

A Proposed Methodology to Assess Disaster Risk within a Land Use Cover Change Model, Contributing to SDGs - Case Study: Bogota, Colombia

Lina Maria González (Colombia), Abbas Rajabifard (Australia), Daniel Paez (Colombia), Soheil Sabri (Australia) and Ricardo Camacho (Colombia)

Key words: Land distribution; Land management; Risk management; Spatial planning; Metronamica, IDDSS, SDI, SDG

SUMMARY

Disaster risk is derived from the combination of natural hazards and anthropogenic influence. Consequently, the social and economic impact that natural hazards have may be massive depending on the communities' vulnerability and exposure. Therefore, the way a city develops can determine its potential losses due to disaster risk, which is the reason why an understanding of hazards impact and urban growth tendencies are fundamental to reduce risk and should be considered by the decision makers. This study aims to develop a disaster risk assessment within a land use cover change model to analyze different scenarios of land development plans in Bogota, Colombia.

A Land Use Cover Change (LUCC) Model for urban and regional planning applications (Metronamica) is used to determine future land use scenarios for Bogota. Then, a risk assessment is conducted to demonstrate the opportunity for long-term risk planning by combining state-of-the-art urban modeling and risk assessment methodologies. In addition to the advanced urban model growth, this analysis is supported by a mapping and analytics Software (ArcGIS). Based on the different scenarios, it is possible to compare the behavior of disaster risk and forecast it by the year 2030.

As a result of this analysis, risk maps have been obtained for each scenario and are shown along with the conclusions and recommendations. Furthermore, this investigation is aligned with the Sustainable Development Goal (SDG) 11 (make cities inclusive, safe, resilient and sustainable) and will develop and improve the knowledge in risk assessment, to support the community and decision makers in the understanding of the impact that land development plans have on the magnitude of disastrous events, based on the found tendencies. It is intended to extend this study in the future to incorporate its findings into city resilience policy development.

A Proposed Methodology to Assess Disaster Risk within a Land Use Cover Change Model, Contributing to SDGs - Case Study: Bogota, Colombia (9861)

Lina Maria González (Colombia), Abbas Rajabifard (Australia), Daniel Paez (Colombia), Soheil Sabri (Australia) and Ricardo Camacho (Colombia)

FIG Working Week 2019

Geospatial information for a smarter life and environmental resilience

Hanoi, Vietnam, April 22–26, 2019