

A review for key challenges of the development of biodiesel industry

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ABSTRACT

The declaration of 2016, third year in a row, as the warmest year ever recorded, the rising of CO₂ concentration, increasing of seawater acidity as well as sea surface temperature are among the worst scenarios of global warming. One of the ways to reduce the harmful emissions is to use renewable energy sources. Biodiesel, being one of the less environment-damaging options to fuel diesel engines, is making its way globally as a greener portion of diesel engines emissions. For countries where utilization of high technological energy sources is a real challenge, then vegetable oils and waste oils from local sources are the possible option. This greener fuel has been mandated of its usage in many countries across the continents in a blending range up to 20% with petro-diesel. The concept of biorefinery is a must as to make the biodiesel industry viable, and to gauge its practicability, Biorefinery Complexity Index (BCI) is a way to go. Production and the use of biodiesel are not without challenges; challenges in term of cost, cold performance, storage stability, engine warranty, post production issues, boundary setting in life cycle analysis and public perceptions. Without an overall assessment, the benefits of biodiesel are not guaranteed; as such, this review is aimed to discuss those challenges, in addition providing possible options as to make this greener fuel into reality in much wider scope.

KEYWORDS:

Biodiesel; Methyl ester; Renewable energy; Engine warranty; Sustainable; Biorefinery