

P4G Study: There are several potential pathways for Indonesia to develop new decarbonized fuels to serve its thriving shipping sector

A study by Ricardo for the P4G Getting to Zero Coalition Partnership finds that Indonesia’s location, economic development, and vast renewable energy sources make it well suited to produce green maritime fuel.

The new report “Indonesia: fuelling the future of shipping – Low carbon shipping fuels for Indonesia’s shipping sector” explores the context and potential for the adoption of zero and low carbon shipping fuels through the shipping sector of Indonesia.

About 47% of Indonesia’s Gross Domestic Product (GDP) comes from manufacturing, which relies on the export of manufactured goods across the world to large economies such as China and the United States.

Being able to offer low carbon fuels to shipping vessels and hence to decarbonize these exports will, according to the study, enable Indonesia to serve a future growing market and facilitate an attractive manufacturing hub to be established as the demand for low carbon goods increases.

Indonesia serves a large number of international vessels and occupies a key position along busy and important shipping routes. Among these are the Strait of Malacca and the Sunda Strait, which open even more international opportunities due to proximity to existing ports in Jakarta. Its strategic maritime position could enable the country to become a key-player in the reaching zero-emission shipping by 2050:

“The study has identified that the most suitable options are hydrogen and ammonia for large commercial vessels such as containers and bulk carriers; small passenger and cargo vessels can be supplied through direct and onboard electrification. Along with Indonesia’s insular composition, its shipping traffic capture area, and its regional partners, this positions Indonesia as a key enabler for the decarbonization of the global fleet. Furthermore, this strategic position in the maritime sector allows Indonesia to further advance its ambition in reducing its national carbon footprint,” says **Dr. Santiago Suarez De La Fuente, Lecturer in Energy and Transport at University of College London’s Energy Institute.**

Currently, fossil fuels make up about 84% of energy production in Indonesia, having historically depended significantly on fossil fuels for electricity generation. The country has set renewable and decarbonization targets – to install 45GW of renewables by 2025 and an overall 29-41% GHG emission reduction by 2030. However, reaching these targets will require collaboration and government action:

“Regardless of the millions of tons of carbon dioxide emitted either by Indonesian or foreign ships crossing the Indonesian waters, Indonesia has determination to gradually lower its national carbon emission levels. The Indonesian government has promoted the transition of oil fuel to gas fuel for small boats. However, it is important to collaborate and to have collective actions by domestic maritime and energy industries as well as international organizations, such as the IMO, UNCTAD, and the World Bank to assist our efforts to introduce low-carbon technology,” says **Basilio Dias Araujo, Indonesian Deputy Minister for Coordination of Maritime Sovereignty and Energy.**

The adoption of zero carbon shipping fuels has significant benefits and synergies for Indonesia far beyond the shipping sector. In particular, there is the potential to create a wide range of jobs within the supply chains of zero carbon fuels, which can support Indonesia's economy:

“There is the potential to create a wide range of jobs within the supply chains of zero carbon fuels, which can support Indonesia's economy. Creation of green jobs across the whole range of skill and education levels will support a just and equitable transition towards a low carbon economy. In addition, the availability of zero carbon fuels can be used to decarbonize other sectors, such as heavy transport, mining, agriculture, manufacturing, and industry”, says **Ingrid Sidenvall Jegou, Project Director at Global Maritime Forum.**

However, although there is potential and several pathways available for Indonesia to develop new decarbonized fuels to serve its shipping sector, there lies a challenge in ensuring a sustainable and environmentally sensitive fuel production:

“Production of decarbonised shipping fuels is heavily dependent on the availability of natural resources. Within Indonesia, the options for generating renewable electricity or supplying biofuels in such a way that is truly sustainable, environmentally sensitive, and scalable vary between locations and contexts. The shipping fuel needs vary greatly as well - from servicing the large, international shipping lanes that pass through Indonesian waters, to supporting the thriving domestic shipping trade and transport sector. This means that there is a challenge, and an opportunity, to find the best option for decarbonised shipping fuels for each setting across Indonesia,” says **Olivia Carpenter-Lomax, Principal Consultant Engineer at Ricardo Energy & Environment.**

The development of Indonesia's zero carbon fuels sector should be approached with consideration to the synergies beyond the shipping sector to gain full benefit and to avoid potential pitfalls. The country has a limited but diverse renewable energy potential - enough to supply its domestic electrical demand as well as production of zero carbon fuels for vessels bunkering in its ports; however, further thought is required to investigate these synergies.

“To accelerate the adoption of decarbonized shipping fuels, Indonesia needs to establish a roadmap consisting of national targets and strategies of shipping decarbonization as declared in 2020 by the High-Level Panel for Sustainable Ocean Economy, in which Indonesia is a member. This roadmap should contain clear and concrete steps towards the shipping decarbonization,” says **Dr. Mas Achmad Santosa, CEO of Indonesian Ocean Justice Initiative.**

About the report

The P4G report *“Indonesia: fuelling the future of shipping - Low carbon shipping fuels for Indonesia's shipping sector”* has been prepared by Ricardo for the P4G Getting to Zero Coalition - a partnership between the Global Maritime Forum, the World Economic Forum and Friends of Ocean Action. It is part of a wider project, investigating the potential adoption of zero-emissions shipping fuels in Indonesia, South Africa and Mexico, and builds on the previous work of the Environmental Defense Fund (EDF).

The P4G Getting to Zero Coalition Partnership, jointly implemented by the Global Maritime Forum, Friends of Ocean Action, World Economic Forum, Environmental Defense Fund, University College London and International Association of Ports and Harbours, is leveraging the P4G platform to engage stakeholders and companies from three P4G partner countries: Indonesia, Mexico and South Africa. The aim is to make zero emission vessels and fuels a reality and identify concrete and actionable growth and business opportunities that can contribute to sustainable and inclusive economic growth in these target countries.

Download the full report [here](#).

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About the Getting to Zero Coalition

The Getting to Zero Coalition, a partnership between the Global Maritime Forum, Friends of Ocean Action and World Economic Forum, is a community of ambitious stakeholders from across the maritime, energy, infrastructure and financial sectors, and supported by key governments, IGOs and other stakeholders, who are committed to the decarbonization of shipping. The ambition of the Getting to Zero Coalition is to have commercially viable ZEVs operating along deep-sea trade routes by 2030, supported by the necessary infrastructure for scalable net zero carbon energy sources including production, distribution, storage, and bunkering.

About P4G

P4G - Partnering for Green Growth and the Global Goals 2030 - is a global delivery mechanism pioneering green partnerships to build sustainable and resilient economies. P4G mobilizes a global ecosystem of 12 partner countries and 5 organizational partners to unlock opportunities for more than 50 partnerships working in five SDG areas: food and agriculture, water, energy, cities and circular economy.

About the Global Maritime Forum

The Global Maritime Forum is an international not-for-profit organization dedicated to shaping the future of global seaborne trade to increase sustainable long-term economic development and human wellbeing.

About Friends of Ocean Action

Friends of Ocean Action is a unique group of over 55 global leaders from business, international organizations, civil society, science and academia who are fast-tracking scalable solutions to the most pressing challenges facing the ocean. It is hosted by the World Economic Forum in collaboration with the World Resources Institute.

About the World Economic Forum

The World Economic Forum is the International Organization for Public-Private Cooperation. The Forum engages the foremost political, business, cultural and other leaders of society to shape global, regional and industry agendas. It was established in 1971 as a not-for-profit foundation and is headquartered in Geneva, Switzerland. It is independent, impartial and not tied to any special interests.

About Environmental Defense Fund

Environmental Defense Fund Europe is an affiliate of Environmental Defense Fund (EDF), a leading international non-profit organization that creates transformative solutions to the most serious environmental problems. Since 1967, EDF has used science, economics, law and innovative private-sector partnerships to bring a new voice for practical solutions.

About University College London Energy Institute

University College London Energy Institute Shipping Group aims to accelerate shipping transition to an equitable, globally sustainable energy system through world-class shipping research, education and policy support. The group specializes in multi-disciplinary research anchored in data analytics and advanced modelling of the maritime sector.

About International Association of Ports and Harbors

The International Association of Ports and Harbours (IAPH) was formed in 1955 and over the last sixty years has grown into a global alliance representing over 180 members ports and 140 port related businesses in 90 countries. The principal aim of IAPH revolves around promotion of the interests of Ports worldwide, building strong member relationships and sharing best practices among our members.

About Ricardo

At Ricardo, our vision is to create a world where everyone can live sustainably: breathing clean air, using clean energy, travelling sustainably, accessing clean water and conserving resources. Adopting zero carbon shipping fuels would bring the world closer to these ideals. Since the 1950s, Ricardo has worked to deliver improvements in air quality and pioneered the use of renewable energy technologies. We are currently working on the implementation of the Paris Agreement on climate change, helping countries to realise their plans for reducing greenhouse gas emissions (GHG).