PERBANDINGAN PENGGUNAAN INDEKS VEGETASI UNTUK PERHITUNGAN VOLUME OKSIGEN TUTUPAN VEGETASI MENGGUNAKAN CITRA SENTINEL-2A DI KAPANEWON DEPOK KABUPATEN SLEMAN

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INTISARI

Pembangunan yang terus dilakukan di Kapanewon Depok berpengaruh pada kualitas dan kuantitas tutupan vegetasi dalam menghasilkan suplai oksigen. Estimasi volume oksigen perlu dilakukan dengan pengembangan suatu pendekatan, salah satunya melalui penginderaan jauh. Penelitian ini bertujuan untuk mengetahui kemampuan Citra Sentinel-2A dalam memetakan tutupan vegetasi tegakan di Kapanewon Depok serta mengestimasi volume oksigen yang dihasilkan tutupan vegetasi tegakan dengan menggunakan Citra Sentinel-2A.

Estimasi volume oksigen tutupan vegetasi tegakan dapat diketahui melalui nilai biomassa dengan menerapkan persamaan rumus kimia fotosintesis. Nilai biomassa diperoleh dengan menggunakan persamaan alometrik Brown. Transformasi indeks vegetasi digunakan dalam menentukan estimasi volume oksigen yang dihasilkan tutupan vegetasi tegakan. Indeks vegetasi yang digunakan yaitu *Normal Difference Vegetation Index* (NDVI), *Soil Adjusted Vegetation Index* (SAVI), dan *Enhanced Vegetation Index* (EVI). Beberapa indeks vegetasi digunakan untuk menentukan indeks vegetasi paling akurat dalam estimasi nilai biomassa dan volume oksigen tutupan vegetasi tegakan.

Hasil dari penelitian ini yaitu luas tutupan vegetasi tegakan yang sudah diinterpretasi sebesar 894 ha, sedangkan transformasi indeks vegetasi paling optimal adalah EVI dengan nilai koefisien determinasi (R^2) sebesar 0,2781. Estimasi total volume oksigen yang dihasilkan tutupan vegetasi tegakan di Kapanewon Depok pada satu hari adalah 218.545,799 ton.

Kata Kunci: Biomassa, Estimasi volume oksigen, Citra Sentinel-2A, Indeks Vegetasi

COMPARISON OF VEGETATION INDEX TO CALCULATE OXYGEN CONCENTRATION OF VEGETATION COVER USING SENTINEL-2A IMAGERY IN DEPOK DISTRICT, SLEMAN REGENCY

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ABSTRACT

The ongoing development in Depok District has affected the quality and quantity of vegetation cover in producing oxygen supply. Estimation of oxygen concentration needs to be carried out by developing an approach, one of which is through remote sensing. This study aims to determine the ability of Sentinel-2A imagery in mapping forest vegetation cover in Depok District as well as estimating the concentration of oxygen produced by forest vegetation cover using Sentinel-2A imagery.

The estimation of oxygen concentration from forest vegetation cover can be determined through biomass values by applying the chemical equation of photosynthesis. Biomass values are obtained using the Brown allometric equation. Vegetation index transformation is used to determine the estimated concentration of oxygen produced by forest vegetation cover. Vegetation indices used are Normal Difference Vegetation Index (NDVI), Soil Adjusted Vegetation Index (SAVI), and Enhanced Vegetation Index (EVI). Several vegetation indices are used to determine the most accurate vegetation index in estimating biomass values and the volume of oxygen produced by forest vegetation cover.

The result of this research is the interpreted total area of forest vegetation coverage which is 894 hectares, while the most optimal vegetation index transformation is EVI with a coefficient of determination (R^2) value of 0.2781. The estimated total oxygen volume produced by the forest vegetation coverage in Kapanewon Depok in one day is 218,545.799 tons.

Key words: *Biomass, Oxygens volume estimation, Sentinel-2A imagery, Vegetation Index*