



19 AUG, 2024

## Biofuel, a good green option

The Star, Malaysia



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MALAYSIA'S New Energy Transition Roadmap has identified biomass as a source of energy for the country. Biomass includes waste from agriculture as well as dedicated biomass crops. But it is specifically oil palm biomass, mainly the empty fruit bunches (EFBs), that is attracting much investor interest. Every year, about 20 million tonnes are available.

The National Biomass Action Plan provides a roadmap to developing this new biomass business. However, not everyone is comfortable with the meteoric rise of the palm oil industry. We now hear of another attempt to undermine it: A recent British news report says burning EFBs can lead to higher carbon emissions ("Viability of biomass energy in green race", *The Star*, Aug 17; online at [bit.ly/star\\_biomass](https://bit.ly/star_biomass)). This is another nonsensical claim lacking in science. The fact is, for a palm oil-producing country like Malaysia, biomass is a much better option than even solar energy since the import element is almost zero. It is more inclusive economically because the ultimate value would trickle down to oil palm smallholders.

Here are some reasons why I consider biofuels a better option than solar energy:

Biofuels have a higher energy density. This makes them suitable for applications requiring a compact, high-energy source, such as in aviation, shipping, or heavy machinery. They can be stored and transported easily, providing



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a continuous and reliable energy source. Solar energy cannot match this. Although solar energy can be stored in batteries, current battery technology is less energy-dense than biofuels, making long-term or large-scale storage more challenging.

Biofuels can often be used in existing internal combustion engines with minimal modifications, allowing for a smoother transition away from fossil fuels. This is particularly advantageous in sectors like transportation. Solar energy typically requires significant infrastructure changes, including the installation of solar panels and battery storage systems.

Biofuels can provide power on demand, making them a more reliable option for applications that require continuous energy. And they are produced from organic materials, including agri-

cultural waste, dedicated energy crops, and even algae. This production can take place in areas unsuitable for solar panels and can utilise waste materials that would otherwise be discarded. Solar panels require large areas of land. In areas where land is scarce or expensive, biofuel production is more feasible.

Biofuel production can be scaled up or down more easily, and the fuel can be transported to where it's needed. This flexibility makes biofuels a good option where energy needs fluctuate. Solar energy production is location-dependent and requires specific conditions to be most effective. It may not be as scalable in regions with limited sunlight.

When produced sustainably, biofuels can be carbon-neutral, as the carbon dioxide they emit when burned is roughly equivalent to the carbon dioxide

absorbed by the plants used to produce the fuels. They can also utilise waste products, reducing overall environmental impact. Solar energy is also carbon-neutral in operation, though the production and disposal of solar panels have environmental impacts. However, once installed, solar panels provide clean energy for decades with minimal additional environmental impact.

Biofuels might be considered a better option than solar energy where high energy density, ease of storage, infrastructure compatibility, and continuous power generation are critical. Solar energy, while OK for stationary and renewable power generation, has limitations in terms of energy storage and land use that make biofuels more suitable, especially in transportation and heavy industry.

Clearly, new energy from oil palm biomass is a better option for Malaysia. Building a robust oil palm biomass industry is a priority.

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