

Design of Integrated Coastal Defense and Renewable Energy Power Plant for Mundu Bay Based on Shoreline Management Plan

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Key words: Implementation of plans; Land management; Remote sensing; Risk management; Spatial planning; Urban renewal; Young surveyor; Zoning Map, Coastal Defense, Shoreline Management Plan, Land Suitability Analysis.

SUMMARY

Cirebon Regency in the “Segitiga Rebana” is a special economic zone area which includes Subang, Indramayu, Majalengka, Cirebon and Sumedang that has been targeted by the West Java Provincial Government to raise the economic growth of West Java Province by 10.91 percent in 2023. Mundu Bay, consists of three district administration areas which are Mundu district, Astanajapura district, and Pangenan district, are the downstream area of Segitiga Rebana. Mundu Bay was selected as a case study for coastal defense design based on the concept of Shoreline Management Plan (SMP). The land suitability analysis for the Mundu Bay area is obtained through an overlapping process of several thematic maps, such as physical conditions (topographic data, geology, hydrology, climatology, disasters, soil types, etc.), socioeconomic, and general spatial plan. The output of this research is the land suitability zoning map of the coastal area of Mundu Bay. The land suitability zoning map is intended to be a guide for optimal and sustainable land use planning. The zoning map is expected to be able to maximize the industrial potential that will grow in the Cirebon Regency and also strengthen Cirebon Regency's economic position in the “Segitiga Rebana” area. Some efforts are planned to defend coastal areas from the threat of sedimentation and abrasion as the impacts of sea waves. The protective infrastructure in the form of groins that are upright with the shoreline along the three districts areas of Mundu Bay has been designed for this purpose. The potential of wave energy along the sea of Mundu Bay can be utilized by implementing self-sufficient energy. The land above the groins is used as a land for placing energy processing technology, namely solar panels, and wave power plants to meet the energy and electricity supply in those 3 districts. The Integrated Coastal Defense and Renewable Energy Power Plant Based on Shoreline Management Plan will be one of the solutions for Mundu Bay Sustainable Development. The multipurpose breakwater for renewable energy power plants will be the solution to minimize the natural hazard risk of flood, erosion and abrasion instead of to fulfill the water demand of Mundu Sustainable

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