

EVALUASI KESESUAIAN LAHAN KAWASAN TRANSMIGRASI BERBASIS SPATIAL MULTI-CRITERIA ANALYSIS (SMCA) DENGAN PEMANFAATAN ARCGIS (STUDI KASUS: PATEK, ACEH JAYA)

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INTISARI

Kawasan Transmigrasi Patek di Kabupaten Aceh Jaya merupakan salah satu wilayah pengembangan transmigrasi yang memiliki potensi sumber daya lahan cukup besar, namun dalam implementasinya masih menghadapi berbagai tantangan seperti konflik lahan, keterbatasan aksesibilitas, serta belum optimalnya pemanfaatan potensi wilayah. Selain itu, evaluasi kawasan transmigrasi selama ini masih cenderung dilakukan secara parsial. Oleh karena itu, penelitian ini bertujuan untuk mengevaluasi tingkat kesesuaian lahan kawasan transmigrasi di Patek, Aceh Jaya menggunakan pendekatan *Spatial Multi-Criteria Analysis* (SMCA) berbasis Sistem Informasi Geografis dengan pemanfaatan ArcGIS.

Analisis kesesuaian lahan dilakukan menggunakan metode Spatial Multi-Criteria Analysis (SMCA) dengan teknik weighted overlay pada ArcGIS. Parameter yang digunakan terdiri dari aspek fisik berupa kemiringan lereng, curah hujan, dan jenis tanah, aspek aksesibilitas berupa jarak terhadap jalan utama dan fasilitas umum, serta aspek sosial-ekonomi berupa ketersediaan lahan produktif, sumber daya air, dan potensi ekonomi lokal. Seluruh parameter direklasifikasi ke dalam kelas kesesuaian, kemudian diberikan skor dan bobot melalui pendekatan *expert judgement*.

Hasil penelitian menunjukkan bahwa kawasan transmigrasi Patek didominasi oleh kelas cukup sesuai (S2) dengan luas sebesar 23.332,7 ha. Selain itu, terdapat kelas sangat sesuai (S1) seluas 14.705,16 ha, kelas sesuai marginal (S3) seluas 14.392,88 ha, dan kelas tidak sesuai (N) seluas 4.823,37 ha. Kecamatan Setia Bakti menjadi wilayah dengan luasan lahan cukup sesuai dan sangat sesuai terbesar, sedangkan Kecamatan Sampoiniet memiliki luasan lahan tidak sesuai paling tinggi akibat adanya beberapa faktor pembatas kondisi lahan.

Kata kunci: Kawasan Transmigrasi, Kesesuaian Lahan, Spatial Multi-Criteria Analysis, ArcGIS, Weighted Overlay, Aceh Jaya

**LAND SUITABILITY EVALUATION OF TRANSMIGRATION AREAS
BASED ON SPATIAL MULTI-CRITERIA ANALYSIS (SMCA)
USING ARCGIS (CASE STUDY: PATEK, ACEH JAYA)**

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ABSTRACT

Patek Transmigration Area in Aceh Jaya Regency is one of the transmigration development areas with considerable land resource potential. However, its implementation still faces several challenges such as land conflicts, limited accessibility, and the underutilization of regional potential. In addition, the evaluation of transmigration areas has generally been conducted partially. Therefore, this study aims to evaluate the land suitability level of the Patek transmigration area in Aceh Jaya using a Spatial Multi-Criteria Analysis (SMCA) approach based on Geographic Information Systems with the utilization of ArcGIS.

The land suitability analysis was conducted using the Spatial Multi-Criteria Analysis (SMCA) method with a weighted overlay technique in ArcGIS. The parameters used consisted of physical aspects including slope, rainfall, and soil type; accessibility aspects including distance to main roads and public facilities; and socio-economic aspects including the availability of productive land, water resources, and local economic potential. All parameters were reclassified into suitability classes, then assigned scores and weights through an expert judgement approach.

The results show that the Patek transmigration area is dominated by the moderately suitable class (S2) with an area of 23,332.7 ha. In addition, the highly suitable class (S1) covers 14,705.16 ha, the marginally suitable class (S3) covers 14,392.88 ha, and the not suitable class (N) covers 4,823.37 ha. Setia Bakti District has the largest area of moderately suitable and highly suitable land, while Sampoiniet District has the largest area of unsuitable land due to several limiting land conditions.

Keywords: *Transmigration Area, Land Suitability, Spatial Multi-Criteria Analysis, ArcGIS, Weighted Overlay, Aceh Jaya*