Global Green Hydrogen Program

Indonesia • India • Malaysia • Morocco
GGGI Global Green Hydrogen Program

GGGI’s Global Green Hydrogen Program is designed to support member and partner countries to adopt green hydrogen for accelerated transition towards clean energy to meet the climate goal under the Paris agreement.

The Program will support the three target countries—Morocco, India and Indonesia to decarbonize energy intensive industries like fertilizers, iron and steel, petrochemicals with inclusion of green Hydrogen to replace the existing use of grey Hydrogen as a feed stock in the manufacturing process (as the case for use of hydrogen is already established) and create business case for use of hydrogen as a fuel where other fossil fuels are currently used.

What is Green Hydrogen?

- Green Hydrogen is produced from green/renewable energy by separating Hydrogen from water.
- Globally, 70 million tonnes per year of grey Hydrogen (from fossil fuels), results in 830 million tonnes of CO2 emissions, equivalent to emissions of Indonesia and the United Kingdom combined.
- Green Hydrogen can reduce Carbon emissions from the hard-to-abate sectors like fertilizer, refineries, chemicals etc.

Green Hydrogen has several benefits...

- Reduces dependency on fossil fuels
- Lowers carbon emissions
- Improves the environment
- Increases use of renewable energy
- Promotes energy self-sufficiency

Program approach

- Create enabling environment by reducing barriers, promote market driven development, and balance risks for the public and private sectors.
- Utilizing low cost green power such as solar, wind, hydro, geothermal for viable green Hydrogen production.
- Create demonstration projects for replicability and scalability in hard to abate sectors.
- Create instruments to bridge the price gap between grey and green Hydrogen.

Program outputs

- Landscape assessment to understand the current status of production and utilization of green Hydrogen, decarbonisation targets across energy use, demand drivers, economics of production and opportunities to achieve financial viability.
- Develop implementation models and mobilize finance based on the pipeline of projects.
- Capacity building and knowledge sharing platforms for exchange of best practices.

Investment targets

- Green investment portfolio of USD 1.5 billion.
- 2.5 GW green electricity supported electrolytic hydrogen projects.
- Additional pipeline worth USD 1 billion of green hydrogen project by the end of three years.
Indonesia, and in particular the Province of North Sumatra, is well positioned for the development of green Hydrogen due to abundant affordable renewable energies (in particular geothermal and run-of-river hydro power energy) required for production of green Hydrogen.

The presence of Special Economic Zones (SEZs) including Sei Mangkei provides huge potential demand of green Hydrogen for local industries (steel, cement, fertilizer, and refineries).

GGGI is exploring the project development in close consultation with the Government of Indonesia (the Ministry of Energy & Mineral Resources, North Sumatra state government, other central government ministries, and related stakeholders).

For the first stage (2021–2023), the green Hydrogen produced will be consumed in industrial economic zones and possible green Hydrogen vehicles in North Sumatra. During the second stage (2024 onwards), green Hydrogen produced will be exported to neighboring countries including the Republic of Korea and Japan.

India’s imports around 17 million tonnes (MT) of Liquefied Natural Gas to meet its annual hydrogen demand resulting in a revenue exchange of 6.25 billion USD.

Recognizing the role of Hydrogen in India’s green growth targets, the Government of India has launched the ‘National Hydrogen Energy Mission’ with focus on generating green hydrogen and enabling its commercial use across transport, iron and steel, chemical and fertilizer and petrochemical sectors.

As per the estimates of the Ministry of New and Renewable Energy (MNRE), Government of India, the demand for green Hydrogen is expected to be additional 16 thousand tonnes per annum by 202 and 1 million tonnes per annum by 2030.

Global Green Hydrogen Program is supporting in developing a national institutional and financial mechanism to bridge the price gap between grey and green hydrogen. GGGI is also working with public sector companies to demonstrate the use of green hydrogen in the industrial process.

The Government of Malaysia has identified hydrogen as an important ingredient to decarbonize the industrial sector.

Malaysian Investment Development Authority (MIDA) with Sarawak Energy have strategic partnership in the green & blue hydrogen production.

GGGI is partnering with POSCO, Samsung Engineering, Lotte Chemical and Sarawak Economic Development Corporation (SEDC) to enter the consortium to design the Green and Blue – Hydrogen, ammonia and Methanol in the Sarawak region of Malaysia.

GGGI would be supporting the consortium by producing the financial and economic analysis for the project implementation, putting downward pressure on cost of capital by engaging MDBs, DFIs and bilateral agencies and climate finance agencies.

GGGI is considered as a neutral advisor in the consortium to also engage with the Sarawak government to support the formulation of a regulatory framework and licensing requirement for the project implementation.

Morocco has a carbon intensive energy matrix, and its supply is heavily dependent on imports. In 2017, imports covered 94% of the primary energy consumption. In 2018, Morocco imported around 2 Mt of Ammonia for its fertilizer and chemical industries, which represents around 1.2% of the world market for this strategic raw material.


With its geographic location, Morocco has one of the largest PV power potentials and highest wind speeds that suit Green Hydrogen production.

The focus of the Global Green Hydrogen Program in Morocco is to demonstrate the feasibility of green ammonia production on a large scale, from a hybrid renewable energy source (solar photovoltaic + wind).
About Global Green Growth Institute

The Global Green Growth Institute (GGGI) is an international organization dedicated to supporting and promoting strong, inclusive and sustainable economic growth in developing countries and emerging economies.

GGGI’s mission is to support the transition of its Member and Partner countries toward a model of green growth by developing and implementing strategies that simultaneously achieve poverty reduction, social inclusion, environmental sustainability and economic growth. By pursuing this mission, GGGI aims to achieve its vision of a resilient world of strong, inclusive and sustainable green growth.

Our Partners

Global Green Growth Institute (GGGI) is well-positioned to support member and partner countries embrace green Hydrogen. In close consultation with government, oil & gas companies, fertilizer and manufacturing industries, investors and technology providers, GGGI is supporting the creation of a green Hydrogen ecosystem.

GGGI will mobilize green finance based on bankable business models and will develop instruments to bridge the pricing gap between grey and green Hydrogen.

GGGI will leverage its in country operations to promote green Hydrogen production and utilization in hard to abate sectors and will align to host governments priorities.

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