# Article information:

Techno-economic analysis and life cycle assessment of mixed plastic waste gasification for production of methanol and hydrogen - Green Chemistry (RSC Publishing)
<https://pubs.rsc.org/en/content/articlelanding/2023/gc/d3gc00679d>

# Article summary:

1. The article presents a techno-economic analysis and life cycle assessment of gasification processes for converting mixed plastic waste (MPW) into methanol and hydrogen.

2. The minimum selling price (MSP) of methanol and hydrogen produced from MPW gasification is $0.70 kg−1 and $3.41 kg−1, respectively.

3. Methanol and hydrogen produced from MPW gasification can reduce total supply chain energy use by 52% and 56%, but greenhouse gas emissions are estimated to increase by 166% and 36% compared to current production pathways.

# 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 titled "Techno-economic analysis and life cycle assessment of mixed plastic waste gasification for production of methanol and hydrogen" provides an analysis of the feasibility and environmental impact of using gasification to convert mixed plastic waste (MPW) into synthesis gas (syngas) for the production of methanol and hydrogen. The article presents a techno-economic analysis (TEA) and a life cycle assessment (LCA) to evaluate the economic viability and environmental performance of this process.

One potential bias in the article is its focus on the positive aspects of MPW gasification, such as its potential to reduce total supply chain energy use and its lower levels of certain pollutants compared to incumbent processes. While these are important considerations, it is also necessary to critically examine the potential risks and drawbacks associated with MPW gasification. For example, the article briefly mentions that greenhouse gas emissions from MPW-gasification pathways are estimated to increase compared to current production pathways, but does not delve into the implications or potential consequences of this increase.

Additionally, the article does not thoroughly explore counterarguments or alternative perspectives on MPW gasification. It primarily presents a positive view of the technology without addressing potential concerns or limitations. This one-sided reporting may lead readers to form an incomplete understanding of the topic.

Furthermore, some claims made in the article lack sufficient evidence or support. For instance, it states that waste plastic feedstock prices below $0.02 kg-1 can enable MPW-based processes to achieve cost parity with existing fossil-fuel-derived pathways, but does not provide data or references to back up this claim.

The article also includes promotional content by highlighting that it is part of a themed collection on Green Chemistry Hot Articles. This may suggest a bias towards promoting green chemistry technologies without providing a balanced assessment.

Overall, while the article provides valuable insights into the techno-economic analysis and life cycle assessment of MPW gasification for methanol and hydrogen production, it has potential biases in its reporting, lacks thorough exploration of counterarguments, and includes unsupported claims. A more comprehensive analysis would consider the potential risks and drawbacks of MPW gasification, provide evidence for the claims made, and present a balanced view of the topic.

# Topics for further research:

* Potential risks and drawbacks of mixed plastic waste gasification
* Environmental consequences of increased greenhouse gas emissions from MPW gasification
* Counterarguments against MPW gasification as a sustainable waste management solution
* Limitations and challenges of MPW gasification technology
* Comparative analysis of MPW gasification versus other waste-to-energy processes
* Economic feasibility of MPW gasification at different waste plastic feedstock prices

# Report location:

<https://www.fullpicture.app/item/ea6168d07c66517c8ef09814da23353c>