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Based on Artificial Intelligence Simulation Study on the Impact of Land Use on Coastal Ecological Security in China's Coastal Zone

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As a transitional area between land and ocean system, coastal zone is a sensitive area of global change, which gathers 2/3 of the global population and wealth. Under the background of coastal urbanization and ecological civilization construction in China, more attention has been attached to develop the coastal zone economy efficiently with the strong interference of human activities. However, the deficiency of a suitable method to evaluate coastal ecological environment, affects the balance between utilization and protection in the coastal zone. This research compared habitat quality in the present with that in the future, and used this as the evaluation index of the impact of land use on coastal ecological security. The impact of land use transformation on natural wetlands and the quality of natural habitats has been calculated based on the coastal land use data since 1980 and the forecast land use in 2050, which under the scenario of RCP 4.5 carbon dioxide emission simulated by FLUS model artificial intelligence. The results show that in recent 20 years, there have been obvious reclamation activities in China's coastal areas, especially in Bohai Bay area, Yangtze river delta and Pearl River Delta. From 1990 to 2010, the reclamation expansion areas are 272.49 km²–270.09 km² and 50.57 km², respectively. With the development of economic transformation and ecological priority in the southeast coastal areas in recent years, the effect of habitat restoration will be remarkable by 2050, while habitat in Bohai Bay area and Pearl River Delta present an obvious degradation trend. These results, including the 30-metre-resolution habitat quality, can be used for reference for coastal ecological security maintenance and economic restructuring in different regions. This research will help to build the national ecological security evaluation system and formulate future policies for coastal ecological environment protection, and accelerate China's economic transformation.