

# KERATAN AKHBAR

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## Algae can be economic powerhouse

LOW-CARBON ENERGY

# ALGAE CAN BE ECONOMIC POWERHOUSE

**T**HE search for low-carbon energy continues. The latest addition is bioenergy from algae.

UCSI University, in collaboration with the University of Cambridge, recently hosted a forum to deliberate on a roadmap for sustainable bioenergy.

The growing interest in bioenergy has driven up investment in research worldwide on algae, an aquatic plant. Apart from energy, microalgae also finds wide use as live feed material in aquaculture.

Algae's antioxidants are much sought after in cosmetics and nutraceuticals.

Microalgae can be produced using nutrients from agricultural waste and industrial effluents, a plus in avoiding potentially polluting disposal.

Palm oil mill effluent is one potential candidate that has passed rigor-

ous studies.

Algae cultivation using carbon emission from a power plant is being exploited in the carbon capture, storage and utilisation approach in reaching net zero.

Studies have also revealed the potential for electricity generation from the algal electrochemical bio-system, though still at an early stage. The process fits nicely in the circular economy.

The reason algae has attracted much interest is the fact that algae is known for its rapid growth rate and high oil content.

It can produce more oil per unit of land compared with traditional crops used for biofuel production.

This high yield makes algae an attractive feedstock for sustainable aviation fuel production.

Algae-based biofuels have the potential to be carbon-neutral or

even carbon-negative. As algae grow, they absorb carbon dioxide from the atmosphere through photosynthesis.

When algae are converted into biofuel, the CO<sub>2</sub> emitted during combustion is offset by the CO<sub>2</sub> absorbed during growth, resulting in a net zero or negative carbon footprint.

Algae can be cultivated in non-arable land, such as desert areas or wastewater ponds, reducing competition with food crops.

Additionally, certain species of algae can grow using brackish water or wastewater, minimising the need for freshwater resources.

Algae can be grown in various forms, including microalgae and macroalgae (seaweed).

This versatility allows for different cultivation methods and the production of a range of biofuel types, including biodiesel and bio jet fuel, which can be used in aviation.

Algae cultivation can also generate valuable co-products, such as protein-rich biomass for animal feed or biofertilisers.

This adds value to the algae-based biofuel production process.

A recently completed study on microalgae, conducted as a collaboration between Malaysia and Japan under the SATREP platform hosted by the Higher Education Ministry, has again confirmed the potential of algae as an economic powerhouse for the country.

At a time when the nation is looking at economic diversification opportunities, there is no doubt that algae is a good candidate to build on.

I would suggest that the ministry assemble experts on algae, from academia and industry, to craft a position paper to turn algae into an industry, just like what we did making palm oil a globally competitive business.

A business ecosystem should be proposed to drive the growth of the algae-based economy.

This is the right time to initiate such a blueprint since many of our energy conglomerates have also expressed an interest to invest in algae.

It has been widely reported that Petronas and Tenaga Nasional Bhd have made known their intention to invest in algae.

Like the palm oil industry ecosystem, a Malaysian Algae Development Board should be established to drive the regulatory and technology development aspects of the ecosystem.

The Economy Ministry is the right entity to coordinate.

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