

Techno-Economic Analysis of Mixed Alcohol Production Through Hydrogenation of Volatile Fatty Acids Derived From Seaweed

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Recently, there has been growing interest regarding use of seaweeds as biomass feedstocks. On bioethanol production from seaweeds, there are two main obstacles that make it hardly applicable in industrial scale such as high seaweed price and low ethanol yield. An alternative way to produce bioethanol would be finding new substitute processes that produce ethanol with higher conversion and lower final ethanol price. Volatile fatty acids (VFAs) can be easily produced from seaweeds. They have higher conversion yields and it can easily be converted to ethanol by hydrogenation. For these reasons, this study develops a techno-economic model to survey economy of VFAs production from seaweeds followed by hydrogenation to produce bioethanol. Our previous study on direct bioethanol production from seaweed showed that the maximum dry seaweed price (MDSP) should be lower than 160 US\$ per ton to allow ethanol production economically viable. This study also calculates the MDSP for this process and survey possible opportunities to improve the economy of ethanol production.