



Research Article

Land take and landscape loss: Effect of uncontrolled urbanization in Southern Italy



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ABSTRACT

The present paper describes a research that, based on the evolutionary data of the urban settlement over a period of half a century, shows the changes undergone by the various landscape categories of Southern Italy. The regions involved are four (Campania, Basilicata, Puglia and Calabria) and share renowned urban, economic and social issues such as unauthorised development, low income per capita and organised crime. All this has produced profound transformations on some of the most important and rare Italian landscapes, such as coastal plains and coastal carbonate slabs. Uncontrolled urban sprawl has further provoked an environmental crisis and eco-friendly insularisation of the yet numerous and valuable protected areas of this geographical area, thus leading to a high density of buildings and infrastructures even in national parks, breaking European records in this respect. Through finalised indicators, the characteristics of the evolution occurred have been analytically highlighted, and by using the latest generation satellite data, it is shown how such phenomena have continued to take place with significant energy over the last few years. The result is a picture of environmental threats still very prominent in this southern extremity of the peninsula, above all towards those naturalistic qualities and landscapes that are the main attractions of an intense national and international tourism whose income, however, has not been conveyed in a correct and inclusive way to allow high-level socio-economic conditions of the resident population.

1. Introduction

The phenomena of land take, associated with the urban sprawl standard, has been internationally recognised internationally by the scientific literature and it is now consolidated in terms of characteristics and related consequences on environmental, economic, social and territorial balances (Barrington-Leigh & Millard-Ballb, 2015; European Commission, 2006; Jaeger, Bertiller, Schwick, & Kienast, 2010; The Worldwatch Institute, 2007). A great interest has also been manifested around the topic of rural areas, especially in countries with rapid expansion such as China (Chen, Wang, Ren, & Du, 2016; Ding & Zhao, 2011; Jiang & Zhang, 2016; Li et al., 2016).

The research presented in this paper shows the effects that 50 years of variations in the urban settlement geography occurred in Southern Italy have caused on certain environmental and landscape components. Furthermore, the transformations studied are correlated to social dynamics and to the concentrations of high naturalistic and vulnerability values, such as protected areas and

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coasts. Such an aspect was taken into consideration half a century after the II World War because in this period Italy experienced the most impressive phenomenon of urban transformation in its history. In fact, previously, exception made for the few large cities, the remaining territory lived in an agricultural and rural conditions with very small and localised urbanised areas. The post-war reconstruction and the economic boom of the '60s' and '70s' completely changed the country's landscape and the construction of buildings and roads spread over huge areas far away from the cities even though with extremely low urban and demographic densities. The questions to which the research carried out attempted to answer therefore concern the distribution and geographical impact of this phenomenon on the Southern Italy area, by verifying the different physiognomies piloted by the regions policies and trying to understand if the entity of what happened, in addition to causing disadvantages to the environment and landscape, has at least led to positive economic results, even if local.

A further intent of this work is to demonstrate how the significant urban growth detected in the investigated period is completely unrelated to the observed demographic dynamics, and to provide at the same time policy guidelines and technical means (GIS based) aiming at limiting, monitoring and controlling the effects of the urban conversion of the soils.

The results presented by this paper derive from a research lasted nearly ten years and that has processed information and made a diagnosis of the impact of urbanisation on the entire national territory from the post-war period (1949–1962) to the noughties (2000–2008), then describing in depth certain geographical areas such as the Alps, the Po Valley, Central Italy and the major islands (Fiorini, Zullo, & Romano, 2017; Romano & Zullo, 2014a, 2014b).

Although most of the research works on soil consumption in Italy carried out by the group of Authors of this paper has been published on international journals, the phenomenon has simultaneously been attracting national scientific attention for several years, producing, however, studies almost exclusively in Italian or based on conference proceedings. Among them, special mention goes to those originated from the research performed by the University of Venice Architectural Institute (IUAV) (Gibelli & Salzano, 2006; Salzano, 1992), Milan Polytechnic Institute (Bonifazi & Heins, 2001; Pileri & Maggi, 2010), University of Palermo (Indovina, 2009), and University of Camerino (Sargolini, 2010), in addition to ItUrb by Giovanni Astengo, which was maybe the first research ever conducted in Italy on this topic (Astengo & Nucci, 1990). Concerning the studies published on international journals on the topics discussed in the present article, relevant references have been made consistently, according to the topics of each section. However, it should be highlighted that the main difference between the data at the basis of this research and those just mentioned is to be found in the actual measurement of the extension of the urbanised areas performed on cartography since the '50s', which took almost ten years of processing to obtain a scale of 1:25,000 for the entire Country. All other contributions, either past or contemporary, to this chronological section made use of sampling methods or took into consideration only sample areas (Munafò et al., 2013).

The present paper highlighted, with final indicators, various relations among the several above-mentioned aspects, which are closely connected with the urban dynamics this territory has experienced since the end of the Second World War.

Section 2 is a description of the field of study, by providing a series of information aiming at depicting an overall picture of the specific domain including its multiple contours of quality and difficulty; Section 3 deals with data acquisition methods related to the urban transformation dynamics, which called for a significant and absolute commitment, but that consequently allowed for drawing many previously unpublished results of the research. Section 4, dealing with the results, is divided into two sub-sections: point 4.1., that presents the urbanisation development data, with a specific focus on the most significant phenomena, and point 4.2., that analyses the effects of such development on the landscape and environment by making use of the classifications of these entities as provided by the Italian institution bodies. The Discussion and Conclusions sections, points 5 and 6, summarise the substantial steps of the study, highlighting the unique aspects that emerged, and indicate the most serious problems and difficulties in solving them.

2. Study area

The southern Italian extremity, made of the four regions of Campania, Basilicata, Puglia and Calabria, constitutes, however, as widely known, one of the most problematic areas of the country, both for economic and social reasons and for environmental/urban aspects and therefore it was deemed appropriate to study them separately from other geographical areas.

The area studied represents about one fifth of the entire country, but it is undoubtedly home to the most contradictory phenomena which are possible to detect: on one hand, it boasts some of the most valuable natural, cultural and landscape resources, both at a national and at a European level, an active farming industry of great importance thanks to the climate and geomorphological characteristics, the coasts are among the most attractive in Southern Europe for summer tourism, and, moreover, the area includes an extensive part of the Apennines, which is of considerable environmental value (Efe & Öztürk, 2014). On the other hand, it is one of the national areas with the greatest problems of social stability, organised crime, and deregulation in every sector, unemployment and youth challenges, illegal housing and corruption of businesses, environmental and urban degradation (Pinotti, 2015). Moreover, this area has seen extensive land-use changes that led to a deep soil consumption (Foley et al., 2005; Ramankutty & Coomes, 2016).

The study area extends over 5,800,000 ha on three sides of the Mediterranean and is surrounded by three Italian Seas (Adriatic, Ionian, and Tyrrhenian), with over 2000 km of coastline (Fig. 1 on the left). Four of the 20 Italian regions (namely Campania, Basilicata, Puglia and Calabria) were included in the analysis, together with 1338 municipalities that constitute 17% of the national ones, but that are larger than average (43 sq. km against 36). The current population (National Institute for Statistics' census from 2011) is 20% of the country's total population (12,500,000 inhabitants) and is perfectly proportional to the area of Italian territory covered by the study, which is exactly 20% of the total territory. The largest part of population is situated in Campania and Puglia, with nearly 10 million inhabitants, while Basilicata, with less than 600,000 inhabitants, is one of the least populated regions in Italy, excluding the very small Valle d'Aosta and Molise regions, whose surfaces are less than half that of Basilicata. However, Campania is

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