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Seaweed Biomass R&D Program Expands Biofuel Opportunity

Highlights

- R&D program is focused on developing renewable biofuel opportunities from seaweed biomass generated through its existing operations.
- Biofuels derived from seaweed biomass have the potential to replace fossil fuels in part or in whole across energy, fuel and transport applications.
- Seaweed biomass when broken down by fermentation in the Company's existing operations produces biohydrogen and other biogases as a by-product.
- As the Company's fermentation-based activities approach commercialisation, proposed to similarly upscale production of biogases in accordance with the outcomes of its R&D program.
- Seaweed biomass can also be processed using hydrothermal liquefaction (HTL) to produce biocrude, a renewable liquid biofuel.
- The Company's R&D program will focus on optimising biogas production from fermentation and biocrude production from HTL processing of seaweed biomass.
- Potential ESG advantages of seaweed-derived biofuels compared with many land-based biofuel feedstocks, include no requirement for arable land, freshwater or fertiliser inputs.

Seaweed Biomass Platform and Biofuel Opportunity

The Board of BPH Global Ltd (ASX: BP8) (**Company**) is pleased to provide an update on the advancement of its seaweed-based research and development (**R&D**) program and the associated opportunity to produce renewable biofuels from seaweed biomass that may partially replace fossil fuels across energy, fuel and transport markets.

- **Biohydrogen and biogases:** The Company's existing research activities involve processing seaweed biomass through fermentation. This process breaks down organic material and produces a liquid extract from which nutraceutical compounds may be obtained for potential use in functional food ingredients, dietary supplements and cosmetic formulations.

During this fermentation process, biogases including biohydrogen and biomethane are produced as a natural by-product. As fermentation activity increases in support of nutraceutical product development, the Company expects that biohydrogen generation will also increase, creating an opportunity to capture and potentially commercialise hydrogen produced during the process as a low-carbon alternative to fossil fuel-based energy sources.

- **Biocrude:** the Company is evaluating **hydrothermal liquefaction (HTL)** as a potential method of converting seaweed biomass into **biocrude**, a renewable liquid biofuel. HTL is a thermochemical process that converts wet biomass into a crude-like oil under high temperature and pressure. Seaweed biomass is considered a promising feedstock for this process because it can be processed without extensive drying. This can reduce processing costs, as drying biomass is typically energy-intensive and represents a significant operational expense in many biofuel production processes.

Global Biofuel Context and Pathway to Commercialisation

Global investment in low-carbon energy technologies continues to increase as governments and industry seek scalable biofuel and hydrogen solutions capable of partially or wholly replacing fossil fuels. Marine biomass such as seaweed is increasingly being examined internationally as a potential renewable feedstock for both hydrogen production and liquid biofuels.

The Company's commercialisation strategy is focused on maximising fuel yields from seaweed biomass, including increasing the production of biogases from fermentation and biocrude from hydrothermal liquefaction (HTL).

The principal commercial outlets for these fuels are expected to include the sale of biohydrogen, biomethane and biocrude into energy, fuel and transport markets where they may serve as renewable substitutes for fossil fuels, including potential opportunities within the sustainable aviation fuel sector.

Biofuel Optimisation R&D Program

The Company's research and development program will focus on evaluating key factors that may influence biofuel yields from seaweed biomass. These key factors include:

- **Seaweed species selection (biogases and biocrude):** Different seaweed species contain varying organic compounds and carbohydrate structures that may influence both fermentation performance and conversion efficiency in HTL processing. The Company will evaluate different species of seaweed to determine which provide the most favourable outcomes for hydrogen generation and liquid biofuel conversion respectively.
- **Fermentation process optimisation (biogases):** Hydrogen generation during fermentation depends on fermentation conditions and microbial systems. The Company will assess fermentation parameters and microbial activity to improve the production of biohydrogen and biomethane during the breakdown of seaweed biomass.
- **Hydrothermal liquefaction processing (biocrude):** The Company will evaluate HTL processing parameters, including temperature, pressure and catalyst systems, that may improve the conversion efficiency of seaweed biomass into biocrude.

ESG Benefits of Seaweed-Derived Biohydrogen

Biofuels derived from marine seaweed biomass may offer several environmental, social and governance (ESG) advantages compared with some land-based biofuel feedstocks. Seaweed cultivation occurs in marine environments and does not require agricultural land, freshwater irrigation or significant fertiliser inputs. Seaweed also absorbs carbon dioxide during its growth cycle and does not compete with agricultural land used for food production. These characteristics may position marine biomass as a sustainable feedstock for renewable energy and fuel production that can partially replace fossil fuel-based energy sources.

Background

The Company previously announced in June 2024 that its seaweed fermentation research program had the potential to produce biogases including biohydrogen and biomethane as a natural by-product of the fermentation of seaweed biomass. During the interim period, the Company focused on progressing seaweed-derived nutraceutical products toward potential commercialisation.

The Company has also previously undertaken preliminary research into hydrothermal liquefaction (HTL) processing of seaweed biomass to produce biocrude, including research conducted in conjunction with Temasek Innovation Holdings Pte Ltd (**TIH**), an operating company of Temasek Polytechnic in Singapore. With R&D initiatives now advancing closer to commercialisation, the Company believes it is appropriate to expand its focus to include renewable fuel opportunities associated with the processing of seaweed biomass, including both hydrogen production from fermentation and liquid biofuel production through HTL.

The Company will provide regular updates to the market on progress of the R&D program and the achievement of key milestones.

This announcement has been authorised by the Board of Directors.

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For further information, please visit our website at www.bphglobal.com or contact the Company Secretary on 03 9088 2049.