Kajian efektivitas metode struktur alat pemecah ombak dan struktur permeabel hybrid engineering sebagai studi pengembangan konsep rehabilitasi pantai di kabupaten demak = Analysis of effectiveness for method of breakwater structure and hybrid engineering permeable structure as a study to develop concept of coastal restoration in district of demak

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Abstrak

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Sebagai upaya menahan dan mengurangi laju erosi pantai utara Provinsi Jawa Tengah telah dilakukan pembangunanstruktur keras (APO dan permeable HE) di Desa Timbulsloko, Kabupaten Demak. Fungsi struktur APO dan struktur HE bersifat sementara untuk meredam gelombang datang dan memperangkap sedimen sampai terbentuk lahan sedimentasi yang relatif stabil untuk ditanami mangrove ?metode soft structure-, yang secara jangka panjang pertumbuhan perakaran mangrove akan berfungsi alami memulihkan kembali stabilitas pantai.

Penilitian ini mengulas mengenai pembentukan sedimen di sekitar struktur APO dan struktur permeable HE sampai dengan layak ditanami mangrove. Metode penelitian menggunakan deskriptif eksploratif dan pemodelan. Pengambilan sampel menggunakan purpose sampling method terhadap data hidro-oseanografi (pasang surut, arus, gelombang), sedimen, dan perubahan garis pantai. Pengolahan data dilakukan sebagai parameter dan batasan dalam pemodelan lebih lanjut. Analisis kesesuaian sedimen juga dilakukan untuk melihat kelayakan melakukan rehabilitasi mangrove.

Hasil pengamatan hidro-oseanografi diperlukan sebagai masukan dalam analisa sedimentasi. Pengamatan pada APO segmen-1 sedimen yang terkumpul selama 7 bulan sebanyak 4.519 m3 atau 21,52 m3/hari dan segmen-2 sebanyak 4.836 m3 atau 26.87 m3/hari. Sedangkan struktur permeadel HE 1-3 segmen selama 6 bulan (Desember 2013 ? Mei 2014) sebanyak 3849m3 atau 21,38 m3/hari. Hasil pemodelan dengan program CEDAS simulasi 6 bulan menunjukkan sedimentasi sebesar 3550 m3. Sedangkan jenis mangrove yang cocok ditanam dengan subtrat lumpur berpasir adalah Rhizopora mucronata dan Rhizopora stylosa.

Sedimentasi yang terbentuk menunjukkan bahwa struktur APO berfungsi dengan baik untuk mempersiapkan kondisi lingkungan yang memungkinkan dilakukan rehabilitasi mangrove. Metoda ini merupakan perpaduan antara hard structure dengan soft structure sebagai upaya pemulihan daerah erosi pantai di Desa Timbulsloko, Demak.

Metoda ini perlu dilanjutkan dan diterapkan di daerah lain dengan karakteristik pantai yang serupa.
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ABSTRACT
As an effort to reduce the northern coastal area erosion of Central Java has established hard-structure (wave-breaker structure and permeable dam). Function of wave-breaker structure and permeable dam are to reduce wave energy and to catch sediment until formed a relatively stable sedimentation land for planting mangrove - method of soft-structure- which in the long term of mangrove roots growth will be naturally restore for beach stability function.

This research is observe sedimentation process around wave-breaker and permeable dam area until can be used to mangrove planting. Research method use descriptive exploration. Sampling activity used purpose sampling method for the data of hydrooceanography, sediment and coastal line changes. Sediment analysis is used to rehabilitation of mangrove.

Hydro-oceanography observation result is needs to be input in sedimentation rate. Sedimentation in wave-breaker segment-1 show that 7 months observation can be collected 4,519 m2 (21.52 m3 per day) and segment-2 was 4,836 m3 (26.87 m3per day).Six months observation in permeable dam can collected 3,849m3 (21,38 m3 per day). Recommendation species of mangrove suitable to be planted in the location are Rhizopora mucronata and Rhizopora stylosa. CEDAS Modelling results in 6 months can be collected sediment 3,550 m3.

Sedimentation formed shows that wave-breaker and permeable structure works well to prepare the environmental conditions to allow performed mangrove rehabilitation. This method is a combination of hard structure and soft structure for restoring coastal erosion area in Timbulsloko Village, Demak Regency. This method needs to be followed and applied in other areas with similar characteristics coast.;As an effort to reduce the northern coastal area erosion of Central Java has
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