

Many different phenomena could produce alteration, decay, depletion or loss of material and immaterial assets that mark out landscapes. In this Special Issue, "Landscape at risk" is understood as concerning all the phenomena that could alter or interrupt that relationship between community and places, which lead to landscape features creation. Therefore, the topic "Landscapes at risk" is addressed considering its multiple meanings: Landscapes under environmental risk, climate change effects, but also landscape at risk of abandonment, or at the contrary landscape overexploited by tourism and other intensive activities. Landscapes endangered by environmental phenomena are analysed taking into account the way risk influences everyday life and the population-resources relationship underpinning landscape creation. Special consideration is given to climate-change related risk and to methodological improvements to develop criteria and tools to achieve the integration of mitigation and adaptation measures within landscape. In addition, landscapes suffering drastic depopulation are investigated and the most suitable management processes to prevent modification on landscape features are proposed. Finally, causes, effects and possible solutions are examined for landscapes where exploitation levels maxed-out saturation or where resources enjoyment is mainly based on an intensive consumption pattern and on the appropriation for commercial purpose, which lead to jeopardize the resources themselves, as mass tourism does.

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CLIMATE CHANGE MITIGATION AND ADAPTATION FOR URBAN AND RURAL LANDSCAPES

Abstract

Spatial development processes and climate change are the main processes that lead to an increased level of risk for urban and rural landscapes. In particular, hydro-meteorological extreme events are increasing in frequency and intensity, generating dramatic negative impacts on ecosystems and increasing the hazards of other risks, such as fires, sea-level rise and biodiversity loss.

Moreover, climate change can alter the value system, which local communities traditionally use to interact with landscape. However, the need to face climate change can also push researchers, local authorities and policy makers to find and test, both at the urban and wider scale, sustainable solutions that can transform the relation between landscape and its community and make them more resilient. The article present in this section investigate focus on the relation between the reduction of risk by climate change with landscape safeguard and promotion.

Keywords: climate change, mitigation, adaptation, landscape enhancement

Striking a balance between the contrast to climate change related risk and landscape value enhancement

Climate Change is acknowledged as one of the most complex global environmental issue facing humanity in the current time [1],[2] and the methods to contrast its dramatic effects on urban and rural areas are one of the most investigated topics in the fields of urban planning, architecture and civil engineering. The constantly increasing climate change related phenomena, such as storms, droughts, heat waves, afflict the landscape and its functional subsystems at different scales, ranging from the public health to rural productivity, from biodiversity loss to land degradation, also including urban settlements and infrastructure efficiency.

According to the “The Lancet”, Climate Change could become the greatest threat of the 21st century for public health [3], [4], as the increase in the intensity of climatic extreme events, such as heat waves, contributes to the worsening of cardiovascular and respiratory diseases, especially among the elderly, and endanger water and food supply [5], [6], [7].

Moreover, available models on current greenhouse gas emissions estimate an overall potential sea level rise between 0,6 and 1,8 meters by 2100. In some parts of the world, such as some countries bordering the Indian Ocean, this phenomenon could force millions of people

to abandon their native places. As well as the above-mentioned heat waves increase, a higher temperature will accelerate the water cycle leading to more floods and droughts and heavily impacting on world agricultural production, especially in places where water scarcity is a critical problem [8].

In this described scenario of global risk, cities are the elements having the highest exposure due to the density of population, dwellings, and economic activities [9]. Furthermore, climate change can also have catastrophic impacts on infrastructure and services’ provision, modifying the access to basic urban services, generating issues of equity among different social subjects and worsening the overall quality of life in cities.

Landscapes, both urban and rural, as conceived by European Landscape Convention [10], are not immune to climate change effects, since they alters the value system through which local communities traditionally read and perceived landscape.

However, despite Climate change is the main cause of rapidly changing landscape scenarios, it can also produce positive implications, when adaptation and mitigation strategies to face its negative effects could become drivers of relevant positive transformations, especially in socio-geographical contexts under rapid transformations [11]: local authorities and policy makers are increasingly seeking and testing policies and practical actions to modify urban and rural landscape and its perception.

For instance, at the territorial scale, climate-sensitive management of agriculture (e.g. by shifting to crops with higher carbon storage potential or reducing forest clearing for agricultural expansion) can contribute not only to a relevant reduction of atmospheric concentrations of CO₂, but also to support natural landscape conservation policies.

Mitigation strategies at the urban scale to limit greenhouse gases emissions, such as the implementation of sustainable mobility-oriented traffic policies, are able to transform the landscape-community relation. Road policies and management (e.g. restricted traffic areas, bike lanes, etc.) can create a sense of landscape and increase visual landscape perception, in addition to the functional benefits of a more efficient traffic circulation [12], [13].

Moreover, in recent times, the adoption of climate-sensitive design principles within urban regeneration intervention is becoming increasingly common [14]. It is no coincidence that urban regeneration is considered, among urban policies, the most suitable tool to implement efficient strategies to face Climate

Change: ranging from low-carbon urban environment creation through land uses rearrangement, to real estate requalification as a result of buildings retrofitting or their replacement with new ones with better energy performance, including the enhancement of vegetated and permeable spaces provision within densely urbanized tissues [15], [16], [17]. Moreover, in recent years, urban regeneration projects provided the opportunity to implement the ecosystem-based approach, theorized in the 1990s by Grumbine [18] and configured as an integrated resource management strategy towards the sustainable use of the resources themselves [19]. Researchers and policy-makers have identified in the ecosystem-based approach a way for introducing sustainable and economically viable solutions in government decisions to achieve a twofold purpose: to face and solve urban problems such as water and urban run-off management, air quality and temperature control and, on another hand, to deal with cross-cutting issues such as the defence and promotion of biodiversity, public health, social justice, economic development. Given the multiplicity and heterogeneity of the targets addressed by these solutions, recent studies and researches are increasingly making use of the concept of Nature-based Solutions (NBS), defined by the European Commission as «inspired solutions and assisted by nature, economically convenient, which simultaneously provide environmental, social and economic benefits and which help to ‘build’ resilience» [20]. The NBS concept combines the ecosystem-based approach, which includes ecosystem services, green and blue infrastructures, environmental engineering interventions and the low-impact development approach, with the economic and social benefits of systemic solutions capable of producing technical, regulatory, social, financial innovations and ensuring the efficient use of resources [21].

Among Climate Change adaptation strategies, nature-based solutions adoption and ecosystem services supply will produce relevant transformation in urban and rural landscapes in the next years, and their implementation will require integrated and multidisciplinary methodological approaches able to develop multi-target actions aiming at infrastructural efficiency, risk prevention and mitigation, enhancement of the quality of urban environment and landscape valorisation.

This section aims to investigate if a positive reconciliation between risk reduction and the landscape safeguard is possible: articles included in propose different approaches on

climate mitigation and adaptation for urban and rural landscapes.

The collections of articles analyse practical examples regarding landscapes that have been or will be tangibly modified by climate change, also highlighting the social and economic impacts produced and actions and urban policies implemented to tackle them [22], [23]. Special attention is paid to assessment methods and tools capable of measuring ecosystem services in different landscape settings to understand the added value of NBSs to landscape quality [24]. Application of proper cost-benefit analyses to urban context having peculiar landscape values, such as historic urban landscapes, are presented, as example to support public administrations decisions in the choice of the most sustainable structural and non-structural mitigation measures to address Climate Change related risks not only from an environmental and social perspective, but also from a financial and economic one [25]. Other contributes include methodological proposal for urban planning and design approaches based on NBSs, green and blue infrastructures and ecosystem services, aiming at striking a balance between facing Climate change and its effects and landscape value enhancement [26].

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