

Using the Land Administration Domain Model for the Mitigation and Preparedness Phases of Disaster Risk Management

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SUMMARY

Disasters caused by natural or man-made phenomena have affected humanity since its origins, especially due to the poor location of human settlements. It is possible to adopt preparation and prevention measures to minimize damage and have a good resilience capacity, integrating the cadastre with disaster risk management information. In the province of Chimborazo, Ecuador, records of disasters in the rainy season show landslides that affect essential infrastructure. In February 2021, a landslide caused the damming of the Picay River, which later generated flooding due to the rupture of the natural dam, affecting nearby infrastructure, including homes and access bridges to neighboring towns. The Territorial Administration Domain Model allows registering and assigning rights, restrictions and responsibilities, improving the virtual integration between the different actors in territorial planning. The proposed model integrates the information from the vulnerability analysis together with tenure, aligning with Goal 11 of the UN 2030 Agenda, which seeks safe, resilient, inclusive and sustainable cities. The estimation study of the susceptibility to landslides in the Guasuntos, Picay and Chanchán rivers obtained by the logistic regression model that defines areas at risk, allows to determine the physical vulnerability through the analysis of the structural, conservation and topographic characteristics of the buildings. registered in the cadastral database of the Chunchi canton. Residential, commercial-residential, agricultural, livestock, conservation, protection uses were also considered; as well as the urban expansion zones defined in the development plans and territorial ordering. Other variables used in addition to the economic ones consider the physical location, infrastructure and legal aspects. The Vulnerability Index of 480 urban and 172 rural properties was calculated using the methodological proposal for vulnerability analysis at the municipal level of the United Nations Development Program. The restrictions within the LADM are related to spatial units or properties located in vulnerable areas, establishing prohibitions such as the division, subdivision or division of protected areas, as well as establishment in risk areas. For mitigation, assignment of responsibilities, the guide to understand everything

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about landslides developed by the United States Geological Survey was used, which proposes approaches for soil stabilization, reduction and strengthening of slopes, fills, flattening, reinforcements, techniques of drainage, among others. Finally, a file generated from the LADM was designed and proposed, which includes a file with information on physical vulnerability to landslides, and recommendations on restrictions and responsibilities; along with traditional cadastral information driven by tax recovery.

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