Predicting Coastal Erosion Based on Erosion and Land Value Model

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ABSTRACT

The coastal region hosted significant economic activity with some of the highest property values, which the government and private investors aimed to maintain and secure their interest in the area. Yet, this area presented a growing risk to coastal properties' value because the land and structural attributes are vulnerable to erosion which could affect tax and revenue return. Few empirical studies have included erosion, an environmental factor, and reclamation apart from the land attribute in analysing its impact on the value of coastal land, especially in Malaysia. Hence, this study aims to derive a coastal erosion model for valuing the coastal land values in Malaysia. Three study areas affected by erosion were selected: the Crystal Bay Taman Alai Perdana, Melaka, Forest City - Port Tg. Pelepas, Gelang Patah, and Bachok, Kelantan. Based on the formula derivation, this study's findings have determined that coastal erosion significantly affected property values in those three case studies. As an example, using property One (1) in Crystal Bay Taman Alai Perdana, Melaka, as a subject property, with a land area of 632m², the market value of the price transaction was RM149,661.00 or RM236.81/m2 before formula application. Then, after applying the formula for the same property, considering the identified area erosion of -1.41m required a reclamation width of 2.5m to rectify the land erosion. Therefore, a value of RM184,265.00 with a difference of RM34,604.00 was determined. Hence, the study has contributed to Malaysia's coastal valuation through the comparison approach and presented practical applications that can assist the Department of Valuation and Property Services (JPPH), the private sector, and local authorities in value determination and predicting properties' future economic values.