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Landslide and Liquefaction Vulnerability Analysis Using Risk Assessment Analysis and Analytic Hierarchy Process Implication: Suitability of the New Capital of the Republic of Indonesia on Borneo Island

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Abstract : Indonesia is a country that has a high level of disaster because it is on the ring of fire, and there are several regions with three major plates meeting in the world. So that disaster analysis must always be done to see the potential disasters that might always occur, especially in this research are landslides and liquefaction. This research was conducted to analyze areas that are vulnerable to landslides and liquefaction hazards and their relationship with the assessment of the issue of moving the new capital of the Republic of Indonesia to the island of Kalimantan with a total area of 612,267.22 km². The method in this analysis uses the Analytical Hierarchy Process and consistency ratio testing as a complex and unstructured problem-solving process into several parameters by providing values. The parameters used in this analysis are the slope, land cover, lithology distribution, wetness index, earthquake data, peak ground acceleration. Weighted overlay was carried out from all these parameters using the percentage value obtained from the Analytical Hierarchy Process and confirmed its accuracy with a consistency ratio so that a percentage of the area obtained with different vulnerability classification values was obtained. Based on the analysis results obtained vulnerability classification from very high to low vulnerability. There are (0.15%) 918.40083 km² of highly vulnerable, medium (20.75%) 127,045,44815 km², low (56.54%) 346,175.886188 km², very low (22.56%) 138,127.484832 km². This research is expected to be able to map landslides and liquefaction disasters on the island of Kalimantan and provide consideration of the suitability of regional development of the new capital of the Republic of Indonesia. Also, this research is expected to provide input or can be applied to all regions that are analyzing the vulnerability of landslides and liquefaction or the suitability of the development of certain regions.

Keywords : analytic hierarchy process, Borneo Island, landslide and liquefaction, vulnerability analysis
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