# Article information:

Biorefinery ethanol upgrading: Opportunities and challenges - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S254243512100091X>

# Article summary:

1. Lignocellulosic biomass is a promising feedstock for producing fuel ethanol due to its availability, and upgrading ethanol to advanced fuels with tailored properties is being studied.

2. The total ethanol production capacity in the United States is about 15,800 million gallons per year, with potential to increase over time.

3. To successfully convert ethanol-to-hydrocarbon drop-in fuels at economically competitive prices, more in-depth and rigorous techno-economic analysis will be required, along with overcoming supply chain limitations and market and policy related challenges.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Biorefinery ethanol upgrading: Opportunities and challenges" discusses the potential of using ethanol as a precursor to make jet fuel and other transportation fuels. The article highlights the availability of feedstock from starch sugar and lignocellulosic biomass, technological maturity of fuel ethanol conversion, and the “blend wall” issue as factors that make ethanol a promising feedstock for producing fuel. However, the article fails to provide a balanced view of the potential risks associated with using ethanol as a precursor to make jet fuel.

One-sided reporting is evident in the article's failure to discuss the environmental impact of using corn-based ethanol. While it is true that GHG emissions from corn-based ethanol are about 39% lower than gasoline, this does not take into account the environmental impact of growing corn for biofuel production. Corn production requires large amounts of water, fertilizer, and pesticides, which can have negative impacts on soil health and water quality.

The article also fails to address concerns about food security. Using corn for biofuel production can lead to higher food prices and food shortages in developing countries where corn is a staple crop. This issue has been raised by several organizations, including Oxfam International.

Another missing point of consideration is the potential impact on biodiversity. Converting natural habitats into agricultural land for biofuel production can lead to habitat loss and fragmentation, which can have negative impacts on wildlife populations.

The article also contains promotional content that presents catalytic upgrading of ethanol to hydrocarbon fuels as a solution without fully exploring its limitations or potential risks. For example, while catalytic upgrading may be cost-effective under certain conditions such as high CO2 electrolysis energy efficiency and low electricity cost, it may not be economically viable in all situations.

Overall, while the article provides useful information about opportunities and challenges associated with biorefinery ethanol upgrading, it fails to provide a balanced view of potential risks associated with using ethanol as a precursor to make jet fuel. The article's promotional content and one-sided reporting may be influenced by the funding source, which is the U.S. Department of Energy’s Bioenergy Technologies Office.

# Topics for further research:

* Environmental impact of corn-based ethanol production
* Water usage in corn production for biofuels
* Pesticide use in corn production for biofuels
* Food security concerns related to biofuel production
* Biodiversity impacts of converting natural habitats to agricultural land for biofuels
* Limitations and potential risks of catalytic upgrading of ethanol to hydrocarbon fuels

# Report location:

<https://www.fullpicture.app/item/980ee6dec370f410a5472b3439ae50e9>