TOWARDS THE REDUCTION OF ENVIRONMENTAL IMPACTS OF TEMPORARY EVENT INFRASTRUCTURES

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Abstract

In the context of temporary events, the use of structural systems suitable for short-term use, is a key strategy in terms of organization. However, this type of infrastructure currently requires the implementation of significant resources, for which the characteristics of flexibility and economic efficiency most often prevail over considerations related to sustainability.

This lack of sustainability exists due to several attributes of a temporary building. Firstly, the distance between the place of storage and the one of use requires transportation, which can sometimes represent a significant share of consumption and environmental impacts. Furthermore, heat energy required to achieve an acceptable level of indoor comfort in a building with little or no thermal isolation is disproportionate to the short time of use. Finally, the materials used, in most cases, have a significant life cycle in terms of embodied energy required for their manufacture and respectively their disposal. However, many parameters are not as yet subject to specific studies. Contributing to remedy this lack, the present paper aims to evaluate the environmental impacts of current temporary event infrastructures and to compare them with the expected performances of an alternative proposition, the On STAGE Project, the design of which refers to architectural quality and high level of comfort with an optimal use of resources and a minimization of environmental impacts.

In this context, a detailed analysis of several existing building systems is presented, including three significant indicators calculated on the whole of their life cycle: Non Renewable Energy (NRE), GWP Global Warming Potential (GWP) and Acidification Potential (AP). A set of results will secondly demonstrate, based on the preliminary values obtained for the On STAGE Project, that it is possible to design a novel temporary infrastructure capable of preserving our resources and reducing environmental impacts. Through an integrated design process based on the principles of bioclimatic architecture and the use of renewable energy sources, it is possible to meet sustainability goals, even when devices with a short lifespan are being utilized.

Keywords: temporary infrastructure, sustainable construction, integrated design, energy, environmental impact, life-cycle assessment.