

論文の要旨

Summary of the Dissertation

論文題目

Dissertation Title: Coastal Zone Health Index (CoZHI) for Sustainable Development and Management

(持続可能な開発と管理に資するための沿岸域健康指数 (CoZHI))

氏名

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In the face of increasing coastal zone degradation caused by anthropogenic activities and climate change, there is an urgent need for innovative models that encompass the health and sustainability of coastal ecosystems. This study introduces the coastal zone health index (CoZHI). It is an innovative multidisciplinary framework for assessing, monitoring, and guiding the sustainable development and management of coastal zones. This study, which is based on a comprehensive methodological approach that incorporates the analytical hierarchy process (AHP) under multicriteria decision analysis (MCDA), explores the complex interactions among human activities, coastal ecosystem services, and climate-related impacts. This study focused on ten diverse criteria for coastal zone health assessment. These include tourism, biodiversity, carbon storage, coastal livelihoods, protection, natural products, clean water, fisheries, marine culture, and sense of place. Furthermore, this study employs diverse datasets and indicators for vulnerability assessment, including shoreline change, geomorphology, elevation, sea surface temperature, sea level rise, and significant wave height. It also includes socioeconomic variables to determine the impact of changing coastal zone phenomena.

This paper demonstrates significant differences in coastal zone health across city contexts, emphasizing the importance of local governance, community engagement, and policy integration in fostering resilience and sustainability. The adaptability of the CoZHI framework to local decision-makers' perspectives highlights the importance of the data and decision-driven strategies to coastal zone management. This study showcases the dynamic tensions and potential combined effects between environmental conservation and socioeconomic development objectives by comparing conservationist, non-extractive, extractive, and strongly extractive development views. Furthermore, this research adds to the ongoing conversation about integrated coastal zone management (ICZM) by offering practical solutions to reduce susceptibility to hazards and enhances the coastal zone communities resiliency in the changing climate.

Finally, this study introduces a flexible and scalable framework for evaluating coastal zone health and promotes a more sustainable coastal management practice. The CoZHI framework stands out as a vital tool for policymakers and researchers in offering a thorough approach in protecting the coastal zone environment while considering the socioeconomic needs of coastal communities. Thus, this dissertation enhances our understanding of coastal zone environmental health dynamics and drives towards sustainable coastal development.

備考 論文の要旨はA4判用紙を使用し、4,000字以内とする。ただし、英文の場合は1,500語以内とする。

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