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What are the Advantages of Replacing Fossil Fuels with Biofuels?

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Abstract

Fossil fuels' negative impact on the environment is leading many people to worry. In addition to that, fossil fuels are running out as every day goes by. Thus, finding a renewable and environmentally friendly source of energy has now become a necessity. Biofuels offer clean energy that comes with numerous economic and environmental benefits. Furthermore, biofuels can absorb more carbon from the air than they would produce when burnt. Giving a chance to clear the air from fossil fuel's carbon.

Introduction

- "*Driving under the influence of alcohol is forbidden – but you could be requested by law to drive using alcohol.*" (Leitner et al., 2017, p. 5413, italics added)
- Biofuels are derived from biomass, which is some crops like corn and soybean. Some examples of these biofuels are ethanol, butanol, and other alcohol compounds. (Bhutto et al., 2016)
- Biofuels offer a sustainable, secure, and easy-to-implement replacement to fossil fuels that have significant economic and environmental benefits.

Why biofuels?

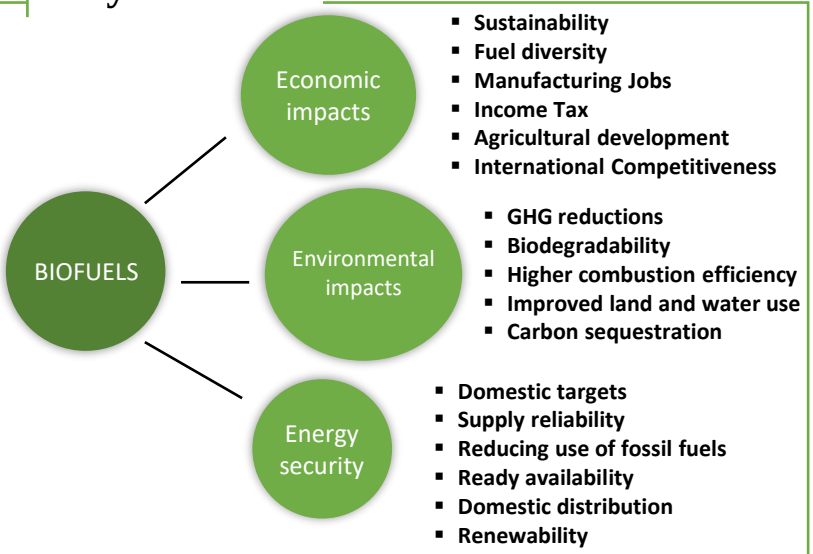

Fig. 2 (Adapted from Bhutto et al., 2016, p.32142)

- The conversion from fossil fuels to biofuels has many benefits that can be categorized into 3 categories: economic benefits, environmental benefits, and energy security. (Bhutto et al., 2016). the following points can be added and highlighted:

Minimal Waste:

- Biomass is a copious and recyclable source of energy whose waste is used for several purposes such as **hydrothermal carbonization**, which is a chemical process to produce chemically activated carbon, which in turn is used in industrial and medical applications. (Jain et al., 2016)

Easy-to-Implement:

- In a world that is mainly powered by fossil fuels, all the machines are built to be compatible with the combustion of fuels, e.g., internal combustion engines commonly found in cars and buses. Thus, introducing a renewable source that requires minimal change in current combustion technologies should be appealing for both governments and industry to adopt.

Carbon-Negativity:

- Biofuels theoretically absorbs more carbon than they emit. This is called carbon-negativity (Mathews, 2008). Finding a viable way to achieve this goal would be the cornerstone of paying humankind's heavy carbon debt.

What are biofuels?

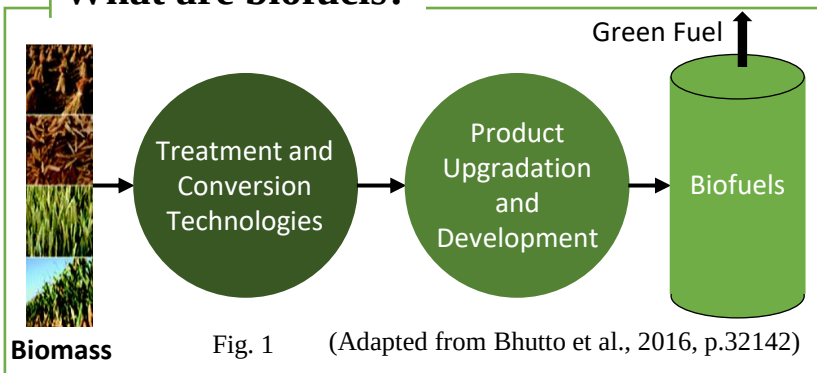

Fig. 1 (Adapted from Bhutto et al., 2016, p.32142)

- Biofuels are extracted from biomass, which can be farm crops or wood or others. Biomass undergoes specific treatments and processes to turn into combustible biofuel like ethanol or biodiesel. (U.S. - EIA, 2018)

Conclusion

- The problems caused by fossil fuels are becoming increasingly alarming due to their environmental effects as well as their non-renewable nature; in turn, this raises questions regarding world energy security.
- Biofuels, which are mainly alcohol compounds, offer a renewable and sustainable energy alternative to fossil fuels that is yet very similar in terms of operation, thus, paving the road for an easy switch towards sustainability.
- The benefits of biofuels for the economy and the environment, as well as the energy security they provide, allow them to play a pivotal role in replacing fossil fuels in many sectors.

References

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