

TeMA

Journal of
Land Use, Mobility and Environment

The Special Issue collects eight papers presenting methodologies, experiences, and techniques related to policies, best practices, and research on the potentialities of planning in the use of natural and agricultural territories, soil consumption, and the enhancement of territorial quality in response to climate change. The aim is to increase the territory's capacity to respond to critical events and enhance its resilience.

TeMA Journal offers papers with a unified approach to planning, mobility and environmental sustainability. With ANVUR resolution of April 2020, TeMA journal and the articles published from 2016 are included in the A category of scientific journals. From 2015, the articles published on TeMA are included in the Core Collection of Web of Science. It is included in Sparc Europe Seal of Open Access Journals, and the Directory of Open Access Journals.

Special Issue 2.2023

Burn or sink

Planning and managing the land

TeMA

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Cover photo by Giuseppe Mazzeo. Rising wheat fields on the hills of Conza della Campania, Irpinia. January 31, 2023.

TeMA. Journal of Land Use, Mobility and Environment offers researches, applications and contributions with a unified approach to planning and mobility and publishes original inter-disciplinary papers on the interaction of transport, land use and environment. Domains include: engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science and complex systems.

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Special Issue 2.2023

BURN OR SINK PLANNING AND MANAGING THE LAND

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EDITORIAL PREFACE

Special Issue 2.2023

Burn or sink

Planning and managing the land

Giuseppe Mazzeo*

In the last few years, we have witnessed an increasing frequency of extreme events such as heavy rains, floods, landslides, fires, and long periods characterized by high temperatures and scarce precipitation. The vast majority of scientists attribute these events to climate change resulting from anthropogenic activities, which leads to a rise in the global average temperature and a consequent disruption of meteorological and climatic balance.

These changes affect both the normal progression of seasons and the frequency of extreme weather events. For the former, the most evident phenomena are the rise in average temperature and the significant variation in average and total precipitation. For the latter, changes are highlighted not so much by the occurrence of such events, as by the reduction in the return period of these phenomena and their displacement from areas of the globe normally affected by extreme events to other areas.

The primary cause of these processes is the use of fossil fuels for energy production.

The extreme events that have impacted many regions in recent years have emphasized the vulnerability of the environment and heightened concerns about potential future consequences on the social and economic organization of these areas. The aspects involved are diverse, ranging from demographic to social, from economic to political.

Urban and territorial planning is also implicated, and in recent decades there has been an increased focus on sustainability-related aspects. In urban areas, for example, policies related to adaptation and regeneration have multiplied. Meanwhile, in larger territorial areas, efforts to protect and develop natural resources have been intensified.

Natural resources are a heritage of territories, an identity value, and one of the factors of their economic and social resilience. They give rise to high-value-added products that are recognized at both the national and international levels. Moreover, within a territory, they represent a specific indicator of balance between the environment and humans.

On natural resources the attention is global, as evidenced, for example, by the Sustainable Development Goals of the United Nations and by the environmental action programs of the European Community. For this reason, these resources must be analyzed in their constituent processes and defended both from

overproduction and from climate change. They must be considered as strategic resources and fully integrated into territorial and urban planning processes.

The Special Issue *Burn or sink- Planning and managing the land* focuses on the relationship between natural resources, territorial planning and management, and the observation that resources are in a fragile situation due to climate change.

The scientific community pays close attention to this topic and deepens it through various interrelated lines of study. One line of research of particular interest to planning focuses on ecosystem services, i.e., the free goods and services provided to communities by certain types of natural capital. Two of these (water and soil) form the basis of economic and social systems and enable the establishment of communities.

A second line of research focuses on natural capital factors – the stock of resources including soil, air, water, and living organisms – which are capable of producing a flow of goods and services to keep for the future.

A third line of research is related to the FEW (Food-Energy-Water) Nexus approach, which explores the connections between the subsystems of food production, energy, and water. It uses methodological and analytical tools to quantify the intensity of relationships between them, both locally and globally.

In addition to these, there are lines of research not specifically focused on natural resources but delved into the impact of climate change on the urban environment. For example, studies on urban heat islands or the role of urban greenery fall under these lines.

The focus on natural resources necessitates their proper planning and management, with new rules able to address the protection of natural and agricultural territories, the reduction of soil consumption, and the enhancement of territorial quality in response to climate change processes. The goal is to increase the territorial capacity to respond to critical events, in other words, to enhance its resilience to extreme events caused by climate change.

Planning involves the use of land to make existing settlements livable for the population. When we create a plan, we hypothesize the livability conditions of a future that we can only predict, as it is uncertain whether the transformation over time guided by the plan will achieve the set objectives. Too often, the impact of this second phase is not considered or, more accurately, is delegated to the implementation of rules that gradually become more and more obsolete.

Therefore, it is necessary to structure plans that are more consistent with reality. If humans are the central element around which planning is built, they are also the main contributors to global warming processes. Consequently, it is obvious that planning must contribute to halting and, if possible, reversing the trend affecting certain processes.

The ability of institutions to develop governance mechanisms that are more suitable for addressing these problems and reducing risks for citizens will be crucial. Studies on this topic seem to affirm that there is no one-size-fits-all system of governance, and the presence of a wide range of good practices testifies that the best solution varies on a case-by-case basis.

TeMA Journal has already shown extensive interest in these aspects. Over its 16-year lifespan, the journal has explored broad themes that characterize today's environmental crisis, with the aim of outlining new planning paths. For the first time, the journal's editorial staff is proposing a Special Issue aimed at deepening the topic by soliciting articles focused on scientific aspects, the development of innovative practices, and the role of social behaviors.

TeMA Journal's Special Issue *Burn or sink - Planning and managing the land* features a collection of eight original papers. These were written specifically for this issue following the call for papers launched in October 2022. The papers present ideas, theories, empirical insights, methodologies, experiences, and techniques about policy issues, best practices, and research findings on the Special Issue themes.

Lai and Zoppi, with the paper *Factors affecting the supply of urban regulating ecosystem services. Empirical estimates from Cagliari, Italy*, present a study to analyze the relationships between supply of ecosystem services, features of green areas and characteristics of settlements in the urban contexts of Cagliari (Italy). The urban ecosystems offer services as heat mitigation, carbon capture and storage, and runoff control, but

they are differentiated in relation to the characteristics of the territory (if they are green areas or urban settlements). The outcomes of the paper are in terms of urban planning and of policy implications.

The paper by Fratini, *The Eco-Pedagogical Microforest a shared Oasis of proximity. A cutting-edge project at the intersection of ecology, urbanism and pedagogy*, deepens the topic of the urban forests. A series of evidence suggest that planting trees represent one of the most effective solutions to mitigate climate change. The paper illustrates an experimentation of a tiny forestation action at the neighborhood scale in Rome, with the aim to integrate both regulative and social-cultural ecosystem services. The project demonstrates that even a small patch of nature can increase young people's biospheric values, influencing pro-environmental behaviors and actions, and enhancing wellbeing.

Mobaraki, with the paper *Spatial analysis of green space use in Tabriz metropolis, Iran*, presents a descriptive and analytical research aimed to evaluate the use of green spaces in the city of Tabriz (Iran) and the way they are distributed in the urban area. The results of the study indicate that per capita use of green space in Tabriz is much lower than the national and international standard. Furthermore, the spatial distribution of green space use is not the same in the different districts.

The paper by Isola, Leone and Pittau, *Evaluating the urban heat island phenomenon from a spatial planning viewpoint. A systematic review*, deals with the issue of urban heat islands. One of the main causes of higher temperatures in urban areas are the impervious surfaces. The urban heat islands present negative impacts on the health of the population and lead to increased energy consumption for cooling. Ecosystem services are a valuable tool to mitigate the effects of UHI. Starting from the existing literature of the last fifteen years, the paper deepens the phenomenon through an interpretation key based on the issues addressed, the methods used and the spatial scales to which these methods have been applied.

Dinç, with the paper *Unveiling shoreline dynamics and remarkable accretion rates in Lake Eğirdir (Turkey) using DSAS. The implications of climate change on lakes*, deepens the issue of the inland lakes. Lakes and their shorelines are important ecosystem areas with the diversity of living species they host. In addition, lakes are an almost indispensable resource for humans as a source of fresh water. To understand the vulnerability of lakes to global climate change, it is of interest to study the temporal rates of change that occur on lake shorelines. In this study, Landsat multi-temporal images of the east part of Isparta Eğirdir Lake in Turkey were obtained and the change in the shoreline over a 10-year period (2013-2022) was examined using DSAS (Digital Shoreline Analysis System) tool.

The paper by Quagliarotti, *The Water-Energy-Food Nexus in the Mediterranean Region in a scenario of polycrisis*, faces with the notion of multiple global crises and their impact on the availability and access to fundamental resources to human survival and well-being: water, energy and food. The Mediterranean region could be considered both a water, energy and food (WEF) Nexus case-study and a climate change hotspot. Climate change, war and other crises modify the global commodity markets on energy and food markets, with ripple effects likely to extend into the next future. The new global systemic risks call for a paradigm shift by adopting measures to reduce exposure and strengthen resilience turning the conventional WEF Nexus into a virtuous circle.

Mazzeo, with the paper *Analysis of strategic natural resources: the FEW Nexus model applied to Irpinia (Italy) and implications for regional planning*, analyses specific types of natural resources (soil, water and energy) and identifies their potential contribution to local development in a perspective of reduced environmental loads in an inland area of the Campania Region. The attention to the three systems of resources is evidenced by the development of research based on FEW Nexus and on other models. This does not translate into attention from planning tools. The paper shows that the regional planning tool for the province of Avellino only partially considers such resources, failing to assign any strategic importance to them. This may be considered a weakness both in regional planning and in land management. For this reason, the last section of the paper proposes changes in regional planning policy.

The paper by Federico, Di Giustino, Ferraioli and Lucertini, *Circular and metabolic perspectives in urban contexts. Integrated flows analysis for an ecological transition*, deepens the issue of circular economy, security and sustainability of food production and reduction of emissions. The intention is to emphasise the

commitment of territorial and urban planning to consider the current systemic components related to the flows that cross urban, peri-urban and rural territories, fostering the development of sustainable and circular supply chains capable of supporting an ecological, energetic and climatic transition. The case study of the Territorial Plan of the Metropolitan Area (PTAV) of the Province of Rimini identifies some methodological aspects useful for a trend shift towards effective actions aimed at the sustainable and circular management of local resources.

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