

Joint Press Release

September 27, 2020

**Saudi Arabian Oil Company(Saudi Aramco)
The Institute of Energy Economics, Japan (IEEJ)
Saudi Basic Industries Corp. (SABIC)**

World's first blue ammonia shipment opens new route to a sustainable future

- *Successful demonstration of supply network from Saudi Arabia to Japan*
- *40 tons of high-grade blue ammonia already dispatched*
- *Progress is a significant step towards a sustainable hydrogen society and a circular carbon economy*

Dhahran, Saudi Arabia; September 27, 2020 – Aramco and the Institute of Energy Economics, Japan (IEEJ), in partnership with SABIC, have successfully demonstrated the production and shipment of blue ammonia from Saudi Arabia to Japan with support from the Japanese Ministry of Economy, Trade and Industry (METI). Forty (40) tons of high-grade blue ammonia have already been dispatched to Japan for use in zero-carbon power generation.

The announcement comes amid growing appreciation of the role hydrogen will play in the global energy system. Ammonia, a compound consisting of three parts hydrogen and one part nitrogen, can contribute to addressing the challenge of meeting the world's growing energy needs in a reliable, affordable and sustainable manner.

The Saudi-Japan blue ammonia supply network demonstration spanned the full value chain; including the conversion of hydrocarbons to hydrogen and then to ammonia, as well as the capture of associated carbon dioxide (CO₂) emissions. It overcame challenges associated with the shipping of blue ammonia to Japan for use in power plants, with 30 tons of CO₂ captured during the process designated for use in methanol production at SABIC's Ibn-Sina facility and another 20 tons of captured CO₂ being used for Enhanced Oil Recovery (EOR) at Aramco's Uthmaniyah field.

This milestone highlights one of several pathways within the concept of a global Circular Carbon Economy (CCE), a framework in which CO₂ emissions are reduced, removed, recycled and reused - as opposed to being released into the atmosphere.

Ahmad O. Al-Khowaiter, Aramco's Chief Technology Officer, said: "This world's first demonstration represents an exciting opportunity for Aramco to showcase the potential of hydrocarbons as a reliable and affordable source of low-carbon hydrogen and ammonia. This milestone also highlights a successful transnational, multi-industry partnership between Saudi Arabia and Japan. Multinational partnerships are key in realizing the Circular Carbon Economy, championed by the Saudi Arabian G20 Presidency."

Toyoda Masakazu, Chairman and Chief Executive Officer of IEEJ, said: "Blue ammonia is critical to Japan's zero carbon emission ambitions to sustain the balance between the environment and the economy. About 10% of power in Japan can be generated by 30 million tons of blue ammonia. We can start with co-firing blue ammonia in existing power stations, eventually transitioning to single firing with 100% blue ammonia. There are nations such as Japan which cannot necessarily utilize Carbon Capture and Storage (CCS) or EOR due to their geological conditions. The carbon neutral blue ammonia/hydrogen will help overcome this regional disadvantage."

Dr. Fahad Al-Sherehy, Vice President of Energy Efficiency and Carbon Management at SABIC, said: "At SABIC, we can economically leverage our existing infrastructure for hydrogen and ammonia production with CO₂ capture. Our experience in the full supply chain along with integrated petrochemicals facilities will play an important role in providing blue ammonia to the world."

Ammonia contains approximately 18% hydrogen by weight and is already a widely traded

chemical on the world stage. It releases zero CO₂ emissions when combusted in a thermal power plant and has the potential to make a significant contribution to an affordable and reliable low-carbon energy future. SABIC and Mitsubishi Corporation, which is represented on the IEEJ study team involved in the project, are overseeing the transport logistics in partnership with JGC Corporation, Mitsubishi Heavy Industries Engineering, Ltd., Mitsubishi Shipbuilding Co., Ltd. and UBE Industries, Ltd.

About Aramco

Aramco is a world-leading integrated energy and chemicals company. We are driven by our core belief that energy is opportunity. From producing approximately one of every eight barrels of the world's crude oil supply to developing new energy technologies, our global team is dedicated to creating positive impact in all that we do. We focus on making our resources more sustainable and more useful, promoting long-term economic growth and prosperity around the world. <https://www.aramco.com>

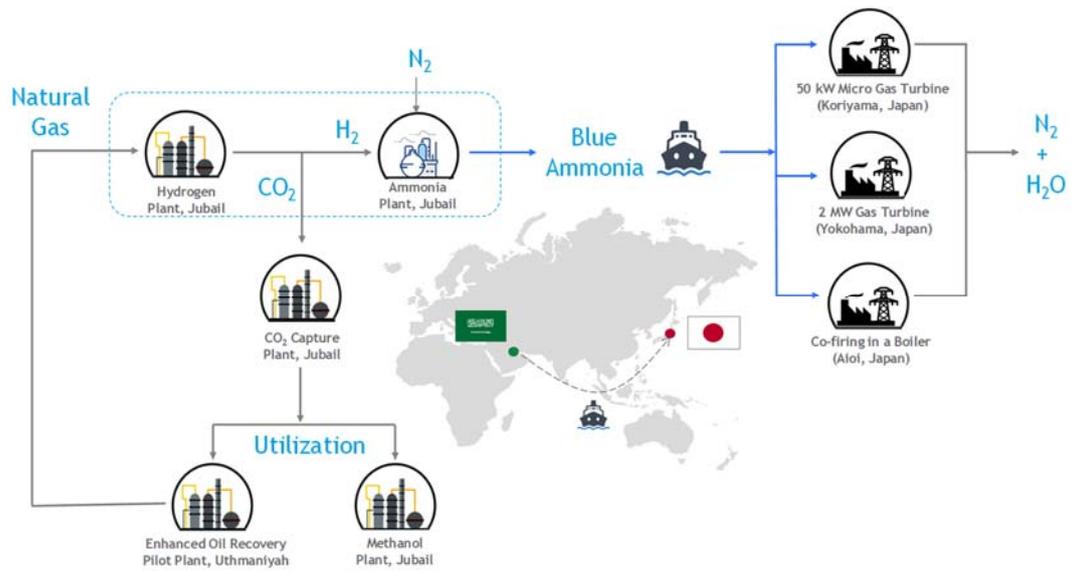
About IEEJ

The Institute of Energy Economics, Japan was established in June 1966 as a private institute supported by energy industries. The original aim of its establishment was to carry on research activities specialized in the area of energy from the viewpoint of the national economy as a whole in a bid to contribute to sound development of the Japanese energy-supplying and energy consuming industries and to the improvement of people's life in the country by objectively analyzing energy problems and providing basic data, information and reports necessary for the formulation of policies.

With the diversification of social needs, IEEJ has expanded its scope of research activities to include such topics as environmental problems and international cooperation closely related to energy. <https://eneken.ieej.or.jp>

About SABIC

SABIC is a global leader in diversified chemicals headquartered in Riyadh, Saudi Arabia. It manufactures on a global scale in the Americas, Europe, Middle East and Asia Pacific, making distinctly different kinds of products: chemicals, commodity and high performance plastics, agri-nutrients and metals. SABIC supports its customers by identifying and developing opportunities in key end markets such as construction, medical devices, packaging, agri-nutrients, electrical and electronics, transportation and clean energy. <https://www.sabic.com>



**Conceptual Flow Diagram of
“Blue Ammonia” Supply Chain Demonstration
(Duration: August 2020 – October 2020)**



Blue Ammonia Carrier at Jubail terminal in Saudi Arabia