

Permodelan dan optimisasi pasar gas bumi jawa bagian barat untuk memaksimalkan nilai social welfare konsumen dan nilai net back gas bumi produsen = Modelling and optimization of natural gas market in west java area to maximize consumer social welfare value and gas producer net back value

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20414157&lokasi=lokal>

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## Abstrak

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Pengelolaan gas bumi merupakan isu yang penting terkait permintaan dan harga bagi kepentingan negara maupun konsumen. Penelitian ini bertujuan melakukan optimisasi terhadap fungsi social welfare mewakili kepentingan konsumen dan fungsi netback produsen mewakili kepentingan negara. Obyek penelitian ini adalah pasar gas bumi Jawa Bagian Barat dengan permintaan terbesar di Indonesia dan infrastruktur terintegrasi. Optimisasi multi obyektif digunakan untuk memperoleh titik optimum kedua fungsi. Formula harga wholesale gas bumi pada titik optimum disusun sebagai fungsi linier terhadap harga minyak bumi dengan slope  $\alpha$ ; dan konstanta  $k$ . Nilai  $\alpha$ ; diperoleh dengan rentang 0,1079 ? 0,1589 dengan  $k$  pada rentang 3,7 ? 5,38.;

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Natural gas utilization is an important issue related to the demand and prices for the benefit of country and consumers. This study aims to optimize social welfare represents the interests of consumer and producer netback representing the interests of country. The scope of this research is the natural gas market in Western Java area having the biggest demand and integrated infrastructure. Multi-objective optimization is used to obtain the optimum value of both functions. Wholesale price formula of natural gas at the optimum value is structured as a linear function of the price of crude oil with slope  $\alpha$ ; and constant  $k$ . The values of  $\alpha$ ; obtained in the range of 0.1079 to 0.1589 with  $k$  in the range of 3.7 to 5.38, Natural gas utilization is an important issue related to the demand and prices

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