

TATA KELOLA LAHAN BERBASIS HIDROTOPOGRAFI DI KESATUAN HIDROLOGIS GAMBUT (KHG) PULAU TEBING TINGGI, PROVINSI RIAU



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Lembar Pengesahan

Abstrak

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28/8/2019

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ABSTRAK

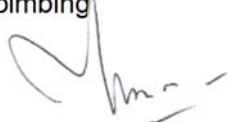
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Tata kelola lahan Kesatuan Hidrologi Gambut (KHG) Pulau Tebing Tinggi berpatokan kepada kondisi hidrotopografi, mengingat topografi permukaan lahan gambut yang datar dan vegetasi yang rendah. Penelitian ini bertujuan: 1) Memetakan rinci zona hidrotopografi; 2) Karakterisasi lahan gambut dan hidrologi dalam kaitannya dengan keseimbangan neraca air; 3) Merumuskan tata kelola lahan sub-KHG Pulau Tebing Tinggi; 4) Mengkaji hubungan topografi dan ketebalan gambut; 5) Mengkaji hubungan topografi dan muka air tanah. Zonasi hidrotopografi sub-KHG Pulau Tebing Tinggi dipetakan menggunakan data DTM LiDAR. Pengamatan pemboran dilakukan berdasarkan satuan lahan sebanyak 42 titik, pengamatan pemboran berdasarkan sistem grid sebanyak 110 titik di dalam 153 km transek, dan pemantauan tinggi muka air tanah (70 sumur pantau) dan subsidensi (9 patok subsidensi) pada bulan Desember 2017 sampai dengan Nopember 2018. Tata kelola lahan sub-KHG Pulau Tebing Tinggi dirumuskan melalui tindakan pembasahan gambut yang kering/rusak/terbakar dan penanaman kembali menggunakan jenis tanaman adaptif terhadap genangan. Hasil penelitian menunjukkan bahwa KHG Pulau Tebing Tinggi telah dirinci menjadi lima bagian satuan hidrologis yang berbeda: sub-KHG 1, sub-KHG 2, sub-KHG 3, sub-KHG 4, dan sub-KHG 5. Prioritas tata kelola lahan gambut diindikasikan dengan kategori rawan kekeringan tinggi sampai sangat tinggi. Sub-KHG 2 dan sub-KHG 1 perlu untuk segera ditata, sedangkan sub-KHG 4 dan sub-KHG 3 menjadi prioritas selanjutnya. Tata kelola lahan kawasan fungsi lindung maupun budidaya dengan cara memadukan tindakan sekat kanal/penimbunan kanal dan penanaman kembali menggunakan jenis-jenis paludikultur melalui teknik suksesi alami, pengkayaan tanaman, penanaman pola maksimal, penghijauan lingkungan, dan agroforestri. Hubungan topografi dan ketebalan gambut menunjukkan bahwa permukaan lahan gambut tidak menentukan ketebalan gambut, posisi gambut tebal tidak selalu berada pada elevasi yang tinggi di bagian tengah pulau. Bentuk permukaan lahan gambut juga tidak sama dengan bentuk permukaan lapisan substratum. Akan tetapi, permukaan lahan gambut menunjukkan pola yang serupa dengan tinggi muka air tanah, dimana elevasi muka air tanah cenderung mengikuti elevasi permukaan lahan. Muka air tanah yang dangkal di sekitar kanal yang disekat memberikan jaminan ketersediaan air tanah untuk pertumbuhan tanaman revegetatif.

Kata kunci: tata kelola lahan, DTM LiDAR, hidrotopografi, kesatuan hidrologi gambut, ketebalan gambut, substratum, tinggi muka air tanah, Sumatera

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Penulis



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**PEATLAND MANAGEMENT BASED ON
HYDROTOPOGRAPHY IN PEATLAND HYDROLOGICAL UNIT
(KHG) PULAU TEBING TINGGI, RIAU PROVINCE**



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Validity Sheet

Abstrack

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ABSTRACT

PEATLAND MANAGEMENT BASED ON HYDROTOPOGRAPHY IN PEATLAND HYDROLOGICAL UNIT (KHG) PULAU TEBING TINGGI, RIAU PROVINCE

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Peatland management of KHG Pulau Tebing Tinggi is based on hydrotopographic conditions due to its flat peatland topography surface and low vegetation. The objectives of this research were: 1) to map hydrotopographic zones in detail; 2) to characterize of peatlands and hydrology in relation to water balance; 3) to formulate peatland management of sub-KHG Pulau Tebing Tinggi; 4) to study the relationship between topography and peat thickness; 5) to examine the relationship between topography and groundwater level. Hydrotopographic zoning of Sub-KHG Pulau Tebing Tinggi was mapped using LiDAR DTM data. Drilling observations were carried out based on land unit (42 points), drilling observation based on grid system (110 points) in transects 153 km, and monitoring of ground water level (70 dipwells) and subsidence (9 pegs) were conducted from December 2017 to November 2018. Peatland management of KHG Pulau Tebing Tinggi was formulated through the actions of re-wetting dry/damaged/ burned peat and replanting using adaptive plant species against inundation. The results showed that KHG Pulau Tebing Tinggi has been broken down into five different hydrological unit sections: sub-KHG 1, sub-KHG 2, sub-KHG 3, sub-KHG 4, and sub-KHG 5. Priority for peatland management was indicated by high to very high drought prone categories. Sub-KHG 2 and sub-KHG 1 should to be immediately organized, while the next priorities were sub-KHG 4 and sub-KHG 3. The land management of protected and cultivated area was implemented by integrating canal blocking/back filling and replanting using paludiculture types through natural succession techniques, plant enrichment, maximum pattern planting, environmental greening, and agroforestry. The relationship between topography and peat thickness showed that the surface of peat did not determine peat thickness, the position of the thick peat was not always at high elevation in the middle of the island. The surface shape of peatlands was also not similar to the surface shape of the substrate layer. However, peatland surface revealed a similar pattern to groundwater level, where groundwater level tended to follow the elevation of land surface. The shallow groundwater around the blocked canals guaranteed the availability of ground water for revegetative plant growth.

Kata kunci: land management, LiDAR DTM, hydrotopography, peat hydrological unit, peat thickness, substratum, groundwater level, Sumatra

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