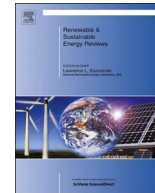


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The prospect of microalgal biodiesel using agro-industrial and industrial wastes in Malaysia



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ABSTRACT

The world's biodiesel demand is rising from day to day due to the urgency to tackle fuel crisis, greenhouse gases (GHG) emissions and climatic changes in the near future. This alternative energy will minimize the dependency on fossil fuels while guarantees a continuous energy supply and upholds the ecosystem sustainability. Malaysia, as a developing country is still finding a suitable green energy source to support the national daily energy consumption without affecting the political stability and socio-economic background. In this article, a realistic effort made by applying microalgal biotechnology for biodiesel production and concurrently mitigating CO₂ and other flue gases in the presence of tertiary wastewater. Microalgae produce high amount of biomass feedstock in a short time with less amount of land capacity by using wastewater as the medium to grow. Malaysia is producing variable wastes from both agro-industrial and industrial sectors that can be recycled as a nutrient supply for microalgae. Wastewater that is available in Malaysia comprises high nutrient value compounds that have high amount of nitrogen and phosphorus. The current trend in Malaysia in the biodiesel industry as well as the application of microalgae as a superlative feedstock to replace conventional methods and boost future biodiesel industries are well elaborated in this article. This also includes the opportunities and challenges of Malaysia in cultivating microalgae with stronger technical feasibility and higher turnout in the economy by using the high rate algal pond (HRAP). Apart from that, this review paper illustrates the process of converting waste from five different sources in biofuel production by using microalgae as the intermediate tool.