**A QUANTITATIVE FRAMEWORK TO ASSESS COMMUNITIES’ RESILIENCE AT THE STATE LEVEL**

**ABSTRACT**

This paper presents an analytical approach to assess the resilience of communities and states based on the Hyogo Framework for Action (HFA). The United Nations (UN) through their advancements in the Disaster Risk Reduction have released multiple international blueprints to help build the resilience of nations and communities, among which we mention the Hyogo Framework for Action and the Sendai Framework. The latter is still under development as the risk bases and the resilience indicators are yet to be defined. For this reason, the work presented here is built upon the more complete HFA framework. A number of weighted indicators taken from HFA are used to compute resilience. Those indicators, however, do not affect the resilience index equally. This discrepancy necessitates the need to weigh the indicators on the basis of their individual contribution towards resilience. In order to achieve this, we have used the Dependence Tree Analysis (DTA). This method allows identifying the dependencies between the HFA indicators and the resilience index and evaluate in unbiased way the weight factors of the different indicators.

The paper is also proposing an analytic formulation to assess a new index, *Bounce Back index* (BBI), which combines both community’s Exposure, Hazard, and Resilience together. To illustrate the methodology in full details, a case study composed of 37 countries is presented in this paper, where the *Resilience* and the *Bounce Back* indexes of each country are evaluated.