ABSTRACT

ANALYSIS OF LAND COVER CHANGES USING LANDSAT 8 MULTITEMPORAL SATELLITE IMAGERY AND RANDOM FOREST ALGORITHMS
(Case Study: Banyumas Regency)

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Village Potential Data Collection (Podes) still uses the interview method conducted directly by trained officers with relevant informants. Podes (Village Potential) data contains various regional data and an overview of the development situation of a region (restricted). Given the large number of sub-districts in Banyumas Regency, using the interview method will take quite a long time and be less effective in collecting data on the development situation of an area. To minimize this, a breakthrough is needed so that it can help collect data on village potential in helping to analyze regionalism and an overview of regions of Banyumas Regency in particular. The Random Forest algorithm was used to study the Banyumas Regency area using Landsat satellite data from 2013 to 2023. The most optimal model for image classification was observed in 2023 and 2018, showing an Overall Accuracy of 0.95 and a Kappa Coefficient of 0.94. The model with the lowest performance in 2015 shows an Overall Accuracy of 0.88 and a Kappa coefficient of 0.84. Several factors can affect research, such as cloud disturbance, season, and cloud shading, affecting the classification results. Cloud masking, date filters, and band combinations are first performed to reduce interference in research before image data is applied to the Random Forest. The results of this study are in the form of a land cover map in the Banyumas district.

Keywords: Land Cover, Landsat 8, Random Forest Classification