

Evaluating the Economic-Environment Co-Benefit of Bio-Fuel Production; An Application of Eco-Efficiency

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Summary

Global warming and other environmental issues are assuming growing importance. For this reason, recent economic policies are finding it increasingly difficult to earn public acceptance unless they have somewhat eco-friendly components. The introduction of bio-fuels is viewed as one means of contributing to both economic growth and environmental preservation, given their benefits for regional economies and their ability to reduce greenhouse gas (GHG) emissions. To date, however, these impacts have been calculated separately and few studies have evaluated both the economic and environmental impacts in a single framework.

This study calculates the economic impact and volume of GHG emissions using a case study involving bio-ethanol production in Tokachi, Hokkaido, and then integrates these impacts by means of eco-efficiency to analyze whether the introduction of bio-fuels creates an economic-environment co-benefit.

The results show that bio-ethanol production in Tokachi region produces a larger economic impact when the reduction of GHG emissions compared with the use of gasoline is considered. We conclude that bio-ethanol production creates an economic-environment co-benefit in the region. To produce bio-ethanol that is even more eco-friendly, the aim should be to try to use more domestic inputs that are produced with lower GHG emissions.