



Euglena, PETRONAS and Eni to Explore Biorefinery Opportunity in Malaysia

Tokyo, Kuala Lumpur, and San Donato Milanese (MI), 14 December 2022 – Euglena Co., Ltd. (Euglena), Petroliaam Nasional Berhad (PETRONAS) and Eni S.p.A (Eni) today announced that they are jointly studying the possibility of developing and operating a biorefinery in the Pengerang Integrated Complex (PIC), one of the largest integrated refinery and petrochemical developments in Southeast Asia.

The three parties are currently carrying out technical and economic feasibility assessments for the proposed project, with the investment decision expected to be reached by 2023 and the plant targeted to be completed by 2025. To be located adjacent to PETRONAS' existing integrated refinery and petrochemical facilities, the biorefinery will be able to leverage the company's integrated value chain as well as existing utilities and facilities in PIC. The complex's strategic location with easy access to major international shipping lanes will also enhance the planned refinery's ability to cater for the rising demand for sustainable solutions worldwide.

The biorefinery is expected to have a flexible configuration to maximise the production of Sustainable Aviation Fuel (SAF) for aircraft as well as Hydrogenated Vegetable Oil (HVO) for on-road vehicles, diesel-powered trains, and marine transportation. This flexibility will enable the production to meet the ever-changing and growing energy demands of customers.

The biorefinery is also expected to have the capability to process about 650,000 tonnes per year of raw materials to produce up to 12,500 barrels per day of biofuels, namely SAF, HVO, and bio-naphtha. The raw materials to be used will not compete with those in the food chain such as used vegetable oils, animal fats, waste from the processing of vegetable oils, and other biomass including microalgae oils to be explored in the mid-term.

Euglena is Japan's leading biotechnology-driven and sustainability-oriented growth company that is proven by winning two Prime Minister Prizes in 2015 (Start-up award) and 2021 (SDGs award). With its R&D capabilities such as mass cultivation technology of the microalgae "Euglena", Euglena has rapidly grown the Healthcare Business and been engaged in establishing the Biofuel Business. Euglena completed Japan's first demonstration plant producing renewable jet and diesel fuels in 2018 and has supplied its products to corporates and organisations covering land, air and marine areas across the country. Recently, Euglena became Japan's first supplier that introduced domestic SAF to the hydrant system of Narita International Airport and completed Japan's first supply of SAF to the governmental aircraft of Japan.

The Founder and President of Euglena, Mitsuru Izumo, said, "This project is a significant step for the commercialisation of our Biofuel business and our challenge to expediting biofuel usages and

decarbonisation in Japan. I am extremely excited for the opportunity to work with the great partners of respective expertise and stride together for a brighter and cleaner future.”

“As PETRONAS continues to chart its course into the biofuels space, decarbonising and diversifying its production portfolio to cater for the rising global demand for sustainable solutions, this collaboration is momentous to unlock the partners’ respective strengths and jointly strengthen our position in the field of biofuels in Malaysia and around the world,” said Ahmad Adly Alias, Vice President, Refining, Marketing and Trading of PETRONAS’ Downstream business.

PETRONAS is the first Asian energy company to declare its Net Zero Carbon Emissions by 2050 aspiration and had recently been involved in a partnership to supply SAF for Malaysia Airlines’ first commercial cargo and passenger flights using the cleaner and more viable fuel option.

It is also exploring other ventures into the biofuels space via co-processing at its existing facilities and other channels. In the same vein, PETRONAS has also renewed its decade-long partnership as the Title and Technical Partner of the Mercedes-AMG PETRONAS F1 Team ahead of the 2026 season as the motorsport shifts towards sustainable fuel. This is in line with PETRONAS’ commitment not just to its larger bio-fuel agenda, but to also develop and deliver clean energy solutions to its partners and customers.

The planned biorefinery will use the Honeywell UOP’s Ecofining™ process which was developed by Eni in cooperation with Honeywell UOP.

Giuseppe Ricci, Chief Operating Officer for Energy Evolution at Eni, said: “For the biorefinery project to develop together with Euglena and PETRONAS in Malaysia, Eni is pleased to share its experience and its breakthrough technologies that enabled the company to make the world’s first conversion of a refinery into a biorefinery in Porto Marghera (Venice) in 2014, and to inaugurate a second one in Gela, Sicily in 2019.”

Eni plans to achieve carbon neutrality by 2050 through a decarbonization pathway that aims to reduce the emissions generated throughout the entire products life cycle. To achieve this goal, in the area of mobility Eni combines all solutions synergically: the role of biofuels is decisive because they represent an energy carrier that can immediately make a contribution to the decarbonization of transport. HVO, of which Eni is the only Italian producer and the second in Europe, can be used either added to diesel fuel or in pure form in all approved engines: 100%-pure HVO enables CO₂ emission reductions of 60% to 90% (calculated throughout the lifecycle), depending on the feedstock, compared to the standard fossil fuel mix. In addition, currently biofuels are also a real solution for decarbonizing the aviation sector: Eni Biojet is the SAF produced at Eni’s Livorno refinery, in cooperation with Eni’s Gela biorefinery. It is mixed 20% into Eni Jet Fuel; and from 2024, production of an additional 150 thousand tons/year of Eni Biojet will be started in Gela, able to meet the potential blending obligation of the Italian market for 2025.

About Euglena

Euglena Co., Ltd. is a Japan-based biotechnology-driven and sustainability-oriented growth company, starting from the world’s first success in outdoor mass cultivation of the edible microalgae *Euglena* in 2005. With “Sustainability First” as its corporate philosophy and its advanced R&D capabilities for proposing sustainable solutions to social problems, the Company has operated the Healthcare Business for marketing

functional foods/cosmetics, the Biofuel Business for producing biofuels, and the Other Business in such areas as fertiliser, bioinformatics, farming, social business, etc. The Company went public in 2012 and is currently listed on the Prime Market of the Tokyo Stock Exchange.

Further details can be found at www.euglena.co.jp/en/

About PETRONAS

PETRONAS is a dynamic global energy group with presence in over 50 countries. PETRONAS produces and delivers energy and solutions that power society's progress in a responsible and sustainable manner.

PETRONAS seeks energy potential across the globe, optimising value through its integrated business model. Its portfolio includes cleaner conventional and renewable resources and a ready range of advanced products and adaptive solutions.

Sustainability is at the core of what PETRONAS does as it harnesses the good in energy to elevate and enrich lives. People are its strength and partners for growth, driving its passion for innovation to progress towards the future of energy sustainability.

Further details can be found at www.petronas.com.my

About Eni

Eni is an integrated energy company with more than 30,000 employees in 69 countries around the world. Further details can be found at www.eni.com