

OPTIMASI BIAYA DISTRIBUSI DALAM PENENTUAN HARGA BIODIESEL: STUDI KASUS DI PULAU JAWA

Rafi Satya Irfanta
19/442695/PN/16101

INTISARI

Telah dilakukan penelitian mengenai optimasi terhadap biaya distribusi biodiesel jenis B30 yang bertujuan untuk meminimalkan biaya distribusi dan menurunkan harga biodiesel. Optimasi dilakukan sebagai salah satu upaya dalam mempercepat peningkatan daya saing biodiesel terhadap barang substitusinya yang kini masih lebih murah, yaitu solar. Metode dasar yang digunakan adalah metode terapan dengan objek penelitian, yaitu tren harga biodiesel, biaya distribusi yang optimal, serta rute distribusi yang efisien. Adapun subjek penelitian, yaitu harga serta rute distribusi biodiesel. Penelitian dilakukan pada 2023. Lokasi penelitian difokuskan di Pulau Jawa atas dasar metode *cluster sampling*. Data dianalisis dengan menggunakan persamaan regresi linier sederhana untuk mendapatkan perbandingan proyeksi tren harga biodiesel dan solar. Selanjutnya, dilakukan optimasi menggunakan metode transportasi pada pemrograman linier guna mendapatkan biaya distribusi minimal. Hasil optimasi kemudian dimasukkan ke dalam formula penentuan harga biodiesel. Uji t dengan sampel berpasangan dilakukan untuk mengetahui signifikansi terhadap perubahan harga biodiesel sebelum dan sesudah proses optimasi. Hasil penelitian menunjukkan bahwa harga biodiesel jenis B30 diproyeksikan akan lebih murah dibandingkan solar pada Januari 2026 mendatang. Adapun hasil optimasi diperoleh penyederhanaan rute distribusi dengan jarak yang semakin dekat dan biaya yang semakin rendah. Proses optimasi memberikan pengaruh signifikan terhadap harga biodiesel menjadi semakin rendah meski saat ini harga tersebut masih lebih tinggi dibandingkan solar. Untuk itu, perlu diupayakan kerja sama antara pemerintah dengan pelaku usaha biodiesel guna meningkatkan daya saing biodiesel di Indonesia.

Kata kunci: biodiesel B30, tren harga, biaya distribusi, metode transportasi.

***DISTRIBUTION COST OPTIMIZATION IN DETERMINING BIODIESEL PRICES:
STUDY CASE IN JAVA ISLAND***

Rafi Satya Irfanta
19/442695/PN/16101

ABSTRACT

Research has been conducted on the optimization of the distribution costs of B30 biodiesel which aims to minimize distribution costs and reduce biodiesel prices. Optimization was carried out as an effort to accelerate the increase in the competitiveness of biodiesel over its substitute goods which are currently still cheaper, namely diesel fuel. The basic method used was an applied method. The object of the research were the trend of biodiesel prices, optimal distribution costs, and efficient distribution routes. The subjects of the study were the price and distribution route of biodiesel. The study was conducted in 2023. The location of the study was focused on Java Island based on the cluster sampling method. The data were analyzed using a simple linear regression equation to obtain a comparison of the projected price trends of biodiesel and diesel. Furthermore, optimization was carried out using the transportation method in linear programming to obtain minimal distribution costs. The optimization results were applied into the biodiesel pricing formula. A paired sample t-test was carried out to determine the significance of changes in biodiesel prices before and after the optimization process. The results of the study showed that the price of B30 biodiesel was projected to be cheaper than diesel fuel in January 2026. The optimization results obtained a simplification of the distribution route with closer distances and lower costs. The optimization process had a significant impact on the price of biodiesel to be lower even though the price is currently still higher than diesel fuel. Therefore, it is necessary to work for cooperation between the government and biodiesel business actors to increase the competitiveness of biodiesel in Indonesia.

Keywords: B30 biodiesel, price trend, distribution costs, transportation method.