Climate change, the built environment and triple-helix innovation

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Abstract

This study assesses relevant discussions related to climate change and extreme weather management, exploring concepts and developing arguments focused on how the need for risk mitigation policies can support the development and establishment of a new era of innovative actions related to the built environment and how hosting mega events can become catalysts for positive change. These arguments lead to further investigation of how successful cases of innovation were achieved only after an attractive environment was created, mainly through solid and combined efforts from the triple helix: industry, university and the government (Etzkowitz, 2008). Rather than exploring the many debates linked to the overall topic of climate change, this study focuses on how extreme weather and global climate change can force innovative management of the built environment and how hosting mega events has supported the development of sustainable development technologies and schemes, as suggested by the analysis of cases focused in Japan and the Middle East. The complete study focuses on ways to foster an environment of progress through the organization of mega events, in both the technological and management sides of human interventions, through the triple helix concept and the resulting public-private-partnerships.

The ensuing conclusions are based on the notion that the risks of climate change can be at least partially mitigated by a holistic approach to transformation, ideally with new ideas being fostered and enhanced by universities and companies in an attractive business environment truly supported by policy makers.

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Introduction

Throughout the past decades climate change and extreme weather discussions have gained strength among different groups of policy makers, academics, environmentalists and entrepreneurs. The recent natural disasters and the often discussed links between human activities and climate change have only added the sense of urgency for the development of actions that have as a common goal the mitigation of the embedded risks the present global warming scenario holds. While definitive agreements on the exact consequences of climate change are unlikely, there is scientific consensus that the warming climate system is expected to bring significant impacts to communities around the world (Solomon, 2007; Oreskes, 2004). Climate change adaptation as part of existing, more traditional discussions aimed at extreme weather and natural disaster risk reduction is already an important item on many government agendas under development and constant revision, leading to a scenario where climate change is treated as a risk and no longer as a myth (Shaw, 2010).

This study assesses relevant discussions related to climate change and extreme weather management, exploring concepts and developing arguments focused on how the need for risk mitigation policies can support the development and establishment of a new era of innovative actions related to the built environment. These arguments lead to further investigation of how successful cases of innovation were achieved only after an attractive environment was created, mainly through solid and combined efforts from the triple helix: industry, university and the government (Etzkowitz, 2008). The risks of climate change can be at least partially mitigated by this holistic approach to transformation, ideally with new ideas being fostered and enhanced by universities and companies in an attractive business environment truly supported by policy makers. At the core of this debate are well-known players such as Japan, with its innovative holistic policies, as well as new entrants that are already driving significant triple helix impacts, such as representatives from the Middle East, a region where sustainability and innovation have become key components of the ongoing efforts to transform once scarcely populated desert areas into global cities.

Rather than exploring the many debates linked to the overall topic of climate change, this essay focuses on how extreme weather and global climate change can force the innovative management of the built environment. The first section analyzes and summarizes the theoretical discussions and concepts surrounding the expected impacts to the world economy caused by the effects of climate change. The following section explores practical examples of innovations focused on the management side of the built environment, supporting the idea of how innovation needs to be encouraged in a holistic way in order to succeed and how it can fail miserably if no ideal marketplace is encouraged. The final section focuses on ways to foster an environment of progress, in both the technological and management sides of human interventions, through the triple helix concept and the resulting public-private-partnerships.

Climate change, global economy and the built environment

While an absolute agreement on the exact timeline of the many threats linked to the present climate change scenario is unlikely to take place, contemporary specialists often agree that a set of immediate actions is needed to mitigate the many predictable negative consequences to the global society in both the short and long terms (Oreskes, 2004). The lower number of deaths caused by cold waves in temperate areas and the rise of agricultural productivity in certain East and Southeast Asia sites are two of the most significant examples of regions that could actually benefit from certain effects of the current global warming process (IPCC, 2007 p14). Specialists, however, also agree that the overall negative impacts should be far worse than any potential positive consequences (Schneider et al., 2007). With climate change leading to the intensification of floods, fires and droughts caused by extreme weather conditions, the supply chains of several basic goods and raw materials are expected to be affected, impacting the global economy in ways like never before (Parry, 2007; Wyman, 1991 ch 11).

According to Stern (2006), a second industrial revolution is needed to effectively address climate change. The high total cost of every new technology needed in each region, frequently with adjustments made according to the specific characteristics of each area, can only be estimated. Stern, however, also argues that the benefits of
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