New study shows furfural derivatives a way to make renewable fuel production financially appealing

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Sales of furfural derivatives could make renewable fuel production

considerably more financially attractive, according to a new University of Maine study.

The study, "Economics of biofuels: Market potential of furfural and its derivatives," was led by Kaveh Dalvand, a researcher in the School of Economics, and was published in the journal *Biomass & Bioenergy*.

A major challenge in making renewable fuel is reaching the target price set by the United States Department of Energy's Bioenergy Technologies Office. The study's focus was to evaluate the economic potential of several major biochemical co-products derived from renewable fuel production that may help overcome this challenge.

The research team looked for co-products of renewable fuel that do not influence the market prices of other co-products and reduce the profitability of renewable fuel investments overall, with a specific focus on furfural.

Furfural is a platform chemical that can be converted to more than 80 other chemicals and materials, and can be produced in significant volumes through renewable fuel production. However, the quantity of furfural produced at a commercial scale could impact its national and world price, and lower its economic return from production, according to the research team.

The researchers recommend converting furfural to other products to have a smaller impact on market prices and higher revenue for the whole renewable fuel process.

The researchers found that two of the furfural derivatives can be produced and sold in the market instead of furfural, and production of one or the other should be prioritized depending on current market elasticity. Based on the researchers' models, the profit when selling

furfural derivatives is almost five times the profit when selling furfural.

More information: Kaveh Dalvand et al. Economics of biofuels: Market potential of furfural and its derivatives, *Biomass and Bioenergy* (2018). DOI: 10.1016/j.biombioe.2018.04.005

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