Sustainable city and effects on it of natural hazard: Design by gamification

Paz Fernández [a], Matías Ceacero [b]

[ab] Department of Civil Engineering, University of Granada, Granada, Spain

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ABSTRACT

With this study we want to go deeper into the design and management of cities, as well as their sustainability. Similarly, we want to check the effects of different natural hazards in cities by carrying out simulations, using gamification. In order to do this, we start from the hypothesis that the material used, Cities: Skylines, could have potential both as a tool for territorial planning and in the Analysis and Management of Natural Hazards. To confirm this hypothesis, a series of variables will be handled, such as the sustainable city that we are going to build and the measures that will be established to prevent or minimize the impacts produced by natural damage. In this sense, in order for our city to achieve sustainability, these measures must be effective in comparison with another city that does not contemplate them, in which we assume that the losses will be greater in the face of the same catastrophe. To justify this study, we start from the evidence that the current human population settlements present an unsustainable model, to a greater or lesser extent. Due to this, numerous authors have studied the impacts produced by these settlements on the environment, as well as new models that mitigate, as far as possible, these impacts, thus paving the way for the current unsustainability. This is a current issue, which is demonstrated by the approval in 2015 of the Agenda 2030 on sustainable development by the United Nations Organization, which has 17 Sustainable Development Goals (SDG). Of these, we have focused on the eleventh because it is more relevant to our work, as it aims to make urban agglomerations inclusive, safe, resilient and sustainable. In the goals of this ODS we can see that one of its purposes is to make cities resilient and resistant to natural hazards. This can be justified by the approximately 90,000 deaths per year that they cause, in addition to direct losses of property and indirect losses of goods and services and some intangible losses. Bearing this in mind, the need for actions to prevent, minimize or repair these damages caused by natural hazards is more than notable, as is the importance of our study.

Keywords: Urban sustainability, Natural hazards, Gamification.