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Case Study

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# Environmental economics of lignin derived transport fuels

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## Abstract

This paper explores the environmental and economic aspects of fast pyrolytic conversion of lignin obtained from 2G ethanol plants, to transport fuels for both the marine and automotive markets. Various scenarios are explored, pertaining to aggregation of lignin from several sites, alternative energy carriers to replace lignin, transport modalities and allocation methodology. The results highlight two critical factors that ultimately determine economic and/or environmental fuel viability. The first factor, the logistic scheme exhibited the disadvantage of the centralized approach, owing to prohibitively expensive transportation costs of the low energy-dense lignin. Life cycle analysis (LCA) displayed the second critical factor related to alternative energy carrier selection. Natural gas (NG) chosen over additional biomass boosts well-to-wheel greenhouse gas emissions (WTW GHG) to a level incompatible with the

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