

TeMA

Journal of
Land Use, Mobility and Environment

There are a number of different future-city visions being developed around the world at the moment: one of them is Smart Cities: ICT and big data availability may contribute to better understand and plan the city, improving efficiency, equity and quality of life. But these visions of utopia need an urgent reality check: this is one of the future challenges that Smart Cities have to face.

Tema is the Journal of Land use, Mobility and Environment and offers papers with a unified approach to planning and mobility. TeMA Journal has also received the Sparc Europe Seal of Open Access Journals released by Scholarly Publishing and Academic Resources Coalition (SPARC Europe) and the Directory of Open Access Journals (DOAJ).



EXTREME WEATHER EVENTS CAUSED BY CLIMATE CHANGE

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1 (2016)

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: Wind travels across Lake Washington, buffeting the 520 floating bridge as the storm grows in strength. (Steve Ringman / The Seattle Times).

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EDITORIAL PREFACE:

EXTREME WEATHER EVENTS CAUSED BY CLIMATE CHANGE

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In the 21st century the world is facing some major challenges as cities are pressed to confront climate change, massive pollution, dwindling natural resources, excessive urban population, traffic congestion, as well as social and political unrest. Of these, climate change, the single most global threat to the survival of future generations on the planet, is happening as a result of global warming attributed to carbon emissions in the post-industrial-revolution world. Many skeptics believe global warming is taking place as one of several natural geological cycles that caused similar climate changes in the past. However, the accelerated rise in the temperature of earth's atmosphere during the last several decades demonstrates the fact that it is something more than that. There must have been man-made intervention resulting in the rapid augmentation of the carbon footprint resulting in global warming. This is the present general scientific consensus. It is indeed a new geological era, but this time, according to the majority of scientists, it is indeed caused by humans.

The awful famines caused by droughts, heat waves, frequent hurricanes and floods, erratic changes in weather patterns, and the rise of sea level everywhere today may be in part due to the assault on the environment during the "Anthropocene," the new geological era when human activities -- mainly industrialization -- are destroying the prospects for decent survival of humans and other species on the planet. These adverse natural phenomena caused by human intervention will continue with enormous consequences for future generations, unless curtailed now.

While climate change is a worldwide problem impacting our lives in both rural and urban settings, cities are particularly vulnerable in that they are immovable where most of the world population live. In 2007, more than half of world's 6.5 billion inhabitants lived in cities, marking for the first time in human history that more people lived in urban rather than rural areas. This is a dramatic shift from 1950, when less than one-third of the world's 2.5 billion people lived in cities. It is projected by the Population Division of the United Nations' Development and Social Affairs that by 2050 nearly 80 per cent of the world's 9 billion people will live in massive urban fabrics. It is expected that this trend may continue beyond this time frame. Consider also the fact that in 1950, New York and Tokyo were the only two megacities with 10 million or more populations. Today there are at least 22 megacities, and by 2025, there will be an estimated 30 or more. Most of these will be in developing countries with constrained physical and economic resources. Some critical attributes of cities are their infrastructure as bridges, subway systems, water supply, roads, and energy systems, buildings, healthcare, food distribution, amenities of urban life, the historic sense of place, and deep-rootedness of residents. These

strengths of place can, however, become liabilities if the local ecosystems are unable to adapt to the climate-induced changes. Climate change poses serious threats to urban infrastructure, quality of life, and entire urban systems. All countries, poor and rich, will increasingly be affected by uncharacteristic climate events and trends.

Historically, cities were located near rivers, oceans and waterfronts for transportation and connectivity purposes. This natural geographic advantage has now become vulnerability for these cities as sea levels rise and wind storms increase in severity and frequency. Many major cities of the world, both in developed and developing countries, are at risk from rising sea level and coastal surges caused by global warming. For example, subways, bridges, sewers, and other major infrastructures in London, New York, and Paris are more than 100 years old. Building comparable infrastructure in newly developed cities like Jakarta, Bangkok, Shanghai, Karachi, Rio de Janeiro, Mumbai, Dubai, etc. to account for possible sea level increases adds more complexity to the existing environment. A more difficult issue yet is that some cities and their national governments will consider the need for relocation of inhabitants and potential abandonment of key infrastructure and areas prone to flooding. This would represent one of the largest losses of land value and infrastructure and the largest transfer of economic resources in human history.

There are two basic approaches to cope with the challenge posed by climate change: adaptation and mitigation. There is a significant distinction between climate change adaptation and mitigation. Adaptation involves readjusting life to the fact that a certain amount of climate change will inevitably occur. The goal is to make cities as resilient as possible at a local level. Mitigation efforts aim for preventing further climate change through reducing greenhouse gas emissions, and are global in nature. An effective climate change policy for cities warrants the inclusion of both approaches, and they need to be tackled in an integrated manner. Climate change imposes an urgent imperative to move toward sustainable cities that constitute the basis of sustainable development creating an open area of research.

This issue of *TeMA Journal* vol.9 n.1 (2016) is dedicated to the important topic of climate change and cities. It is intended to prompt a scholarly discourse on some of the above issues under the rubric: Planning for livable and safe cities: Extreme weather events caused by climate change. Five selected papers in the issue present a diverse set of topics in this regard.

The paper on green infrastructure (GI) proposes the idea of climate change adaptation through integration of GI and spatial planning that will improve the microclimate and the urban heat island (UHI) effect. A simple methodology is developed to minimize UHI and to recognize the potential of compact area GI assets and redesign them to optimize climate change adaptation. A second paper studies the post-Katrina urban regeneration. The paper argues that environmental disasters inflicted on cities are not entirely natural, and the associated threats are often man-made. To support this argument, it may be mentioned that there were several problems in New Orleans. For example, levees were weak, communication and responsibilities were not clear, pumping of water was delayed causing hardship and mold, rebuilding was hindered by reduced access to credit due to the US housing collapse, to name few. A third paper examines the urban systems in Italy that are under high seismic and hydrogeological risks. It also reviews the role of urban and regional planning in minimizing risks in Italian cities. In particular, it scrutinizes the status of Italian cities with more than 50,000 populations for hazard risks and how risk reduction is framed in Italian planning system at regional and national levels. The paper concludes that the risk reduction policies and multidisciplinary proactive approaches are only partially cultivated and practically implemented. Another paper describes the land take phenomenon in Metropolitan Naples. It makes the case that a combination of residential land use and expansion of land for agricultural purposes produces an indicator called “residual land” that can provide new insight into the valuation of land take and represent an important element to work on for preventing further land transformation, as well as to protect natural and agricultural land. In the fifth and last paper, it is pointed out that although UHI effect is often linked to large metropolises, in the Netherlands even small cities will be

affected by the phenomenon in the future due to the assorted nature of urbanization patterns, particularly in part of the province of North Brabant located in the south of the country. The 2006 heat wave of 21 urban areas in this region vindicates this fact. Based on studies of the land surface temperature supported by data, the paper proposes that the 12 “urban living environments” categories of North Brabant can be reduced to 7 categories thereby simplifying the design guidelines to improve the different neighborhoods.

While this journal issue addresses a very crucial issue of climate change and its effects on cities, not all topics can be covered in a single issue like this; nor can it be covered even in just a few issues because of the breadth and depth of this subject. It is expected that more coverage will be given in the scholarly literature to this critical matter affecting human lives now and in the future.