages such as installation and maintenance costs (Tofani et al. 2013; Rossi, 2016). Geomatics techniques can be examined in two groups as aerospace and ground based approaches. The most important advantage of airborne approaches is that it requires less labor and time. Remote Sensing has been an important method for landslide investigations. Remote Sensing, Interferometric Synthetic Aperture Radar (InSAR) and Light Detection and Ranging (LIDAR) techniques have been applied to investigate and monitor the flowing behavior of landslide and mapping (Riedel & Walther 2008; Mazzanti et al., 2014; Jaboyedoff et al., 2010; Jones, 2006; Lindner et al., 2016). Differential InSAR (Interferometric Synthetic Aperture Radar) has been used for detailed displacement analysis on active landslide surfaces (Belardinelli et al., 2003), although it may block the signal from the vegetation cover. With relatively high cost, air laser scanning (ALS) and terrestrial laser scanning (TLS) techniques enable the production of high quality digital elevation models (Ackermann, 1999; Pirotti et al., 2013).

Panchromatic QuickBird satellite images can provide data with a floor resolution of 0.61 m (Niebergall et al., 2007). Air and terrestrial geodetic LIDAR scans (Light Detection and Interference) are techniques that give high density fine and high resolution 3D surface coordinates. The quality of the point clouds is affected by the roughness of the surface, its reflection, the measuring angle and the observation interval (Cheok et al., 2002; Lichti et al., 2005). Digital terrain models (DTM) can be derived from point clouds with sub-meter accuracy (Carter et al., 2007; Van Den Eeckhaut et al., 2007). Airborne images can provide significant surface textural data, but photogrammetric DTMs are generally not as accurate as airborne LIDAR-based DTMs (Baltsavias, 1999). Conventional air and satellite based remote sensing techniques are suitable for landslide detection in a few square kilometers (Henry et al., 2002). However, these techniques cannot provide data for the landslides and displacements that occur in smaller areas and the high resolution digital image below the decimeter and the desired period (Neithammer et al., 2012).

Nowadays, UAVs equipped with suitable compact cameras offer fast and cost-effective solutions for many photogrammetric applications compared to conventional aerial photometric studies Peppa et al., 2016). UAV System and Peripheral Units: UAV systems have been used extensively in agriculture, environment, mining, and disaster monitoring, archeology and land follow-up activities with various purposes. UAV applications generate significant alternative solutions in these areas (Nex & Remondino, 2015). There are only a few studies in the literature regarding with the use of UAVs for monitoring of landslides. Rau et al. (2011) in Taiwan; Niethammer et al. (2012) and Stumpf et al. (2013) in France and Lindner et al. (2013) used a quadrotor

system and a The biggest advantage of UAV remote sensing is the ability to collect risk-free information in real-time, flexible, high-resolution, low-cost, and hazardous environments. (Chang Chun et al., 2011; Rossi et al., 2016). Terrestrial approaches to landscape monitoring work are risky approaches because they require direct contact with risky areas and require longer time for measurement and evaluation.

Unmanned Aerial Vehicle (UAV) is a very useful system that has begun to be used for solving a wide range of problems (Tahar et al., 2011). In parallel with the developing technology, UAVs have begun to be used in recent years by integrating with Global Positioning System (GPS), Inertial Measurement Units (IMU) and high-resolution cameras.

Remote Sensing (RS) is also being used in commercial and scientific research such as digital map production, landslide and disaster monitoring, as well as agricultural land monitoring and planning. Although high resolution positional data can be obtained in 20-50 cm/pixel band with satellite and manned air vehicles, it is possible to obtain 1 cm/pixel high resolution data thanks to fly at lower altitudes with UAV systems (Hunt et al., 2010). Various monitoring techniques such as GPS, PS-INSAR, total station and leveling instruments are used to monitor the movements in the landslide area and to carry out planning in agricultural areas (Turk et al., 2015). However, these techniques may not be in the desired availability/suitability in terms of time and cost. Although the above-mentioned methods have the capacity to provide sufficient positional accuracy, they cannot always be preferred because of the disadvantages such as the necessity to obtain data for a longer time and the risk of measuring in the landslide area. As a result of the downsizing of sensors and the developments in sensor technology, the cameras integrated into UAVs, and the structural developments of IMU systems have enabled the creation of precise 3D terrain model, point cloud and orthomosaic production. For this reason, it has become an alternative to aerial photogrammetry (Remondino et al., 2011). In this case, the UAVs allow achieving the results with sufficient sensitivity, pursuant to appropriate camera selection and short-term field measurement. Especially in recent years, close range photogrammetry and image based measurement systems have been widely used in such researches (Tschari et al., 2015).

This study consists of two parts; the availability of UAV photogrammetry in agricultural planning and landslide monitoring has been researched.

a) UAV flights were carried out at Gaziosmanpaşa University (GOU) Agricultural Application Area (approximately 344 hectares) to test the utility of UAV systems in agricultural planning. The obtained digital surface model (DSM) and orthophoto are used to produce orthomosaic map and cross sections. The optimal use plan of the area is prepared by using slope, view, irrigability and soil properties of the land.

b) The study area of the landslide area (about 50 hectares) in the Organized Industrial Zone was selected to examine the monitoring of the landslide motion with UAV systems. The study area was observed with UAV at five different times to determine the speed, direction and characteristic of the landslide motion. In addition, the amount of displaced soil was calculated for a period of five months.

2 MATERIALS AND METHODS

GEO_2 UAV was used for this study. In addition, GNSS/IMU integrated into UAV, Sony a6000 camera, and the peripheral units consisting of moving platforms were used as well. Four geodetic GNSS receivers were used to observe eight Ground Control Points (GCP). GCPs were evaluated by using Leica LGO V.8.3 software with static GNSS observations. As a result of the process, the coordinates of the GCPs in ITRF96 Datum were determined. The GEO_2 UAV and peripheral units used in this study was given in Figure 1. Peripheral units consist of multi-copter carrier bag, conveyor platform, control unit (IMU, GPS, mainboard) and camera systemsin Table 1.

Fig. 1 GEO_2 UAV and environmental equipment

In both studies, in order to take pictures in RAW format, the Sony A6000 16mm - 6000 x 4000 camera was used for collecting visible imaginary.

Env. Specification	Environmental Detail
Weight with environment	4.30 kg
Edge to edge Wing Span	0.74 m
Effective Payload	4.00 kg
Height from bottom to up	0.34 m
Max. Range	4000 m
UAV Endurance	0.5 hour
Duty Speed	14 m/sec
Maximum flying Speed	70 km - 30 mm /sec
Frequency(Radio Control)	433 MHz
First Person Video (FPV)	2.4 GHz
Frequency(Telemetry Radio)	868 MHz
GPS	5 Hz – 72 channels
Kind of Battery	6S li-po 25C 1600 Mah
Monitor	40 Channels 5.8 GHz DVR 7 inch LED system
Kind of gimbal	Gimbal for mapping
UAV motors	35 x 15 Brushless Motor
Kind of frame	22 mm 3K Carbon
Elect. Speed Control(ESC)	60 Ampere 400 Hz
Size/kind of Prop	15 x 55 inch Carbon
Camera	Sony A6000
Camera dimension	4.72x2.63x1.778 in
Camera weight	12.13 oz
Magapixels	12 MP
Type of camera sensor	23.5x15.6 mm(APS-C)
Size of camera sensor	24.3 MP
Camera ISO sensitivity	100-25600
Zoom(Digital)	L:4x, R:5.7, S:8
Speed of shutter	0.00025 to 30 sec
Speed of flash sync.	0.00625 sec.

Tab.1 GEO_UAV and peripheral unit features

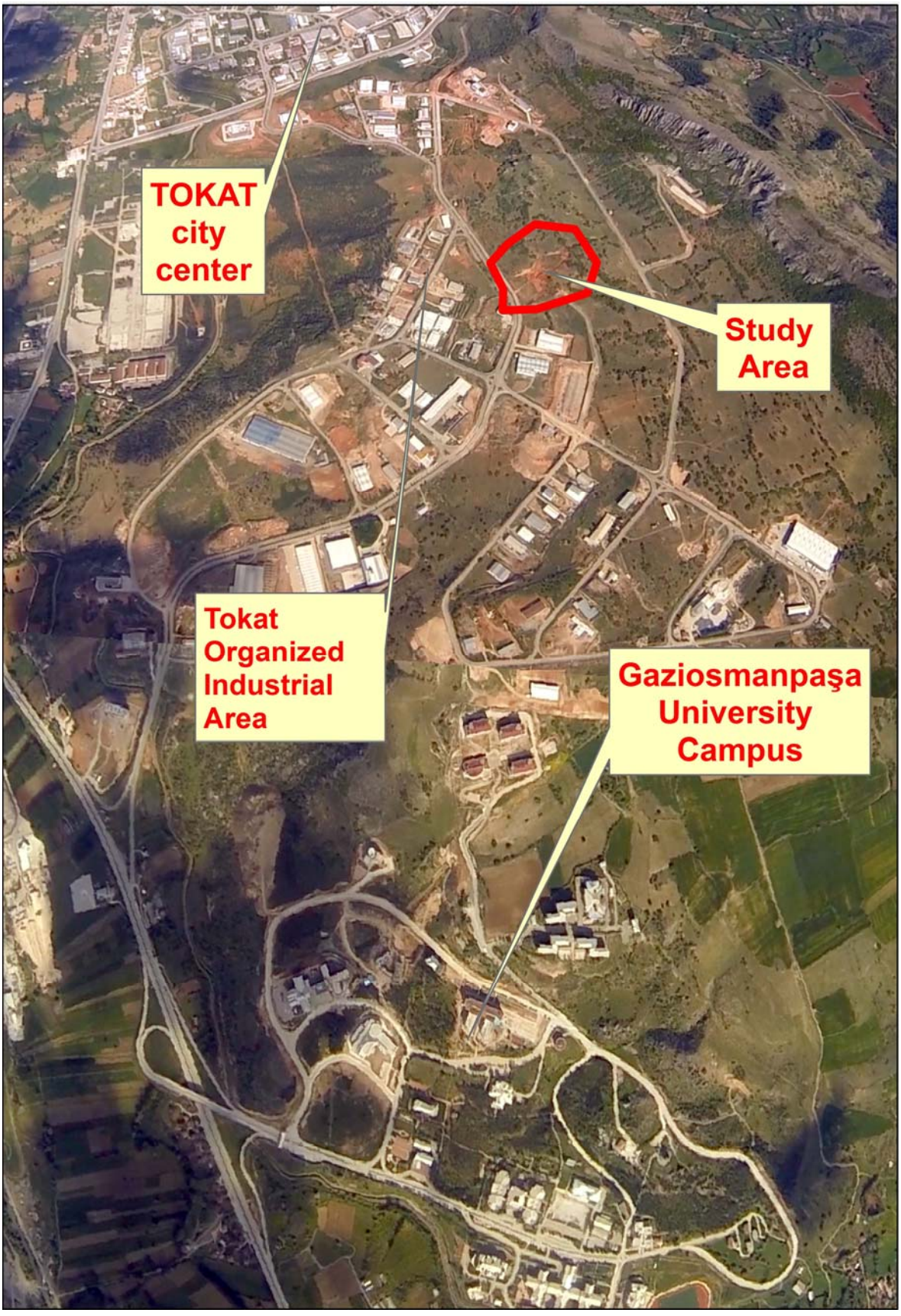

Fig.2 Study Area is in the Tokat Organized Industrial Zone

The study area is on the southwest side of the Gaziosmanpaşa University (GOU) campus and having an approximate coordinates of 40°19'21.03"K, 36°30'6.25"D (Figure 2). This area is located in the factories area of Tokat Organized Industrial Zone. The continuation of the landscape movement will create a great risk for the factories in the region. Raw images were taken, having 80% overlap and 60% sidelap rates from 100 meters height relative to ground. A total of 6 flights were carried out for the same area at different times. Flight planning was carried out in accordance with the weather conditions and the conditions in which the light was most appropriate. In order to orient pictures, eight GCP points were staked out in the field. GCP points were observed with precise GNSS instruments with two hours of static observation mod and processed by using Leica LGO V.8.3 software. RMS value calculated as ± 2.4 mm.

The absolute accuracy obtained depends on the difference between the position of the features on the model and the accuracy and distribution of the number of measured GCPs. By using pictures taken at each flights and GCPs, dense point clouds, digital surface models and orthomosaic were produced by using Pix4d photogrametry software.

The characteristics of the landslide movement (direction, speed and volume changes) were determined by taking advantages of these outputs. The displacement volumes (fill and excavation volumes) between 1st and 6th periods were also calculated by cross section method.

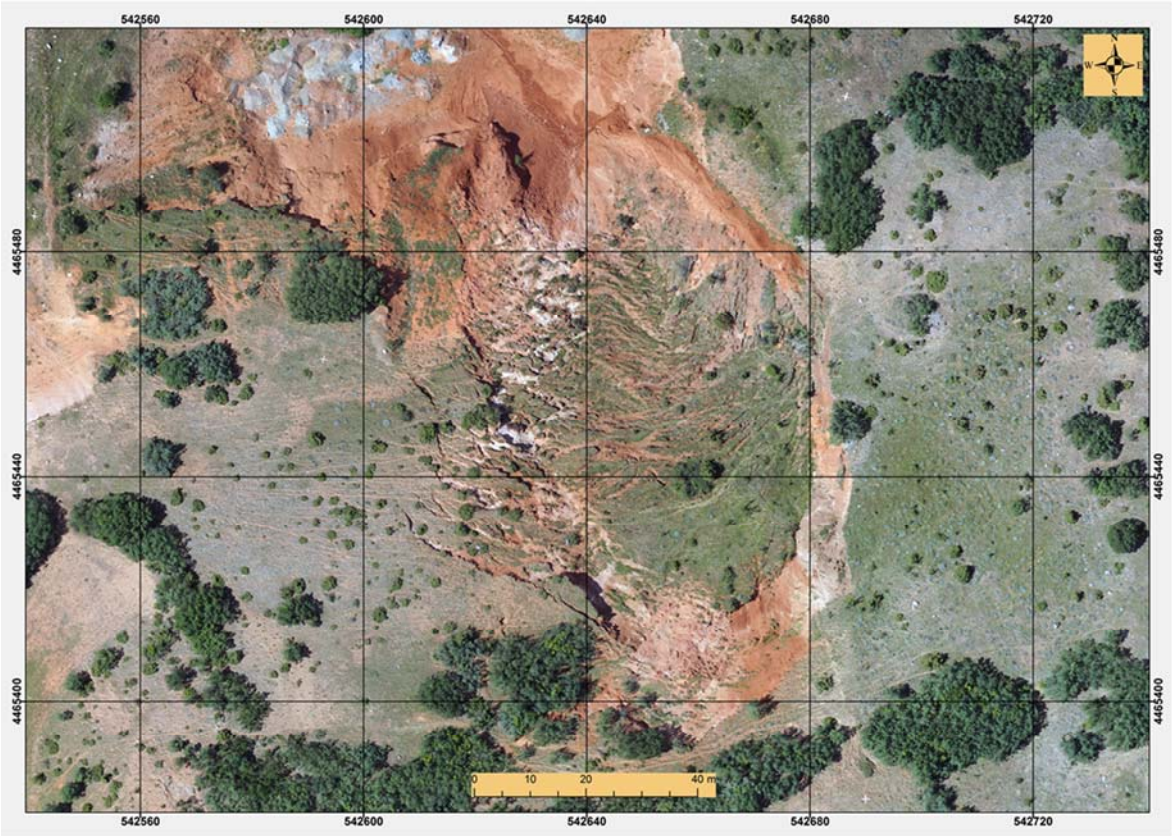

Fig.3 Landslide area orthomosaic map

3 RESULTS

The main purpose of this research is to analyze the usability of UAV monitoring landslide movements. Ground Sampling Distance (GSD) for the study area were calculated as ± 3.56 cm, GSD is the distance between two following pixel centers measured on the ground. The bigger the value of the image GSD, the lower the

spatial resolution of the image and the less visible details. The spatial data results of the generated orthomosaic were determined on TUREF / TM36 in ITRF datum. The amount of earth movement in the study area (excavation/fill) was calculated by using the section method shown in Fig. 4 and calculated from the numerical data obtained from the dense point cloud, DSM and orthomosaic produced at the beginning and end of the period. Between sixth and first observation, 2.976 m^3 excavation volume and 978 m^3 fill volume difference were calculated.

In addition, pixel comparisons have been made in the DSMs for the determination of surface movements. For this, the following function was defined and the pixel ratios between the periods were examined.

$$\Delta = f(H_6)/f(H_1) \quad (1)$$

In the function;

Δ: criterion of benchmarch,

$f(H_6)$, Orthometric height function in period 6,

$f(H_1)$, Orthometric height function in period 1.

H_i: Orthometric height of object points at period I,

If Δ >1, then there is an increase in height

If Δ <1, then there is a decrease in height

If Δ =1, then no change observed.

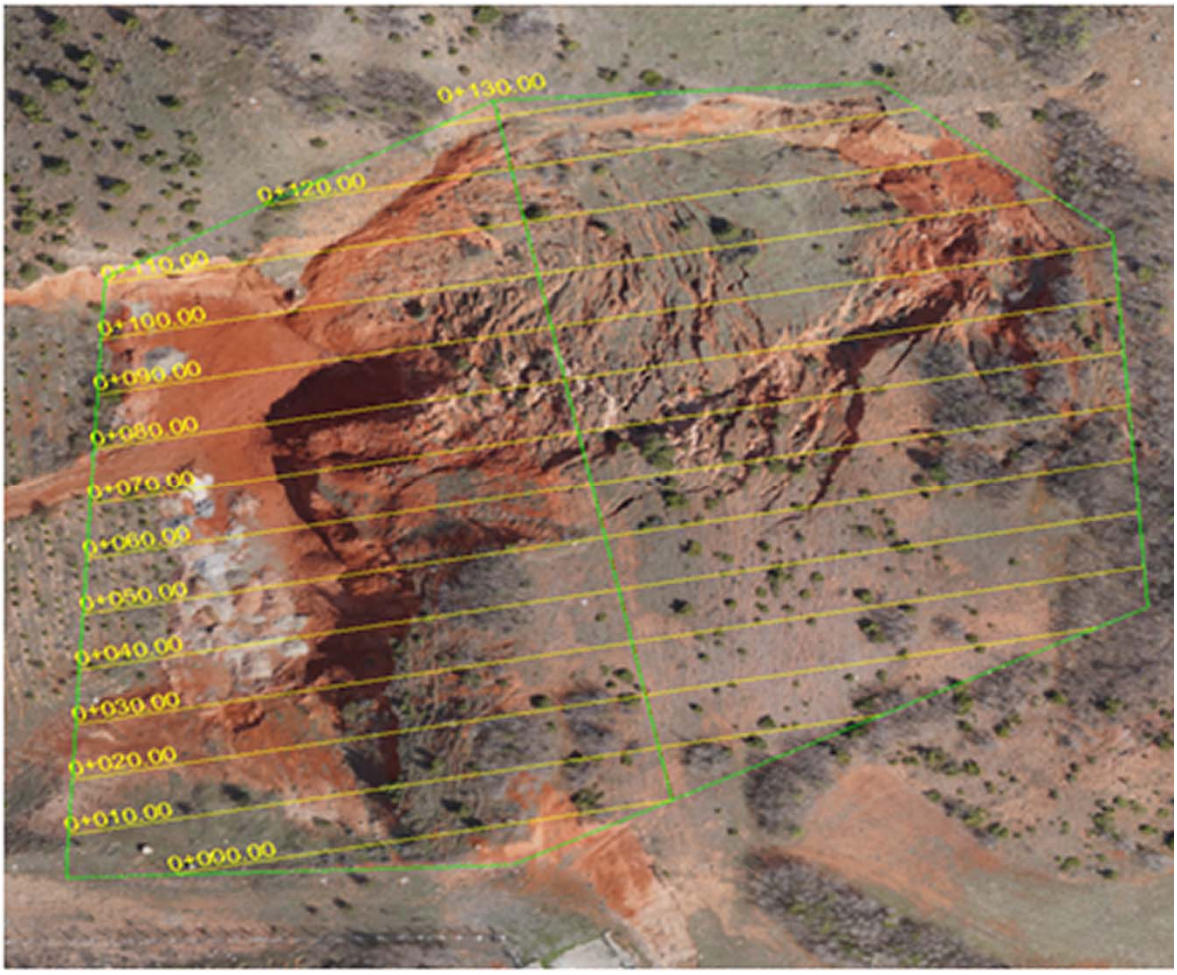

Fig.4 Base lines that were used for all six periods

According to the relation given above, pixel comparisons between periods were presented in Figure 5. The dots with increasing height are shown in brown color and the points with decreasing height are shown with dark-yellow color.

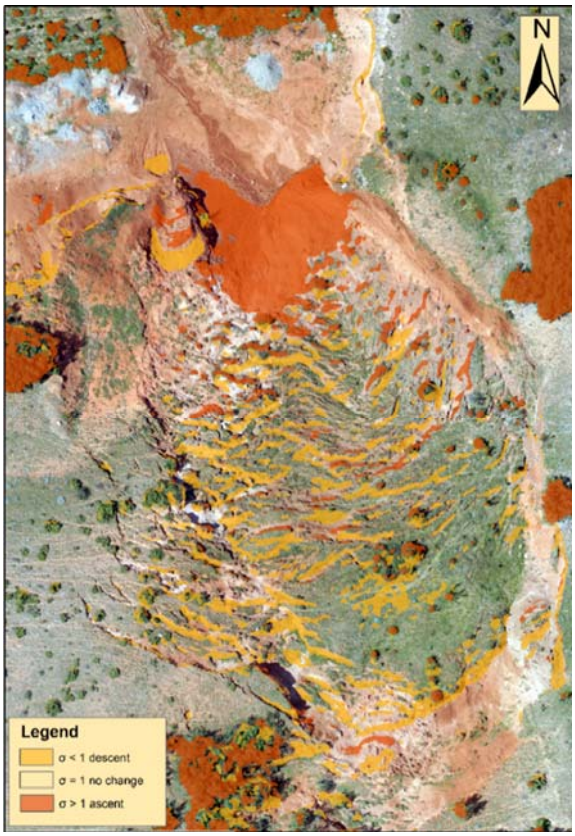

Fig.5 Pixel matching map of landslide area

4 DISCUSSION

Recent developments in UAV technology offer significant new advances that allow high resolution (1 - 20 cm) mapping and monitoring. UAV displays have indisputable contributions to the management of disasters such as landslides, avalanches, sellers and earthquakes, and have many advantages when compared to other methods. Over the last decade, the use of remote sensing technology and UAV photogrammetry has been increased to map and track landslides. Nowadays, UAVs equipped with suitable compact cameras offer fast and cost-effective solutions for many photogrammetric applications compared to conventional aerial photometric studies (Peppa et al., 2016). There are only a few studies in the literature regarding with the use of UAVs for monitoring of landslides. Rau et al. (2011) in Taiwan; Niethammer et al. (2012); Stumpf et al. (2013) in France and Lindner et al. (2013) used a quadrotor system and a fixed-wing system for monitoring a large landslides.

The biggest advantage of UAV remote sensing is the ability to collect risk-free information in real-time, flexible, high-resolution, low-cost, and hazardous environments. (Chang Chun et al., 2011; Rossi et al., 2016). Terrestrial approaches to landscape monitoring work are risky approaches because they require direct contact with risky areas and require longer time for measurement and evaluation. One of the advantages of UAV systems is its ability to deliver fast, high temporal and spatial resolution image information in critical situations where instant access to 3D location information is required. First of all, it is impossible to make local measurements in areas

where disaster impact continues. Second, obtaining a satellite image or photogrammetric image is difficult and expensive. In fact, UAV has real-time capabilities such as fast data acquisition, transmission and image processing (Mazzanti et al., 2014). In addition, UAVs do not only record disaster-affected regions, but also assist in the coordination and communication of disaster management. (Kauai et al., 2016). The main advantage of the UAV photogrammetry is that it can provide information about the moving speed using image correlation algorithms using orthophoto images and digital surface models (DSMs). (Leprince et al., 2008). Another significant advantage of UAV-based remote sensing applications for hazardous environments such as landslides and rocks is the ability to acquire information in very dangerous areas with minimal risk. Direct measurements in such areas are usually not possible (Neithammer, 2012). Orthomosaics obtained by UAV allow detailed analysis of landslide materials and fissure structures (Walter et al., 2009). In addition, high resolution textural information in orthophotos obtained by the UAV may allow for soil moisture analysis of the landslide surface (Niethammer et al., 2009). Extremely sensitive DSMs were used to detect surface fissures and measure the mass movements of the landslide. Alternatively, it is known that providing satellite images is expensive and difficult when satellite images are used. It is also impossible to obtain this sensitivity from satellite images. Panchromatic QuickBird satellite images can provide data with a floor resolution of 0.61 m (Niebergall et al., 2007). Conventional air and satellite based remote sensing techniques are suitable for landslide detection in a few square kilometers (Henry et al., 2002). However, these techniques cannot provide data for the landslides and displacements that occur in smaller areas and the high resolution digital image below the decimeter and the desired period (Neithammer et al., 2012).

5 CONCLUSION

In this study, 985 raw pictures were taken for the landslide area with UAV and Sony a6000 digital CMOS camera. All images were taken from 100 meters high with 80% overlap and 60% sidelap rates. Pix4D software was used to process images to create 3D dense point cloud and orthophoto.

As a result of evaluating the images the horizontal position accuracy of GCPs were calculated as ± 1.79 cm. A total of 12 months have elapsed between the first period and the last period of the measurements. At the end of 6 periods it was calculated that 2976 m^3 of soil was displaced in the landslide area. In addition, the speed and direction of the motion of the landslide was determined. It has also been found that ground motion accelerates after rainy weather events.

Flight altitude and RMSE show a linear relationship with a correlation coefficient greater than 0.9 independently of the forward and side turn settings (Javier et al., 2016). It is a known fact that more precise position accuracy can be achieved by increasing the number of GCPs and decreasing flight altitude as well as increasing camera resolution. For the landslide movements, more sensitive results can be obtained by changing these parameters when requested. However, the results obtained from this study show that 3D surfaces obtained by processing UAV-based images, DEMs and orthophoto can be used for monitoring landslide movements.

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IMAGE SOURCES

Fig. 1, 2, 3, 4, 5: created by the author

TeMA
Journal of
Land Use, Mobility and Environment

TeMA 3 (2017) 339-353
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5275

review paper received 6 September 2017, accepted 7 December 2017

www.tema.unina.it

How to cite item in APA format:
Wiltshier, P. (2017). What is a learning town? Reflections on the experience at Wirkworth. *Tema. Journal of Land Use, Mobility and Environment*, Issue Volume 10 (3), 339-353. doi: http://dx.doi.org/10.6092/1970-9870/5275

WHAT IS A LEARNING TOWN? REFLECTIONS ON THE EXPERIENCE AT WIRKSWORTH

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ABSTRACT

This paper explores the legacy of regeneration project work and knowledge management and transfer. A university intervention was undertaken with a regeneration charity designed to support new business opportunities, specifically in arts and entertainment, tourism, skills development and training. As part of the University of Derby's own work-related learning and problem-based learning, a project team was assigned to work alongside the charity 'New Opportunities in Wirksworth!' (NOW!). The knowledge exchange, the new learning acquired at Wirksworth is viewed from the perspective of the public sector organisations, the private sector organisations engaged at the destination and the university. The results of the knowledge transfer (KT) are analysed from these three perspectives; the businesses, local government and educators. A participant observation, action research approach has been used to elicit and analyse the knowledge transfer, both explicit and implicit. Staff and students from the University of Derby have been contracted to research development specifically in festival supply and visitor demand, the attractiveness of the destination and its key features the market, mining heritage and volunteer railway. Staff and students also committed to an events strategy, marketing the destination and finance for start-ups. Key stakeholders have reflected on a decade of achievements and both fails and success stories. Through the KT process agendas for the future have been identified and the project NOW! Has a legacy of both tacit and explicit knowledge for the benefit of other communities. There is an ongoing desire to explore how both public and private sectors can benefit from knowledge sharing and to benefit ongoing problem-based learning in education and training through university based open-access library resources.

KEYWORDS:
knowledge transfer, repository, university, learning, stakeholder, tourism.

TeMA

有关土地使用、交通和环境的杂志

TeMA 3 (2017) 339-353
print ISSN 1970-9889, e- ISSN 1970-9870
DOI: 10.6092/1970-9870/5275

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什么是学习型城市？关于威克斯沃斯经验的思考

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摘要

本文探讨了再生项目工作和知识管理与迁移的遗留问题。
我们进行了一次大学实验，设计了一个再生慈善机构，旨在为艺术和娱乐、旅游、技能发展和培训方面提供新的商业机会。我们还指定了一个项目小组，与名为“威克斯沃斯的新机遇！(NOW!)”的慈善机构一同工作，作为德比大学自己的工作相关学习和以问题为本的学习的一部分。从公共部门组织、从事的私营部门组织和大学的不同角度，对知识交流和在威克斯沃斯学到的新东西这两方面进行观察。从三个角度分析了知识转移（KT）的结果：企业、地方政府和教育工作者。
采用了参与者观察法和行动研究方法来引出和分析知识的转移，包括显性和隐性的。
德比大学的工作人员和学生已签约该研究开发项目，具体而言包括以下方面：节日供应和游客需求，目的地吸引力及其在市场上的关键特点，矿业遗迹和铁路志愿者。工作人员和学生们也都努力推行活动战略，推广目的地，为初创企业提供资金。
利益攸关者们回顾了十年来的成就，同时也追忆了失败和成功的故事。通过 KT 流程，确定了前景计划议程和 NOW！项目。保持具有隐性和显性知识的传统，能造福于其他社区。人们总是希望探讨公共和私营部门如何能从分享知识中获益，并能通过以大学为基础的开放式图书馆资源，为教育和培训方面的持续的问题提供支持。

关键词：
知识转移，知识库，大学，学习，利益攸关者，旅游

1 INTRODUCTION

This paper aims to clarify the explicit and tacit benefits of knowledge transfer in a small rural market-town community in England. Specifically it undertakes, through a reflective research process with eight key informants, to establish the residual value to the community of knowledge transfers through research tasks assigned by stakeholders to students and staff of the University. The report is structured to reflect the core literature on networks, structure, legacy of learning and knowledge transfer using current academic perspectives, research approach and method. The paper reflect on the findings for the three key stakeholder groups and develops an emergent model with a framework for further exploration.

Wirksworth has been an important market town and centre for mining and extractive industries from medieval times. In the eighteenth century lead mining was at a peak. In the twentieth century quarrying for feldspar, lime came to a conclusion as the easily mined raw materials became hard to extract and a rejuvenation in the 1970s saw Wirksworth change direction as a centre towards services, arts, crafts and a dormitory town for workers from Derby, Nottingham and Sheffield. At this time the town was awarded a grant for sympathetic renovation of Georgian houses and there was a growing awareness that Wirksworth's future was going to be marked by innovation and enterprise in services, the creative industries, education and tourism.

So, the story that unfolds here relates to the formation of a government funded charity, New Opportunities Wirksworth (or NOW!) established in 2001 to take advantage of an inflow of skilled, creative, energetic and like-minded residents who saw that the small town of 5000 people could become a magnet for specialists in creative arts, education, services and tourism. Tourism is almost an afterthought. Many residents, even a decade ago, perceived increased visitor numbers as contrary to community wishes, based on values and beliefs largely accruing to a mining town, a market town, and a rather depressed economic destination at least defined by the boom era of the mid twentieth century.

Considerable funding was made available to have NOW! Co-ordinated by a project manager based in the Town Hall and various research tasks undertaken with the collaboration of the Business School at the University of Derby as well as privately commissioned contract workers right through to 2008. A period of energetic optimism pervaded the Wirksworth community. Far from feeling constrained by limited economic growth, the people of the town anticipated an even greater, government subsidised Arts Festival and Trail annually in September to accompany a long-standing Carnival earlier in each summer that was locally well patronised.

Community groups, public servants, retailers, schools, the University of Derby, various jobbing contractors all work cooperatively during the 2000s to secure a future based upon the creative industries and other ancillary services as earlier described. There was no sense of concern for the expenditure and resources thrown at the project NOW! By late 2008 the community was still keen to espouse a future predicated on several pillars of development. During 2009 with two major factors, NOW! Came to a head. Firstly funding of the co-ordinator's role ceased and the person contracted for the tasks was dismissed. This was not exactly unexpected as the project had a project shelf-life of seven years. At the same time the economic recession ended enthusiasm and sapped energy for volunteers to continue their roles in these diverse silos.

The project continues in the second decade of the century. There is a project manager and some of the original silos still exist. Tourism has not really fared well since 2009 (see for example Coles et al., 2014). The destination struggled to secure support from devolved local economic partnership (D2N2) in Derby/Nottingham (shires) at the same time as regional development agencies, centrally funded, ceased to exist in 2010. Champions for tourism development emerged from various areas, a volunteer railway that predates NOW! and several retailers including the champion of the monthly market. Unfortunately, even with the energy of these champions and their earnest intentions to provoke demand for visitor services the lack of research, co-operation and co-ordination had an unfortunate and divisive effect on the tourism cluster. Several champions wanted to co-locate the visitor service centre in either the Heritage Centre of the Railway, even a bakery that

was vacant. This research reflects on those experiences and provides some insights into the knowledge management and transfer that occurred at Wirksworth since 2001. At the same time notions of community development through regeneration projects and volunteers and suggest a blueprint for KT and Knowledge repository at, and facilitated by the University of Derby are discussed.

2 LITERATURE REVIEW

A plan-check-do-see-act approach to resolving difficulties with embedding new knowledge for stakeholders is central to success as has been recognised in the health and wellbeing research and just-in-time innovations in engineering (see for example, WHO, 2000; Srivannaboon, 2009; Nakamura and Ashton, 2017). At the heart of this research is the imperative for small market towns, tourist destinations in their own right and centres for inward investment as distinctive regeneration projects for some forty years (Garcia, 2004; Richards & Wilson, 2007; Knox & Mayer, 2013; La Rocca, 2014). Since 1979 Wirksworth has been a typical destination struggling to create a vitality for stakeholders and enthusiasm with local government and business as a service centre after having been a failed mining and quarrying centre. In the neo-liberal environment of Margaret Thatcher and the conservative government at the time there was considerable emphasis placed on such towns to re-align their resources and productive strategy around the emerging service economy (Coles et al., 2014). A compelling story has now emerged within the town as a rejuvenated historic market town and centre with notable architecture dating back 2000 years (personal communication, Wirksworth Heritage Association, 01/10/2017). Perhaps we are now fortunate to have reflections on the 'Bowling-alone' phenomenon so described by Putnam in the United States with the parallel rise of neo-liberal market-forces economy issues in small town USA under Ronald Regan (Putnam, 1995; Swyngedouw et al., 2002). The key for knowledge management is securing skills, capacity and associated resources to ensure regeneration action does not go un-documented and that the processes and structures associated with this are transferred explicitly and tacitly to the knowledge required for continuing adaptation to the changing external and by inference, internal, environment (Jessop, 2002; Geddes, 2006).

Additionally in responding to the structural changes needed in the market town economy the commitment required to a legacy of learning for key stakeholders is acknowledged (Raivola et al., 2001; Robinson et al., 2013). It is insufficient to emulate projects conducted elsewhere to embed new learning. It is imperative to embed learning and new knowledge within this community to ensure continuity and to align structure with strategy and forecasting to ensure that these processes are stored, retrieved and added to over time (Clarke et al., 2012; Coles et al., 2014).The University was asked by the local town council to provide support for various regeneration projects in tourism and small business, education and skills development, arts and performance (see for example, Midmore & Thomas, 2006; Selada, Cunha & Tomaz, 2011; Robinson et al., 2013). The project entitled 'New Opportunities for Wirksworth' or 'NOW!' which was established at the beginning of the twenty first century with a charter as a charity and with human resources to manage and review projects sourced from European Union regional development funding and from the University of Derby. A third key issue which has been the centre of higher education activity working with the private sector over the past decade is encouraging stakeholders to publish, store and access developmental materials for destinations in open-source forms (Atkins et al., 2007). Open source is an innovation from this decade to allow possibly deprived stakeholders from benefiting from state of the art resources to inform and empower communities to take key problems and establish a priori solutions from benchmarking and the use of appropriate case studies (Cooper, 2006; Clarke et al., 2012). The gift of research conducted by project workers is often overlooked as the repository offered is seldom transparently provided by institutions to communities to the same degree of ease of access that is provided to enrolled students and researchers of the institution (Atkins et al., 2007; Geuna & Muscio, 2009; Finch, 2012).

Useful outputs and feedback from this work-related learning can inform future student-led research. The knowledge transfer and repository aspects of this research are secondary objectives but by no means of lesser importance (Moscardo, 2014; Arnaboldi & Spiller, 2011; Geuna & Muscio, 2009; Agrawal, 2001; Raivola et al., 2001).

A further focus is skills acquisition to manage new knowledge and extract maximum shared benefit with new social capital held in trust for future generations (Raivola et al., 2001; Moscardo, 2014; Shone et al., 2016). Universities play a key and critical role in furnishing studies that allow communities such as Wirksworth to become enthused and excited over empowerment and devolved responsibility for a shared common future (Fishbourne & Derounian, 2009). To illustrate the opportunities, successes and challenges to knowledge transfer and repository we have interviewed key informants within the community of Wirksworth using unstructured questions. These questions drive answers to specific issues such as the external and internal environment in 2014 and comparisons and contrasts in 2004. The focus is on skills required for regeneration, again using the respondents' reflections as a lens. Suggestions that lessons learned through the knowledge transfer and repository are considered as benchmarking opportunities to be shared with other communities. Finally respondents were asked to clarify the aim and objectives of NOW in 2014 to compare with those explicitly explored in 2004.

Lastly, the report identifies whether stakeholders actually can agree on shared agendas within the community (for example see Henderson et al., 2007 for a UK example; Flowers & Waddell, 2004 using an Australian example). There are metaphors and algorithms for measuring outcomes that can be shared (for example see Kania & Kramer, 2011). The establishment of a regeneration body within the community has reinforced the development of Wirksworth. The various sections of the regeneration board have enjoyed and celebrated the successes and reflected on the opportunities for the future.

A community-led leadership and development role is a conceptual start point to reviewing the outcomes (Flowers & Waddell, 2004). In a political climate of devolved responsibility for policy, planning and management the Wirksworth community needed strength in local government, not just ‘liberation from central policy control’ (Rossiter & Price; 2013). Critically the increased devolution of responsibility to local council and community from regional government with the demise of the region East Midlands was not accompanied by resources for upskilling the community nor policy directions from central government in the face of increased demand for public sector funding cuts and transfer of knowledge and skills to private sector community stakeholders (Bentley & Pugalis, 2013; Shone et al., 2016).

The opportunity to identify champions in leadership roles as opposed to management teams and project co-coordinators as a further issue in this community (Lemmetyinen & Go, 2009; Gibson, Lynch & Morrison, 2005). Without doubt the critical factor in successful planning, implementation and review of learning destinations revolves around the presence of inspirational and motivational stakeholders. Our present review focused our attention on such champions and we identified the conceptual presence of a champion as reality through this process (Della Lucia & Franch, 2014).

The ability to inspire, influence and direct proceedings that actually reflected the values, beliefs and intent of the entire community was central to success and has been demonstrated to be important to lead on regeneration and redevelopment projects in other locations (Manidis, 1997). Globally some of the more successful tourism projects have been constructed around culture and heritage tourism (see a Romanian example Dumitrescu & Baltalunga, 2014). Therefore, through the lenses of regeneration, business championship, the importance of innovation, creativity, the industries and performances at the heart of the projects cannot be underestimated (Richards, 2014). The articulation of shared values and a common agenda that reflects the over-arching aim of NOW! also seemed to be absent from the extant materials. Too many of the project objectives were not mirrored in political structures so alignment of political roles, co-ordination of

actors and networks was similarly missing as has been indicated as central to many other success stories(Della Lucia & Franch, 2014). Resourcing projects for change is another core area that needs reflecting in the lens of a learning destination (Robinson et al., 2013). The small town has a core of intellectuals, artisans, creative enterprising people which, on the face of it, bodes very well for development and new directions. This has not so far occurred and we should reflect on the literature to identify why resources were not easily mobilised and consider internal as well as external factors that have had an impact.

3 RESEARCH METHOD

As has been mentioned over the past ten years the University provided additional resources to NOW! in the form of both undergraduate and postgraduate enrolled students. The students worked with the NOW! team on specific research projects for which students earned academic credits towards their respective programmes. Key stakeholders at the University and within the town agreed to manage the research experience and outcomes. The earlier research activity consisted of consumer satisfaction surveys with visitors and townspeople in regard to events, attractions and tourist sites. In addition reviews of these events, attractions and sites were incorporated in the research activity by stakeholders that had committed time to the projects in NOW! and who were self-selected to become mentors to students and maintained oversight of the aim and objectives of specific projects. These mentors and townspeople were not required to participate in the academic outcome or performance and management of the student experience. These stakeholders were encouraged to reflect on the experiences and were brought together to review and discuss the regeneration of Wirksworth in light of the established charitable organisation NOW!

Two of the University's staff have worked together since 2009 on the research projects that linked the objectives of NOW! to the town's regeneration strategy. The research projects involved both undergraduate and postgraduate students from tourism management, events management, marketing and business management. The outcomes of these projects have formed the basis of several academic research publications (Clarke & Raffay, 2002; Clarke, Raffay & Wiltshier, 2012; Wiltshier & Edwards, 2013). The publications were designed to analyse the delivery of outcomes and outputs from regeneration and project work to be stored in the University's research repository UDORA (University of Derby Online Research Archive). The aim of UDORA is to inform all stakeholders of the University's research activity and holds copies of peer-reviewed research and defended research theses. The existence of UDORA is not unique. What is important is that the gift of research conducted on and bestowed upon a local community is hosted as open-source and online and is available for the benefit of current and future project managers and community leaders to interrogate as needed. By adoption of an inductive and exploratory research approach key stakeholders were identified that have been engaged in the KT and empowerment and devolution arguments for the past decade (see for example Wakefield & Poland, 2005). These identified respondents have been dealing with expectations of greater accumulations of social as well as economic capital. However, there has been little research to elicit how lessons learned from devolution, regeneration and the attracting of inward investment to this small community have been viewed and analysed by either the community of the university.

Interviews were conducted with eight key public and private sector stakeholders from NOW! The interviews were largely unstructured. Respondent stakeholders were asked to comment on the success and failures from the regeneration projects with special emphasis on enablers and barriers as they were perceived somewhat subjectively. The focus was to identify responsibility for these factors and to consider capacity building and nurturing from the teams engaged with the projects over the decade. Several respondents felt quite comfortable with this approach and were prepared for informal interviews lasting an hour or more. All topics were presented and respondents questioned until the discussions were exhausted. Access through action research and participant observation were deemed appropriate approaches owing to previous engagement by

the author with the projects in tourism and arts/culture regeneration. In future such a subjective and inductive approach might be supported by metrics to build a series of hypotheses testing the relationships between skills, aptitude and attitude of key stakeholders and specific outcomes such as jobs created, business opportunities supported and informatics relating to visibility and ongoing provision of regeneration under the project works umbrella (Phillimore & Goodson, 2004; Crang, 2003). Key algorithms for measuring success of tacit and explicit knowledge management and sharing can be driven by best-practice case study (Huysman & Wulf, 2006). The model presented here identifies the framework proposed for future enquiry as to the legacy of new knowledge and learning assigned to responsible stakeholders within the community who will share agendas, attempt to resolve problems arising from skills shortages in decision-making and outcomes that can improve capacity for local communities to take development and KT forward for shared benefit.

4 FINDINGS

Of the eight respondents almost all credited themselves, as would naturally be expected, with successes and failures under the umbrella of regeneration practices. As was explained the focus was on expectations and conditions for capacity building and antecedents to nurturing (Shaw & Williams, 2009). Discussions along the lines of pride in achievement and humbled by the outcome were common. Respondents were seldom shy about their successes and quite matter-of-fact about their role, and that of other partner workers, in the outputs and outcomes. In general these concur with the working discussion on knowledge management (see Shaw & Williams, 2009; Cooper, 2006). A reflexive individual adjusting to the changing needs of their host community can demonstrate the skills and capacity available and the opportunity to reinforce the devolved, private sector supportive approach needed for future growth in all dimensions of regeneration; the economic underpinning social and environmental (Fishbourne & Derounian, 2009; Midmore & Thomas, 2006). A framework is proposed that reflects the shared agenda across a range of roles, skills and knowledge transfer enablers. In tab. 1 the issues relating to successful incorporation of KM in the destination community are outlined. Following the figure are details of specific initiatives undertaken that reflect developing capacity and the nexus of knowledge sharing and outcomes for all three key stakeholder groups; the public and private sectors and educators.

Specific successes mentioned: (Acting, Checking, Seeing, Planning and Doing)

- NOW achieved the skate park for kids. We managed to get broadband into Wirksworth. The monthly Farmers Market has been hugely successful. I'm proud of my involvement with the community fair. Everything I wanted introduced has come to the fore. Inference; stakeholder has engaged with wider community and used resources appropriately;
- The Northern Lights independent cinema is very successful. The owner brings in people from miles around. He is committed to Wirksworth. There are expensive holiday homes sleeping up to 14 people adjacent to the site at £383 per night and people are using it. Inference; supportive and nurturing approach connecting past to present;
- Open gardens in June is successful and contributes to charity;
- The Railway draws people in and enterprising schemes exist. We have got younger people moving in. New blood is coming through. The NOW AGM was attended by 20+ people and enthusiasm is evident - we have a new secretary who is a friend of mine. Inference; engaged the wider community and demonstrates a participatory approach;
- Our community quiz is magnificent;
- Our publications are great; Community Fayre is immensely successful and been going for 35 years. An ex-teacher is the chief editor. There are new people in Community Fayre; a journalist; a

psychology lecturer; a retired Guardian journalist. Inference; has engaged the values and beliefs espoused to develop storytelling that demonstrates power-sharing.

- Heritage is doing well. For example the Pilsley Pit has been done well. Chesterfield Canal also done well despite some hiccups with the route of HS2. We've had a decade of developing skills and much research has been done and obtaining the local community's buy in. Inference; adopts a mediation role with skills to the fore in resourcing and planning.
- We are adapting to a different climate and pulling in European money couched in terms of developing confidence and work ready outcomes. There is mission drift but caring people can navigate streams of funding. It's harder for small groups that are passionate but not wise.
- I feel a 'rosy glow' personally. If you make a successful application for funds then everyone's behind you and support a great idea and people want it (the Centre).
- The trauma of sorting out a brilliant idea was worth it. However no one now has any money.

ISSUE	RESOLUTION	IMPACT	OUTCOME	SPECIFIC DETAIL
Difficulty accessing regeneration funding for projects and community development (shared socio-economic capital, Putam,1195)	Skills and capacity capability within destination (Acting)	Targeting structures and infrastructure for business and new inward investment	Local capacity to manage various silo projects	An Independent cinema. A Heritage Railway
Enduring lifelong learning (Gibson, Lynch & Morrison, 2005)	Acknowledges contracted staff for special regeneration projects are truly mobile yet their legacy is embedded within the destination (Checking, Seeing)	Agile in the face of competing destinations and a rapidly changing external environment	On site expertise with evidence of prior experience	Wirksworth Heritage Association. Printed media and online resources to promote the destination
Resources (Finch,2012)	Open Access (Planning)	Improved benchmarking capacity and managing in a chaotic, complex and uncertain environment	Just in time solutions	Heritage projects. Improving experience of applications for funding.
New networks (Della Lucia & Franch,2014)	Created external partnerships (Doing)	Improved benchmarking capacity and managing in a chaotic, complex and uncertain environment	Better use of public funding at both destination and at the university	Heritage projects. Consumer expectations and perceptions research
Permanence of enduring skills acquisition community (Lemmetynen & Go, 2009)	Supportive University both academic staff and students (Doing)	Minimising budget overrun	Better use of government funding for both destination and university	Heritage projects. Emerging new business ventures; Farmers' Market, Skate Park for young people.

Tab.1 Shared Agenda Framework for the Learning Destination

Specific hurdles and interim failures: (Not yet Acting, Checking, Seeing, Planning or Doing)

- NOW tried to invigorate the Tuesday market. We got some flags and bunting and councillors had an opening ceremony and the following week it was dead again; it struggled. Inference; working to eradicate imbalance in power;
- A Literary Festival is planned. This will occur at a different time of the year (not September, June). NOW is not dead; it's the structure that has changed. We have a new person learning and featured a lot with festival. Contact has been made with schools. Inference; change management taken aboard and prepared to manage change;
- Priorities for the future include maintenance of what we already have. I accept that we are disparate and there are 'unders and over's';
- We need to bridge the gap. In past years the Festival didn't know and didn't care. There was inequality and now we are coming up with some ideas around the Literary Festival. More thinking and possible action relates to doing things for the whole town. We are not just addressing the needs of the underprivileged or the privileged. Inference; sharing power awareness;
- How difficult it is to involve younger people and what steps might be needed to get them into the Heritage Centre and volunteering. Difficult working with schools' timetables and not everyone wants to be involved;
- We never had support in the past other than the Town Council;
- We are 'nose diving' in tourism as no one wants to pay for it. The government is at fault as no one ways to pay for up skilling. People do not want a certificate they want to run a business. It is desperately sad that different governments come and go and say tourism is important but they would not support tourism unless it fits into local area and that's maybe only certain areas (where there's nothing to promote). I've seen this over and over again. Inference; engaging formal and informal ties within community and working with people before trying to change institutions;
- A broadband policy as an example working for rural areas. They would give advice not a grant. Needed for funding connections. First into on-line booking was excellent and a successful project which was expensive. Outcome driven with training sessions and visits to properties (were good);
- We don't get people into the town as we used. The post office has closed and people prefer to go out of town at the weekends. With the introduction of the Coop other retail struggles as a result. People park at the Coop to get petrol and don't used the Independent shops. I have no real answer to solving that problem. Inference; we can share power;
- There is evidence of poverty everywhere and I feel we are worse off now than a decade ago. London's making the laws and doesn't see the inequality. We have some nice Independent shops but those shops relate the struggles they're having;
- We have seen a rise in the number of second homes and holiday cottages and many opposed them. I prefer that young people occupy those homes and get onto the housing ladder. What did you learn from these?;
- There's still a big division between the haves and the have not's. Old and new (carnival versus festival). Nothing's really been achieved. Inference; we can leverage off incoming investors;
- Creative Futures were asked as consultants to undertake a private study with lots of suggestions but nothing was taken up and only the Town Hall improved;

- Festival no longer receives Art Council funding. !50 artists over 2 days, No one knows who will pay and doesn't help that a division exists between the haves and the have not's;
- Maybe there will be fewer artists and fewer displays. According to the Festival Chair they have done okay;
- One former project worker is currently working in the voluntary sector with caring services for older people;
- 'People don't want to learn lessons from the past' Wirksworth was never good at managing impact or the social return on investment practices. Inference; we can work co-operatively to break down barriers.

5 DISCUSSION AND CONCLUSION

There is a diverse range of perspectives on learning achieved through this case study. As has been demonstrated there are multiple angles to establishing the a priori conditions and a framework for a well-developed learning destination. The communitarian approach much espoused since Reaganomics and post Thatcher years (Putnam, 19905) can be used through the observation of structures needed to espouse and enable social capital. That has been well demonstrated in Wirksworth. The legacy of learning is embedded by the community project lobby group, New Opportunities Wirksworth and reflects the focus on inequalities and access to resources (again Putnam with elements of Bourdieu, 1986). The final route to becoming a true learning destination is represented through the articulation of resources, values and action using students and staff to provide repositories of new information derived from on-site research and embedded in open-source and on-line resources (Finch, 2012). European Union regional development funding is difficult to obtain and the learning from the project needs reviewing and then embedding in the public and private sector for future reference. Project leaders and contract workers in these funded projects are also difficult to obtain and to retain. The legacy in explicit and tacit knowledge is often lost. Concurrence on values and beliefs is essential prior to adoption and circulation of any development plans (Manidis, 1997). The reflections on equality of opportunity; the “haves and have nots”; divisions between groups within this community help reinforce the need for detailed plans built around shared values, practices and culture. Although Wirksworth’s residents reflect above-average socio-economic and education scores compared to English averages there is very little evidence of capacity building, skills development and embedding new knowledge as part of the original plan (Cooper, 2015; Wiltshier & Edwards, 2014). Skills and training necessary for regeneration are assumed to be in plentiful supply. The evidence was that skills and training was fragmented, some sectors or silos were competing for skills and some residents were opposed to regeneration in principle (see Clark & Kippenberg, 2014). This reflected in the successes and failures indicated here. Community well-being and intangible benefits from regeneration are also important outcomes and often seen but not explicitly measured (Knox & Mayer, 2013). External political and economic drivers became important towards the end of the project. The literature indicates that externalities can and will jeopardise positive outcomes from centrally funded projects as risk cannot be mitigated in the case of the economic recession and global banking crisis (Coles et al., 2014). Perhaps a level of contingency could have been expected to be part of the original specifications to acknowledge risk areas where some projects within NOW! would inevitably suffer from public sector funding and inherently never be protected by private sector investment. What should be measured though regeneration projects in the learning are good governance, institutional organisation, quality of life, levels of enterprise and emergent and growing networks (Selada, Cunha & Tomaz, 2011). Social capital is infrequently discussed by stakeholders; the underpinning for shared social capital must surely derive from shared economic gains but this is implied and not explicit in this research. Many authors identified the relative strength of a

destination through the quality and effectiveness of collaboration, partnership and networking. The relationships established are across disciplines, in the vertical and horizontal supply chain and evidenced through the perceptions of quality and return on investment at the destination (see an example measured longitudinally, in Alberti & Giusti, 2012). The ability to achieve a measure of sustainability though collaboration is a strategic intent and plan in many rural location in Europe (see Hall et al., 2011). Unfortunately there are also examples where collaboration has not occurred and relationships have been fragmented and counter-intuitive to a learning destination (see an example from Portugal in Fonseca & Ramos, 2012). The supply chain in collaboration has occasionally also missed festivals and events as the cornerstone of bringing communities together using long existing beliefs and values (see Clifton et al., 2012). Special relationships over projects have triumphed where influential stakeholders can rise to support activity (Bordeaux wine centre, Cusin & Passebois-Ducros, 2015). A commitment to growing skills and a destination's capacity to improve business opportunities through regeneration was also evident in a further Scottish example (McCarthy & Doyle, 2011). In conclusion the need from the outset was for an agreed and shared agenda for all three groups of stakeholders that is driven by research-informed values and beliefs. We can see that the project utilised a myriad of objectives in different economic sectors. The actions planned were differentiated but the key was to acknowledge that difference and to mutually agree and support the diverse range of outcomes anticipated in 2001 (see for example Kania & Kramer, 2011). The framework conceived for future development is predicated on a focus on strongly reinforced outcomes for key stakeholders. The final significant area of concern and ongoing interest concerns the strength of networks, partnerships and opportunities missed for collaboration. These can include spatial, scalar, network, supply-chain collaborations (Lemmetyinen & Go, 2009). Systems thinking would indicate that a failure to study and model developments from other locations has impacted network development (Checkland, 1981). A cyclical process based on the agreed values and beliefs, the capacity to adapt to change and skills base to enact change coupled to infrastructure and man-made and natural endowments are pre-conditions to the learning town (Figure1). Decisions on informed action accompanied by learning resources enable development through regeneration. Throughout the reflections in recognition of the need to reinforce new networks, both formal and informal learning, is evident. Learning from a plan-check-do-see-act approach in education is insufficiently embedded in the terms and conditions of the responsible charitable body NOW! Embedding into the regulations of the organisation this wonderful skills-set and enthusiasm is critical to the success of the learning town.

Fig.1 The Plan Check See Do Act Approach to Embedding Learning (after Srivannaboon, 2009)

Fig.2 Garden party

Fig.3 Wirksworth's Heritage

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IMAGE SOURCES

Fig. 1,2, 3: created by the author

AUTHOR'S PROFILE

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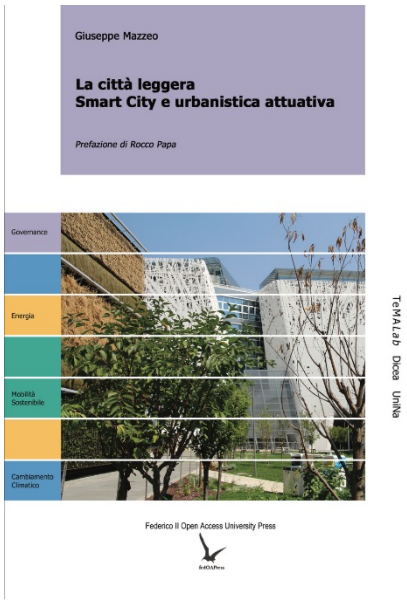
Peter J Wiltshier PhD, his research interests concern sharing and experience economy particularly focused on sharing services with co-production between residents and guest-population (visitors and tourists). He hold a Master of Business Studies in Management, Massey University, Albany Campus, Auckland, New Zealand. Bachelor of Arts (Geography), University of Auckland, New Zealand. Since 2004 he has been Programme Leader and Senior Lecturer at the University of Derby in Buxton. He is responsible for driving the experiential learning agenda for the University in tourism studies. At present, he is member of the School Quality Committee and of the Faculty Research and Research Degrees Committee. He is reviewer for scientific Journal of Destination Marketing & Management; a reviewer for the Journal of Tourism Management and a reviewer for the International Society of Travel & Tourism Educators (ISSTE).

FedOA Press Federico II Open Access University Press



Giuseppe Mazzeo

La città leggera
Smart City e urbanistiche attuative

Smart City, Urban Planning for a Sustainable Future

ISBN-13 (15)
978-88-6887-008-9
doi: 10.6093/978-88-6887-008-9

http:
www.fedoabooks.unina.it/index.php/fedoapress/catalog/book/40

Abstract

Cities are in a state in which two opposing forces are acting on them: on the one hand the unabated urbanization process, on the other the evergrowing demand for real sustainability. The book proposes an urban planning response focused on the transformations of urban sectors to be achieved using innovative operative tools; for this aim the book defines the main features of this operative tools. The goal is to include in the cities innovative actions that can provoke a domino effect with repercussions on the entire urban structure. The book is devided in 5 sections. The first one addresses the issue of urbanization and the development of the urban systems, with the related implications in terms of resource consumption and concentration of people and functions. The second part discusses some models that explain the mechanisms of urban sprawl and the derived scenarios. The third part deals with one of the key nodes of the relationship between urban systems and environmental resources, namely the energy. The fourth part analyzes some international case studies to extrapolate recurring characteristics that can affect the operative planning. The fifth section focuses on the features of this new type of plan.fuel economy savings and incentives for the use of renewable energy sources and, on the other hand, to meet the new needs of transporting people and goods safely and efficiently.

Abstract

Le città sono in una fase nella quale due forze contrastanti agiscono su di esse: da un lato il processo di urbanizzazione che procede senza sosta, dall'altro la domanda di reale sostenibilità. Il volume propone una risposta in chiave urbanistica incentrata sulle trasformazioni di ambiti urbani da realizzare mediante strumenti operativi innovativi e ne definisce le caratteristiche principali. L'obiettivo è inserire nelle città azioni innovative che possano provocare un effetto a cascata con ricadute sull'intera struttura urbana. Il saggio si struttura in cinque parti. Nella prima si affronta il tema della urbanizzazione e dello sviluppo dei sistemi urbani, con le relative implicazioni in termini di consumo di risorse e di concentrazione di persone e di funzioni. Nella seconda parte si discutono alcuni modelli che spiegano i meccanismi di diffusione urbana e gli scenari che ne derivano. La terza parte affronta uno dei nodi cardine del rapporto tra sistemi urbani e risorse ambientali, ossia quello dell'energia. La quarta parte analizza alcuni casi studio internazionali per estrapolarne caratteristiche ricorrenti che possono influenzare la pianificazione operativa. Nella quinta parte si approfondiscono i caratteri di questo nuovo tipo di piano.

TeMA
Journal of
Land Use, Mobility and Environment

TeMA 3 (2017) 355-373
print ISSN 1970-9889, e- ISSN 1970-9870
doi: 10.6092/1970-9870/5217

www.tema.unina.it

REVIEWS PAGES

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES 3(2017)

Starting from the relationship between urban planning and mobility management, TeMA has gradually expanded the view of the covered topics, always remaining in the groove of rigorous scientific in-depth analysis. During the last two years a particular attention has been paid on the Smart Cities theme and on the different meanings that come with it. The last section of the journal is formed by the Review Pages. They have different aims: to inform on the problems, trends and evolutionary processes; to investigate on the paths by highlighting the advanced relationships among apparently distant disciplinary fields; to explore the interaction's areas, experiences and potential applications; to underline interactions, disciplinary developments but also, if present, defeats and setbacks.
Inside the journal the Review Pages have the task of stimulating as much as possible the circulation of ideas and the discovery of new points of view. For this reason the section is founded on a series of basic's references, required for the identification of new and more advanced interactions. These references are the research, the planning acts, the actions and the applications, analysed and investigated both for their ability to give a systematic response to questions concerning the urban and territorial planning, and for their attention to aspects such as the environmental sustainability and the innovation in the practices. For this purpose the Review Pages are formed by five sections (Web Resources; Books; Laws; Urban Practices; News and Events), each of which examines a specific aspect of the broader information storage of interest for TeMA.

01_WEB RESOURCES
The web report offers the readers web pages which are directly connected with the issue theme.

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02_BOOKS
The books review suggests brand new publications related with the theme of the journal number.

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03_URBAN PRACTICES
Urban practices describes the most innovative application in practice of the journal theme.

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04_NEWS AND EVENTS
News and events section keeps the readers up-to-date on congresses, events and exhibition related to the journal theme.

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TeMA
Journal of
Land Use, Mobility and Environment

TeMA 3 (2017) 355-373
print ISSN 1970-9889, e- ISSN 1970-9870
doi: 10.6092/1970-9870/5217

www.tema.unina.it

评述页：

提高城市系统对自然及人为变化顺应能力的方法、工具和最佳实践

TeMA 从城市规划和流动性管理之间的关系入手，将涉及的论题逐步展，并始终保持科学严谨的态度进行深入分析。在过去两年中，智能城市（Smart Cities）课题和随之而来的不同含义一直受到特别关注。
学报的最后部分是评述页（Review Pages）。这些评述页具有不同的目的：表明问题、趋势和演进过程；通过突出貌似不相关的学科领域之间的深度关系对途径进行调查；探索交互作用的领域、经验和潜在应用；强调交互作用、学科发展、同时还包括失败和挫折（如果存在的话）。
评述页在学报中的任务是，尽可能地促进观点的不断传播并激发新视角。因此，该部分主要是一些基本参考文献，这些是鉴别新的和更加深入的交互作用所必需的。这些参考文献包括研究、规划法规、行动和应用，它们均已经过分析和探讨，能够对与城市和国土规划有关的问题作出有系统的响应，同时还对诸如环境可持续性和在实践中创新等方面有所注重。因，评述页由五个部分组成（网络资源、书籍、法律、城市实务、新闻和事件），每个部分负责核查 TeMA 所关心的海量信息存储的一个具体方面。

01_WEB RESOURCES
网站报告为读者提供与主题直接相关的网页。

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02_BOOKS
书评推荐与期刊该期主题相关的最新出版著作。

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03_URBAN PRACTICES
城市的实践描述了期刊主题在实践中最具创新性的应用。

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04_NEWS AND EVENTS
新闻与活动部分让读者了解与期刊主题相关的会议、活动及展览。

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01

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES 3(2017)

REVIEW PAGES: WEB RESOURCES

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In this number

NEW PRACTICES AND EXPERIENCES FOR PLANNING THE RESILIENT CITY

Nowadays cities have to face several challenges, not only connected to potential shocks like floodings, heatwaves and earthquakes, but also related to daily stresses such economic and social inequality, crime, inefficiencies of public transportation, noise and environmental pollution, and so on. Hence, cities need to change their structures and design in order to improve their capacities to deal with those issues. In the last thirty years, urban planning has adopted concepts like Sustainable Development and Smart City (Morelli et al., 2013), aimed at defining solutions for solving the main urban issues and in order to plan more efficient and livable cities. More recently, a new reference concept is arisen, namely the Resilient City. Even if it has been defined in different ways, the Resilient City concept has several overlapping elements with the Sustainable Development and the Smart City, starting from its purpose that can include the purposes of the other two concepts (Arafah and Winarso, 2017; Hudec, 2017). Indeed, the Resilient City concept aims at growing the capacity of an urban system to deal with social, economic and physical challenges of the 21st century (100 Resilient Cities, 2017). In operational terms, the urban practices and experiences for developing resilient cities are fragmentary (Papa et al., 2015). Indeed, cities are investing in urban strategy for improving their resilience. Moreover, in the last year, several governance networks for making cities more resilient have been developed, mainly with the aim of addressing cities in the definition of resilience strategies. Since each city presents its own urban issues, each city defines a specific resilience strategy. This is due also to the lack of a shared definition of “resilience”. In accordance with this perspective, resilience could become a label to use in urban planning for defining an all-inclusive approach for facing the several challenges of the contemporary cities.Therefore, this section will illustrate websites of three cities - New Orleans, New York and Ho Chi Minh - that are investing in the enhancing of their urban resilience. In particular, those websites were created to illustrate strategies and actions that those cities are implementing to enhance their capacities not only to deal with climate change impacts but also with economic and social urban issues. The first website is RESILIENT NEW ORLEANS, developed by the City of New Orleans. It aims at illustrating and disseminating the ‘Resilient New Orleans’ strategy and its results. The second one is OneNYC that is the website of the strategic plan of New York City, called ‘OneNYC - Plan for a Strong and Just City’. The last website is developed by the Vietnam Climate Adaptation Partnership (VCAPS) and it illustrates all the results achieved by this partnership, such as also the Ho Chi Minh City’s Climate Adaptation Strategy.

RESILIENT NEW ORLEANS
http://resilientnola.org/

RESILIENT NEW ORLEANS is the website developed by the City of New Orleans in order to illustrate the urban strategy adopted by New Orleans in August 2015, named *Resilient New Orleans*.

The *Resilient New Orleans* strategy is one of the last steps of the City of New Orleans adopted for improving its capacity to deal with current challenges, such as climate change. Indeed, after the Hurricane Katrina that in 2005 devastated the Gulf Coast of the city, New Orleans started to invest in several initiatives among which there is the definition of the Greater New Orleans Urban Water Plan (2013) for a more resilient urban development of the city.

Through the *Resilient New Orleans* the city is proposing pragmatic actions to set forth aspirations for the city that are:

- (i) adapting the city to changing natural environment;
- (ii) investing in equity;
- (iii) creating flexible and reliable systems;
- (iv) preparing for future shocks.

This strategy is the results of the combination of local expertise with global best practices, also the participation of the City of New Orleans to the network "100 Resilient Cities".

Finally, the strategy will be implemented through the coordination of the Mayor's Office of Resilience and Sustainability and the Chief Resilience Officer among partners and agencies and for integrating resilience in regulations, policies and practices, the Resilience Office will collaborate with the City Planning Commission and Hazard Mitigation Office to develop Master Plan and Hazard Mitigation Plan.

In relation to the contents of the strategy, the website is organized into five sections: *Intro*, *Visions*, *About*, *Get Involved* and *Voices*.

The *Intro* section corresponds to the website's homepage and illustrates the three visions for 2050 of New Orleans that are:

- Adapt to Thrive,
- Connect to Opportunity and
- Transform City Systems.

Indeed, these three visions are better illustrated in the *Visions* section. In detail, each vision is synthetically described in a specific webpage through the definition of the main initiatives to implement.

In the *About* webpage, a description of the strategy and its implementation are reported. Moreover, in the page partners involved in the strategy and in the 100 Resilient Cities network are reported.

In the *Get Involved* section users' website can put their own information - first name, last name, email and ZIP code – in order to receive information on the strategy. Moreover, for downloading the strategy, users can access the 100 Resilient Cities website in order to find out about other cities like New Orleans, involved in the 100 Resilient Cities network.

The *Voices* section illustrated 'Stories of Resilience' that tell about initiatives and actions implemented in New Orleans and oriented to a resilient development.

In all the sections at the bottom of the page, it is possible to link to the *About* section clicking on *About Resilient New Orleans*, to *Get Involved* through *Contact* and, to *Download the Strategy,* and finally to connect to social media such as YouTube, Facebook and Instagram.

Furthermore, under the section board, there is a string that permits to visualize videos on YouTube.

ONENYC – THE PLAN FOR A STRONG AND JUST CITY
https://onenyc.cityofnewyork.us/

OneNYC is the website of the strategic plan, developed by New York City and named Plan for a Strong and Just City. This plan is followed to *PlaNYC*, realised in 2007, and take into account some events like the economic recession and the Hurricane Sandy that interested New York. In particular, the plan aims at developing the future New York in relation with four principles that are Growth, Equity, Sustainability and Resiliency and it was developed with cross-cutting interagency collaboration, public engagement and consultation with leading experts of different fields. *OneNYC* is coordinated by the Mayor's Office of Sustainability in collaboration with the Mayor's Office of Recovery and Resiliency for its implementation.

The plan is organized into four visions that are:

- Our Growing, Thriving City;
- Our Just and Equitable City;
- Our Sustainable City;
- Our Resilient City.

The website is articulated into seven sections: *The Plan, Visions, Progress, About #OneNYC, Downloads, Speak Up* and *Contact*. The OneNYC's homepage contains frames of all these sections. In particular, through the top banner users can download reports on the progress of the plan and access to other documents (among the OneNYC plan), suggest improvements to the plan (linking to the *Speak Up* webpage), share the website through social media and access to all the contents of OneNYC website.

In particular, through the first section, it is possible to visit a page with a generic description of the plan. In such description issues, actions and ways of their implementation are defined. For reaching this webpage, it is possible also to select *About #OneNYC* from the menu. The *Visions* section is composed of four pages, each of them illustrates a vision of the plan. In particular, each vision's webpage is structured in further parts. Indeed, for each vision, there are different goals and they are deeply illustrated by their definition, the description of challenges and opportunities and initiatives already implemented or to implement in order to reach the goal. In the *Progress* section, all the initiatives implemented for each vision are reported. In particular, it is possible to select them both for all the visions and for each vision. Moreover, users can click on the initiative frame and a description appears.

The *Download* section permits to download five documents. The first one, *1.5°C: Aligning New York City with the Paris Climate*, illustrates how OneNYC is aligned with the Paris Climate Agreement in order to not exceed 1.5 degrees Celsius in 2050 while the second one is the *OneNYC plan*. Furthermore, it is possible to consult two reports on signs of progress recorded in relation to the plan in 2016 and 2017. Finally, the last document, *New York City's Roadmap to 80 x 50*, contains the New York's roadmap to achieve the reduction of greenhouse gas emissions by at least 80% by 2050.

Through *Speak Up*, users can contact the Office of the Mayor and express through a contact form their ideas for the future of New York. Indeed, there is a space in this form where the user can suggest 'one way to create a better New York City'.

The *Contact* section links to a webpage of the official website of New York City where all the 338 NYC's official social media channels are reported. In particular, all the social media channels can be selected by topic (e.g. Business, Civic Services, etc.), by type (e.g. Facebook, Flickr, Instagram, etc.) and by Office and Department.

Vietnam Climate Adaptation PartnerShip

VIETNAM CLIMATE ADAPTATION PARTNERSHIP
http://www.vcaps.org/en/

The Vietnam Climate Adaptation PartnerShip (VCAPS)'s website illustrates the results of the VCPA consortium that assisted Ho Chi Minh City in developing their Climate Adaptation Strategy to develop the city and harbour towards the sea. It is interesting to note that the City of Rotterdam is a member of the VCAPS and it is sharing its knowledge and experience through the Rotterdam Climate Initiative for helping Ho Chi Minh City.

The website is composed of ten sections that are: *Home, Project, Products, Events, Project meetings, Working groups, VCAPS Members, Office Ho Chi Minh City, Contact* and *Links*.

While the *Home* describes, in general terms, the VCAPS consortium and its results, the *Project* webpage specifies its goal, illustrating in the climate conditions of Ho Chi Minh City, which is the approach and the methodology adopted and which are the project phases. In *Products*, users can find and download two of the main results of VCAPS consortium, the *Atlas* and the *Adaptation strategy,* and the project-presentation.

In the *Events* section, all the media events and news on the project are reported while in the *Project meetings* all the working group meetings organized to develop the Atlas and the Adaptation Strategy and the Action plan are described. The *Working groups* section illustrates all the groups involved in the development of the project. In particular, considering their interests' topics, the working groups are divided into four types: the Institutional one, the Spatial Environment one, the Infrastructure one and the Socio-economic one. For each working group, the aim and their components are indicated.

In the *VCAPS Members* section, it is illustrated the partners of the consortium that are composed mainly of Dutch consultant societies and institutions that are described as their role in the consortium in specific webpages. In the *Office Ho Chi Minh City* page VCAPS references (address, phone, etc.) are reported, while through the *Contact* pages users can contact consortium for questions or for having additional information.

Finally, in the last section there are some links to webpages connected to the VCAPS project, including the partners one.

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IMAGE SOURCES

The images are from: https://www.orbitz.com/blog/2015/05/worlds-futuristic-cities/; http://resilientnola.org/; http://www.vcaps.org/en/; https://onenyc.cityofnewyork.us/.

02

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES 3(2017)

REVIEW PAGES: BOOKS

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In this number

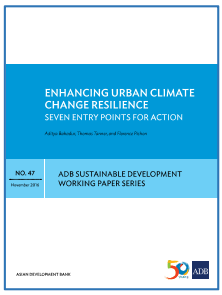
URBAN ADAPTATION STRATEGIES

The problems that cities face in the 21st century can no longer be dealt with the old solutions and tools. Urban Resilience is about facing and learning to adapt to hard challenges in ways that look towards the future. Most of the world's population now lives in towns and cities that are disproportionately located along coasts and rivers, and therefore faces substantial risks posed by hydrometeorological shocks and stresses. By 2050, the percentage of the world's population living in cities and towns will grow from 50% to 70%, urban areas in many cases retain high socioeconomic vulnerability, such as urban poverty, informal settlements, lack of municipal services, land tenure issues, etc., which are exacerbated by the exposure to climate-related shocks and stresses (United Nations, 2014). The urban paradox is evident in the hard and conflicting coexistence of dynamic growth and social exclusion in urban regions (Barresi & Pultrone, 2013). In the context of work on climate change, development, and natural hazards, resilience is generally understood to mean the ability of systems to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks.

In the U.S., seventy-five cities have undertaken adaptation planning in the past decade, and a second wave of cities is starting to plan. The first wave contained a diversity of cities - large and small cities, in each of nine climate regions in the U.S. Coastal cities driven by concerns about sea-level rise - most prominently along the eastern seaboard, Gulf Coast, and San Francisco Bay - have been especially active in adaptation planning.

Some important challenges related to broader urban governance; understanding the political economy context, navigating the power structures, and dealing with drivers or barriers to change; and engaging with the complexities of treating cities as systems. This challenges requires regular feedbacks between urban systems, the need for action at different scales of governance, and the critical bearing of areas outside the political boundaries of the city. It's about being able to redefine goals and develop skills that make the urban systems stronger. Resilience is all about dynamic transformation.

According to these themes, this section suggests three books and reports that help to better understand the issue of this number: Enhancing Urban Climate Change Resilience. Seven Entry Points for Action, Essential Capacities for Urban Climate Adaptation. A Framework for Cities and Redefining the city Athens Resilience Strategy for 2030.



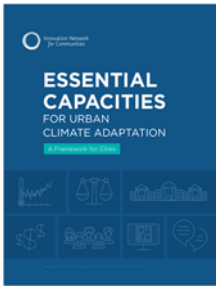
Title: Enhancing Urban Climate Change Resilience. Seven Entry Points for Action
Author/editor: Aditya Bahadur, Thomas Tanner, and Florence Pichon
Publisher: Asian Development Bank
Publication year: 2016
ISBN code: -

This report was realized by Asian Development Bank. This has given rise to a growing interest in the concept of Urban Climate Change Resilience (UCCR), which recognizes the complexity of rapid urbanization and uncertainties associated with climate change. Many development agencies are working carefully with their member countries and partners to develop these frameworks. This report highlights that while technology and infrastructure are integral to enhancing of resilience challenger, there are also some others aspects as those institutional, financial, spatial, and social. Looking across a vast body of literature on urban resilience and examples of practice reveals seven entry points for action that, in contextually specific combinations:

- Generating, sharing, and regularly updating data, information, and knowledge on how urban growth interacts or will interact with potential impacts of climate change is a first step for enhancing a city's ability to strengthen UCCR;
- Forward-looking urban planning tools, such as land use planning and development planning that allow adopting integrated, inclusive, and reflective approaches, provide a comprehensive and sustainable route to enhancing UCCR;
- Development processes associated with urban infrastructure and services, including water and sanitation, energy, transport and telecommunications, ecosystems, built environment, and health and social services, can strengthen UCCR by instituting new processes to ensure their organizational systems support resilience and recognize the interconnections among sectors;
- Individuals and institutions within city governments often know the city intimately, and building their capacity is critical for bringing UCCR to life;
- Community development processes that allow capturing diverse perspectives of communities, especially the perspectives of the most vulnerable, are essential for enhancing UCCR;
- There are huge needs for and potential gains from involving the private sector in enhancing UCCR;
- Catalyzing finance is key to the success of UCCR and includes finances available from different scales of governance: microfinance and local development funds; taxes, levies, and fines at the city level; earmarked and non-earmarked funding from provincial and national governments; and multilateral, bilateral, and philanthropic funding.

These seven points need to come together in contextually relevant combinations to strengthen the resilience strategies but usually treated as isolated sectors of activity. The report describes and outlines each entry point, the benefits, the range of practical actions to leverage the potential of this entry point for operationalizing pathways to Urban Climate Change Resilience, and the challenges of using each entry point. Some cities may have made more progress on some entry points than on others, revealing the need for customized solutions based on local factors. Over time, and with experience, the points proposed in this study may be refined and new ones added.

The report identifies a wide range of potential actions can be identified for private sector engagement in enhancing Urban Climate Change Resilience. Many sectors can be pinpointed for engagement, with three modes distinguished: Strengthen business continuity; Explore business opportunity; Consider business as a stakeholder; and Provide incentives for engaging the private sector.

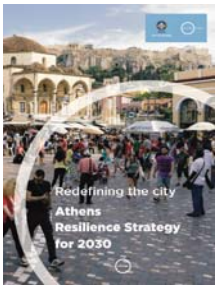


Title: Essential Capacities for Urban Climate Adaptation. A Framework for Cities
Author/editor: Innovation Network for Communities
Publisher: -
Publication year: 2017
ISBN code: -

This report developed by the Innovation Network for Communities (INC), a non-profit organization whose mission is to develop and spread scalable innovations that transform the performance of community systems. It presents a framework for urban climate adaptation that proposes seven essential capacities actions to implement climate adaptation of the cities, that should need to develop in the short and long term. This framework is based on a review of recent adaptation practice and is diverse from other frameworks because it focuses primarily on processes for adaptation planning and specific actions to take depending on which climate hazards a city. Listed below are the seven essential capacities for urban adaptation:

- Scientific Foundation. Capacity to assess and understand climate risks and vulnerabilities of city's built, natural, and economic assets and its populations, and use these analyses for ongoing adaptation planning;
- Communications. Capacity to communicate with and educate civic leaders and community members in ways that build and sustain a sense of urgency to adapt for climate changes;
- Equitable Adaptation. Capacity to make social and economic equity a central driver of the city's adaptation approach;
- Inclusive Community Engagement. Capacity to fully engage stakeholders and the public, especially vulnerable and underrepresented populations, in developing, implementing, and monitoring adaptation plans;
- Intergovernmental Alignment. Capacity to coordinate planning and action across governments at local, regional, state, tribal, and federal levels;
- Technical Design. Capacity to design, test, and implement adaptation actions that require engineering, legal, and other highly specialized details, as well as performance metrics for monitoring;
- Financial Resources. Capacity to repurpose, leverage, and obtain public and private funds to invest in infrastructure development and other adaptation actions.

The report identifies the new and enduring capabilities that cities need to build on the current knowledge level on the issue of urban adaptation. It focuses on climate adaptation preventive actions a city seeks to take in anticipation of climate hazards, which may also be called climate preparedness or climate resilience. The climate adaptation solutions, propose in this report, do not include the emergency response to the recent climate hazard events or the after-event process of recovery. It present cities with a useful framework, based on their practical experiences, for understanding how to grow and prosper in the face of increasing climate disruptions. In support of this information, the report provides best practices from cities that have been developing versions of the essential capacities, an overview of main adaptation planning frameworks, and links to useful tools and technical instruments. The project of the framework is based undertook four research activities. During the first phase, the research team interviewed thirty-five city practitioners, climate-adaptation experts, city-support and conservation NGOs, and funders of urban adaptation work. In the next phase, it is exanimated twenty-two U.S. cities' adaptation plans and six international cities' plans. The third phase is focused to literature review of guidance and tools for and recent studies and articles about urban adaptation planning in the U.S. cities. I the last phase of feedback. Selected city practitioners, researchers, and philanthropic funders provided feedback on our draft materials.



Title: Redefining the city Athens Resilience Strategy for 2030
Author/editor: City of Athens
Publisher: Rockefeller Foundation
Publication year: 2017
ISBN code: -

The City of Athens, a venerable yet intricate city of near 700.000 residents, part of a 3.75 million people metropolis, is for several years now facing a serious socio-economic crisis. Through concerted e orts, the city has managed to survive, to adapt and to transform into a more creative and collaborative city. The struggle is by no means over. This last year, calling on the insights and expertise of hundreds of stakeholders, from opinion leaders and academics to women migrants and the homeless, the city drafted its Resilience Strategy. This is a set of practicable actions which first of all strengthen and scales up what has made our city stronger: formal and informal networks and alliances. Athens Resilience Strategy offers a set of new integrated ways to prepare and protect our most vulnerable from future shocks and stresses that the city will face. Boosting the city's resilience means creating new as well as revitalizing existing open and green public spaces. This is vital for our densely built and populated city, threatened by both intense heat (climate change) and earthquakes. The city needs to become more forward thinking and proactive, turning its challenges into resources (vacant buildings, newly arrived refugee and migrant populations, energy and waste). Around such resources it will build capacity and start to develop economies that, together with tourism and the creative sector, will generate the city's future. Finally, the city will strengthen its government, through becoming more transparent and accountable, opening streams of communication, creating a digital agenda and innovation strategy. This work does not stand alone; it is supported by several documents that have been instigated by or produced in alliance with the city's resilience journey. The first one came out of the Athens Network Exchange in September 2016 under the title "Global Migration: Resilient Cities at the Forefront," and the second is a set of policy proposals "Advancing Equity for Athens' Resilience" created for the city by Transatlantic Policy Lab program as an offering and funded by the Bertelsmann Foundation. Lastly, the Athens Climate Change Adaptation and Mitigation Action plan was produced through a unique collaboration. These two documents together with the existing Athens strategic and operational plans, frame this resilience strategy. The resilience strategy is framed by four pillars, 65 actions and 53 supporting actions.

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03

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES 3(2017)

REVIEW PAGES: URBAN PRACTICES

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In this number

PLANNING FOR SHARED MOBILITY: TWO CASE STUDIES IN THE U.S.

In recent years, economic, social and environmental forces have quickly given rise to the "sharing economy", a collective of entrepreneurs and consumers leveraging technology to share resources, save money, and generate capital (Shaheen, 2016). From goods and services to accommodation and mobility, disruptive business models based on the sharing economy paradigm are emerging, shaking up the concepts of ownership and consumption.

Shared mobility (i.e. the shared use of a vehicle, bicycle, or other mode) is among the fastest growing segments of the shared economy. It can be defined as an innovative transportation strategy that enables users to gain short-term access to transportation modes on an "as-needed" basis (Shaheen & Chan 2015). The term includes a variety of services such as carsharing, bikesharing, ridesharing, and ridesourcing. More broadly, the term also includes alternative transit services, such as paratransit, shuttles, and private transit services, called microtransit, which can supplement fixed-route bus and rail services (Cohen & Kietzmann, 2014).

Shared mobility may have a transformative impact on urban areas as it can enhance accessibility by providing new mobility options, while simultaneously reducing driving and personal vehicle ownership (Baptista et al., 2014; Staricco, 2013). It can complement "conventional" public transport by helping provide first/last mile connections, alleviating pressure on transit demand in core service areas, and filling the service gaps at off-peak hours (Feigon and Murphy, 2016). Furthermore, the introduction of shared mobility options in urban areas can reduced the need for off-street parking space that can be used by local governments to create additional public spaces for non-motorized transport modes (McKinsey, 2012).

Given the potential disruptive impacts of shared mobility on urban transportation and, more in general, on urban quality of life and liveability, several cities and regions around the world have started incorporating shared mobility considerations in their "traditional" mobility plans. Furthermore, in some cases, they have also developed dedicated planning instruments (i.e. shared mobility action plans).

Shared mobility is gaining momentum in the United States where around 20 percent of US population used a shared mobility service in 2015, predominantly in urban areas (Dhar et al., 2017). In this context, the Shared-Use Mobility Center, a public-interest organization, is working with cities and regions across the US to foster collaboration between shared mobility stakeholders, and develop shared mobility plans. This contribution presents two relevant case studies of US regions that have recently developed a shared mobility

action plan with the support of the SUMC: i) the County of Los Angeles and ii) the metropolitan area of Minneapolis–Saint Paul.

LOS ANGELES COUNTY

Whit over 10 million inhabitants, the county of Los Angeles is home to more than one-quarter of California residents and is one of the most ethnically diverse counties in the U.S.. Despite its reputation as a car-oriented region, the county has made huge investments in recent decades to improve its once-non-existent public transportation system. Furthermore - due to the positive influx of public and private sector investments, and the introduction of new environmental sustainability initiatives - the county has experienced a rapid growth in carsharing, bikesharing, ridesourcing, and other forms of shared mobility. Despite this progress, however, the county still faces pressing issues related to traffic congestion, air quality and equitable access to transportation.

To maximize the public benefits of shared mobility and establish a vision for the region, the SUMC has recently realized the Shared Mobility Action Plan for Los Angeles County (SUMC, 2016). The plan is based on a two-year-period of research and interviews with local stakeholders and provides a roadmap that the county can follow in the forthcoming years. At the heart of the plan there is a 2 percent vehicle reduction goal that would remove nearly 100,000 private cars from the county's roads within the next five years by dramatically scaling up shared mobility in concert with public transit. To realize this goal, the plan includes six complementary strategies:

- Expand the Role of Transit. Transit is considered the backbone that support other forms of shared mobility. To consolidate this position, the plan envisions an integrated Transit Access Pass (TAP) fare system, based on real-time information technologies, able to create a seamless integration across all transport modes.
- Drive Cultural Change to Support Transit & Shared Mobility. Changing the prevailing perception of vehicle ownership is considered a fundamental prerequisite for the development of successful shared mobility policies. To make this change happen, the plan includes marketing campaigns aimed at promoting the positive benefits of using shared mobility options such as cost savings, increased physical activity and reduced stress.
- Emphasize and Expand Carsharing in All Communities. Carsharing has tremendous potential to increase transportation access in Los Angeles County, especially for non-work trips. To maximize this potential, the plan envisions a coordinated mix of actions, including: i) the provision of significant dedicated street space for carsharing, ii) the reduction of minimum parking requirements for buildings that offer carsharing vehicles on site for their residents, and iii) the expansion of the carsharing network in disadvantaged communities.
- Leverage the Region's Bikesharing Momentum. The LA bikesharing system has rapidly growth over the past few years. To leverage this momentum, the plan foresees a coordinated approach to scaling the region's existing and planned systems. Relevant actions in this direction are: i) make bike sharing more accessible by disadvantaged social groups; ii) build protected bike lanes, and iii) make existent and planned bikesharing stations more visible and easy to access.
- Experiment in Ridesourcing, Microtransit & Vanpooling. Some of the most innovative recent developments in the shared mobility industry have taken place in ridesourcing, microtransit,

carpooling and vanpooling. To foster these innovations, the plan suggests dedicating pick-up and drop-off zones for shuttles and ridesourcing services. This will support shared mobility initiatives, especially those that address jobs access for the service sector that is currently poor served by "conventional" transit.

- Build Out Mobility Hubs Countywide. Mobility hubs are the physical place where multiple modes converge in one location. In this regard the plan consolidates previous initiatives aimed at creating new mobility hubs in the county (or improving the existing one) by establishing guidelines for hubs design.

The plan also features a summary of anticipated outcomes, calls for increased public and private investments to expand transit and shared mobility, and identifies specific funding sources that local leaders can pursue to achieve the established goals.

MINNEAPOLIS-SAINT PAUL METROPOLITAN AREA

Minneapolis–Saint Paul (commonly known as the Twin Cities) is a major metropolitan area in the US with a population of 3,684,92 inhabitants. The area has expanded outward significantly in the last decades as automobiles had made it possible for suburbs to grow greatly. In recent years, the region has made notable improvements to its public transit system, including launching bus rapid transit service and building a new light rail route that helped to "re-twin" the Twin Cities. It was also an early pioneer in bikesharing, carsharing and other forms of shared mobility. However, it has lost some ground lately if compared with peer cities such as Seattle and Denver that have been able to scale shared mobility and transit on a remarkable level. Furthermore, the region still faces pressing issues related to traffic congestion, affordability, livability and freedom of movement. With assistance from the McKnight Foundation, SUMC worked with leaders in the Minneapolis-St. Paul region to develop a Shared Mobility Action Plan for the Twin Cities (SUMC, 2017). At the core of the plan there is an ambitious goal of taking 20,000 cars off the road in the next five years (50,000 in the next 10 years). To realize this goal, the plan includes a portfolio of complementary strategies:

- Leverage the Metro Transit App to Establish a Data Clearinghouse. The Metro Transit app, and its planned integrations with various shared mobility platforms, has the potential to offer a myriad of benefits for the region such as real-time travel information, payment integration, targeted discounts and other incentives that encourage multimodality. To reach this aim, the plan supports the creation of an intermodal data platform. The data collected from this platform will be further used to better understand new travel patterns and identify new service opportunities for a variety of public and private transportation services.
- Stabilize and Grow Carsharing. The Twin Cities can take a number of actions to help strengthen the region's remaining carsharing services and lay the groundwork for a more robust marketplace in future years. To this aim, the plan supports several coordinated actions such as: i) expand the carsharing network in disadvantaged communities; ii) reform local and state carshare taxes to be competitive with other regions where carsharing is successful; iii) create highly-visible carshare locations in conjunction with recent and planned street infrastructure projects.
- Pilot Flexible Transit that Focuses on Reverse Commute Challenges. Flexible transit services have the potential to address first/last mile issues, especially in suburban areas. Accordingly, the plan

supports the development of flexible services based on small and medium-sized vehicles and flexible routing that bring riders directly from a transit-heavy urban neighborhood to a diffuse but relatively high-density job center.

- Expand and Evolve Bikesharing The Twin Cities bikesharing system has rapidly growth over the past few years. However, the plan considers further expansions of the network, in coordination with the growth of the Metro Transit light rail network, in order to support multimodality.
- Optimize Parking and Street Space to Prioritize Shared Mobility. As long as parking is cheap and abundant, it will be difficult to encourage people to use sustainable modes. In order to encourage modal shift toward more sustainable transportation modes, the plan recommends reducing mandatory parking minimums for residential developments located near high-frequency transit lines. The plan also suggests using parking revenues to support shared mobility actions.
- Concentrate Efforts around Integrated Mobility Hubs. Mobility hubs are the physical place where multiple modes converge in one location, often clustered around a high-frequency public transit stop. In the Twin Cities, SUMC has observed several sites that possess high-quality transit service but missing essential components such as parking surface. In this regard, the plan identifies six potential locations that could serve as mobility hubs and defines guidelines to redevelop these locations.

The plan also calls for increased public and private investments to expand transit and shared mobility, identifies local, state and federal funds identifies funds that local leaders can pursue to achieve the established goals and provides suggestion for involving private-sector and community stakeholders.

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The image shown in the first page is from: wrirosscities.org. The images shown in the second and third pages are both from: wikipedia.org

04

METHODS, TOOLS AND BEST PRACTICES TO INCREASE THE CAPACITY OF URBAN SYSTEMS TO ADAPT TO NATURAL AND MAN-MADE CHANGES 3(2017)

REVIEW PAGES: NEWS AND EVENTS

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In this number

SAFE-TO-FAIL ADAPTIVE URBAN DESIGN: NETWORKING PRACTICES TO MINIMIZE THE CONSEQUENCES OF FAILURES

Urban resilience is a concept that only recently has been actively undertaken by cities around the world. However, while the concept of resilience is intellectually intriguing, it remains largely unpracticed in contemporary urban planning and design, because it's feasibility would need a mental switch in a system that is still predominantly deterministic. Becoming more resilient means that a city strives to enhance its ability to bounce back and grow even stronger and better in the face of the chronic stresses and acute shocks; it would mean to overtake a "fail-safe" mentality based on the promise of science and technology to be able to define a perfect urban model that could persist for generations in favor of the "safe-to-fail" paradigm based on the creation of adaptation scenarios that would allow to fail but control or minimize the consequences of the failure. (Kim et al., 2017). In this way, "resilience capacity is well-suited to an adaptive approach to planning and design, in which innovation is pursued through responsible experimentation, developing a culture of monitoring, and learning from modest failures" (Ahern, 2011). As such, city resilience is a continuous challenge for individuals, communities, institutions, businesses and infrastructure systems to address current trends and future transitions, trying to take advantages from the ongoing experiences. Furthermore, the monitoring of this citizens' dialogue and integration of experiential and professional knowledge appears currently more feasible thanks to the potentiality of Social Media Geographic Information as source of knowledge for the planning practices (Massa & Campagna, 2014).

A fertile ground of application of this theory could be the URBACT program that, for about 15 years, has been the European Territorial Cooperation program aiming at fostering sustainable integrated urban development in cities across Europe. It is an instrument of the Cohesion Policy, co-financed by the European Regional Development Fund, the 28 Member States, Norway and Switzerland, whose mission is to "enable cities to work together and develop integrated solutions to common urban challenges, by networking, learning from one another's experiences, drawing lessons and identifying good practices to improve urban policies". Among the almost one hundred cities networks created within this program, Resilient Europe network, involving 11 European cities (Rotterdam, Glasgow, Antwerp, Bristol, Potenza, Ioannina, Thessaloniki, Burgas, Katowice, Malmö, Vejle), uses the innovative governance approach of Transition Management, a process-oriented methodology that enables social learning through iterations between collective vision development and experimenting. This form of co-creation process will be applied in every

city and across the cities for specifying "what city resilience means" for each city, to enable a translation and identification of resilience aspirations of stakeholders in a participatory vision development way and to formulate an Integrated Action Plan to pave the ground for achieving city resilience.
In this perspective were selected some international conferences taking place in the coming months, that will contribute to the networking of experience, knowledge and best practices on the urban resilience topic.

URBAN FUTURE _ GLOBAL CONFERENCE

Where: Wien, Austria
When: 28th February – 2nd March 2018
www.urban-future.org

As we said previously Transition management approach requires a collective vision able to drive the above mentioned mental switch, starting from those concrete experiences that currently seek to find innovative solutions of governance in cities. The URBAN FUTURE global conference is the World's largest meeting point of "City Changers": mayors, architects, mobility experts, city planners, scientists, sustainability managers, representatives from Start-Ups, environmentalists, innovation experts and many more will meet to share experiences and to implement their ideas for sustainable, livable cities. "Citizen engagement: how to make sure people don't feel left behind", "Climate protection and adaptation for city leaders", "Cities going low-carbon: from freaks to mainstream strategy", "Retrofitting and energy efficiency: how to pimp-up existing building stock", "The invisible Smart City: the impact of social investment", are some interesting titles of the almost 30 sessions of the conference divided in four main themes: living and city planning, communication & leadership, resources and mobility.

CITIES AND CLIMATE CHANGE SCIENCE CONFERENCE

Where: Edmonton, Canada
When: 5-7 March 2018
www. citiesipcc.org

The important role of the over described "City Changer" to address challenges of sustainability and resilience, may not be enough without the effort of the scientific community. In addition to adaptive design solutions, "research is needed to learn what makes knowledge about nature society interactions useful within both science and society to build resilience capacity and to guide society on a sustainable trajectory" (Ahern, 2011). It will demand a higher level of transdisciplinary collaboration in both research and practice than presently exists, especially regarding the pressing request for answers on the topic of climate change. On these premises takes place the Cities and Climate Change Science Conference that aims to inspire the next frontier of research focused on the science of cities and climate change. In fact, the primary goal of the conference is to assess the state of academic and practice-based knowledge related to cities and climate change, and to establish a global research agenda based on the joint identification of key gaps by the academic, practitioner and urban policy-making communities. The main themes of the conference are the followings:

- Cities & climate change (Imperatives for action);
- urban emissions, impacts and vulnerabilities (Science and practice of cities);
- solutions for the transition to low carbon and climate resilient cities (Science and practice for cities);
- enabling transformative climate action in cities (advancing science and advancing cities).

GREEN CITIES 2018

Where: Melbourne, Australia
When: 13-15 March 2018
www.greencities.org.au

The third important element to implement this Copernican revolution in the way of rethinking cities is industry. Green Cities, Australia's premier sustainability conference for the built environment organized by industry sector, could be an interesting opportunity to walk through this topic. The main questions of the conference are the followings:

- How can we spark sustainable change throughout industry and government to plan cities and communities needs to be reinvigorated to become resilient ?
- How will health and wellbeing impact the way we build our cities ?
- What can we learn about communities through reconciliation ?
- How will we win the race to renewables ?

RESILIENT CITIES 2018 THE 9TH GLOBAL FORUM ON URBAN RESILIENCE AND ADAPTATION

Where: Bonn, Germany
When: 26-28 April 2018
www.resilientcities2018.iclei.org

In September 2015 the Heads of State and Government and High Representatives, meeting at the United Nations Headquarters in New York, defined an agenda based on new global Sustainable Development Goals: the 2030 Agenda for Sustainable Development. It is a set of 17 universal and transformative goals and 169 targets balanced on the three dimensions of sustainable development: the economic, social and environmental; it represents a plan of action for people, planet and prosperity that seeks to strengthen universal peace in larger freedom.

After 2 years, ICLEI - Local Governments for Sustainability - intends to review the state of urban resilience and local implementation of the Agenda, by organizing the 9th Global Forum on Urban Resilience and Adaptation. Resilient Cities 2018 will focus on:

- Social cohesion: Building resilient urban societies;
- Resilient and resource efficient cities: transition toward a circular economy; and
- Reinventing business as usual: Private sector engagement in resilience building.

Congress themes also include current and pressing issues such as ecosystem-based adaptation, managing climate-related health risks, data and ICT resilience, and evidence-based adaptation planning.

ADAPTATION FUTURES 2018

Where: Cape Town, South Africa
When: 18-21 June 2018
http://adaptationfutures2018.capetown/

Thousands of cities in the developing world are facing rising pressures on institutions and infrastructure due to population growth and urbanization; developing country cities are now beginning to experience the added impacts of climate change**.** For those countries climate change is likely to increase already high levels of disaster risk. On these premises takes place the Adaptation Futures 2018 conference that will take advantage of its location in Africa to stimulate critical Southern perspectives on adaptation to inform regional and global policy, practice and research, and to increase the focus on the links between adaptation and sustainable development. The conference focus will be on how to move from problem diagnosis to successful implementation. It intends to investigate on community learning methods about making adaptation work, at different spatial, institutional and time scales, in different geographies, and in different political and economic settings. AF2018 is especially interested in exploring the following themes:

- Adaptation and development;
- South-South and South-North knowledge and learning;
- Adaptation and 21st century challenges;
- Collaboration, knowledge co-production and research into use;
- Financing of adaptation and climate resilient development;
- Learning from doing.

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IMAGE SOURCES

The image shown in the first page is taken from:
https://berkonomics.com/wp-content/uploads/2015/07/man-falling-onto-safety-net-300x300.jpg

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