

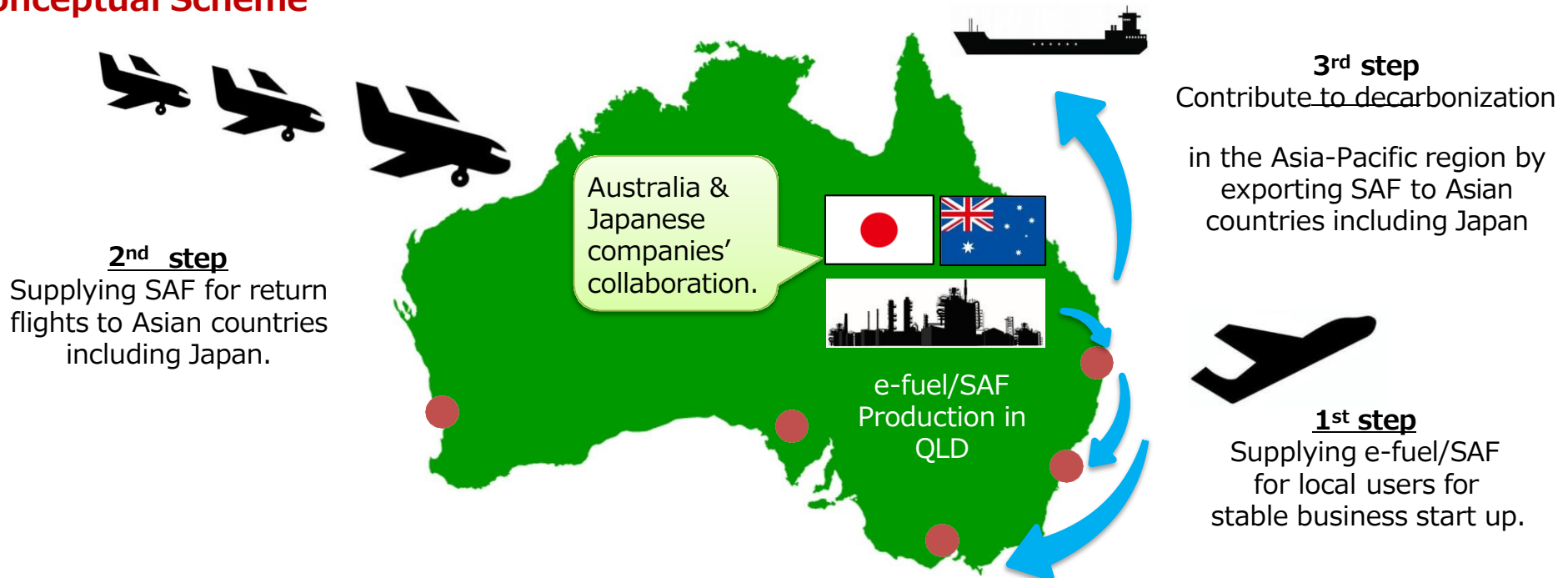
List of MOUs (AZEC Public Private Investment Forum)

**March 2023,
Agency of Natural Resources and Energy**

MOU for establishment of e-fuel/SAF value chain in Queensland, Australia

- **Overview** : CS Energy (Queensland Government Owned Corporation, Australia), Toyo Engineering Corporation (Japan), and Sojitz Corporation (Japan) agree to cooperate establishing e-fuel/SAF value chain in Queensland Australia(QLD), aiming for realization of carbon neutrality in the aviation industry and decarbonization in the Asia-Pacific region.
- **Purpose and Goal** : (1) To realize synthetic fuel (e-fuel/SAF) production from renewable hydrogen and carbon dioxide. (2) To establish the competitive e-fuel/SAF value chain in QLD having huge potential of renewable hydrogen. (3) Contribute to decarbonization in the Asia-Pacific region through the stable supply of e-fuel/SAF.

Conceptual Scheme

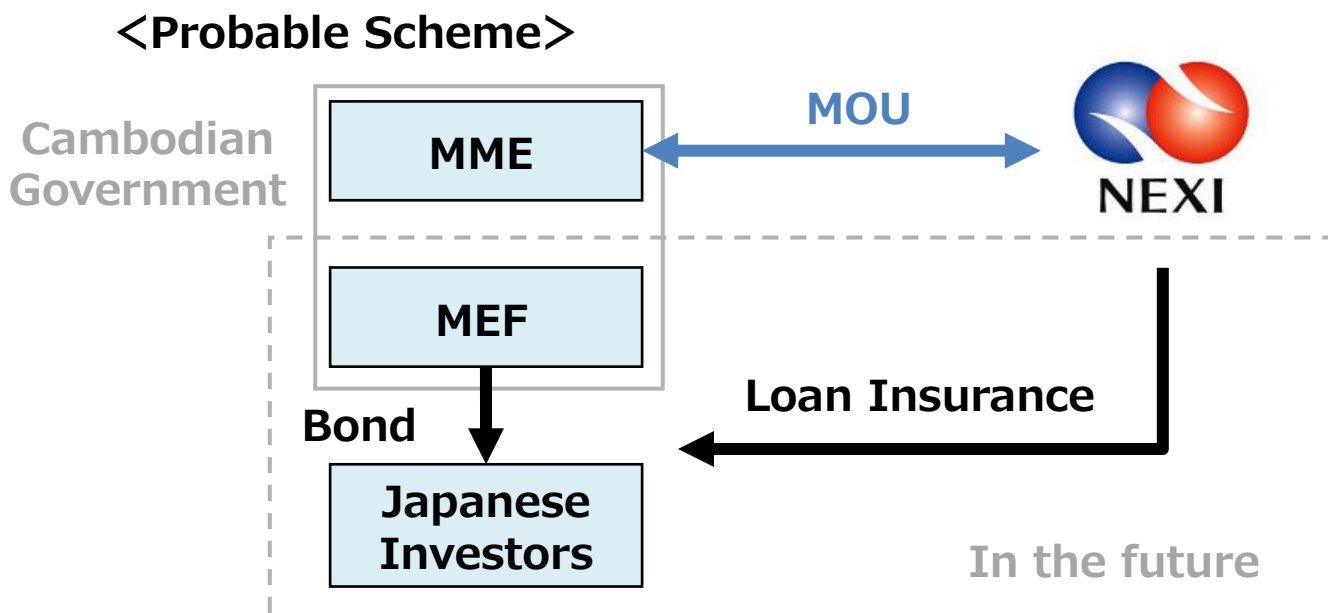


NEXI signs MOU with Ministry of Mines and Energy(MME)

Nippon Export and Investment Insurance (NEXI) has concluded a Memorandum of Understanding (MOU) with Ministry of Mines and Energy (MME) in Kingdom of Cambodia.

Purpose: This MOU further strengthens the cooperation in the power sector between NEXI and MME in Cambodia.

Miscellaneous: NEXI will contribute to supporting MME's efforts in achieving realistic energy transitions and to creating potential business opportunities for Japanese companies in Cambodia.



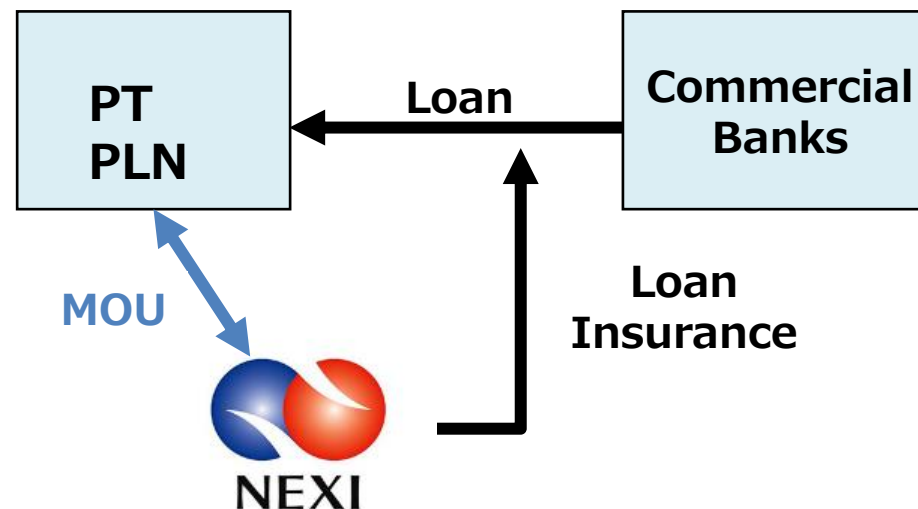
NEXI signs MOU with PT PLN

Nippon Export and Investment Insurance (NEXI) will provide financing support of a maximum of USD 500 million for PT PLN, state-owned utility company in the Republic of Indonesia, as a part of Asian Zero Emissions Community (AZEC) Concept. Furthermore, NEXI will introduce Japanese technologies to PT PLN.

Purpose: This MOU further strengthens the cooperation in the power sector between NEXI and PT PLN in Indonesia.

Miscellaneous: NEXI has signed the MOU with PT PLN in April 2022, and has amended it in November. In March 2023, NEXI and PT PLN will amend this MOU again along with the progress on their discussion.

<Scheme>



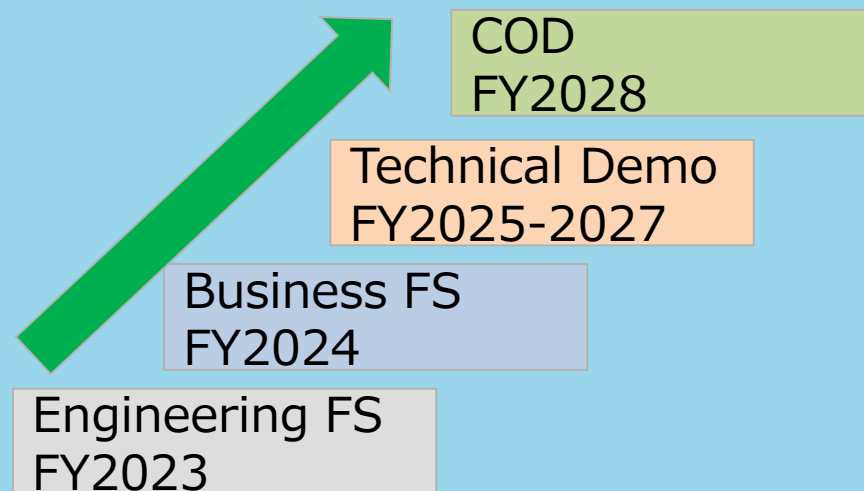
MoU on Renewable Energy Business Development between PT. Indonesia Power and Kyudenko Corporation

- **Summary** : In Indonesia, to increase the ratio of renewable energy generation is important policy. Through “Kyudenko EMS” which is an Energy management system of renewable energy, Indonesia power and Japan companies can try together for achievement.
- **Scope** : PT. Indonesia Power is a group company of PT. PLN and is core company of domestic power business area. They are best partner for the business of Stabilization technology for renewable energy.
- **Others** : As pilot project, co-working at remote islands of North Kalimantan is under discussing base on the MoU.

<Image of Big scale Lead-acid Battery for stabilization>



<Targeting Milestone>



MOU on decarbonization cooperation between PT. PLN Nusantara Power and Mitsubishi Heavy Industries, Ltd.

- **Overview of MOU** : Toward decarbonization of energy in Indonesia, PT. PLN Nusantara Power (PNP), a subsidiary of Indonesia's state-owned electricity company, and Mitsubishi Heavy Industries, Ltd.(MHI) will commence discussions on feasibility studies co-firing less carbon intensive fuels at power plants owned and operated by PNP.
- **Aim of the cooperation** : This MOU will allow us to explore innovative solutions by MHI de-carbonization technology in order to achieve sustainable environmental goals, while responding to the country's critical energy demand.
- **Detail of the cooperation** : To discuss the potential collaboration for materializing hydrogen co-firing in gas turbines, ammonia co-firing in gas-fired boilers, and biomass co-firing in coal-fired boilers at two existing power plants in Indonesia.

<Location of Power Plant to be covered in MOU>



Muara Karang Power Plant



- ① Hydrogen co-firing in gas turbines
- ② Ammonia co-firing in gas-fired boilers

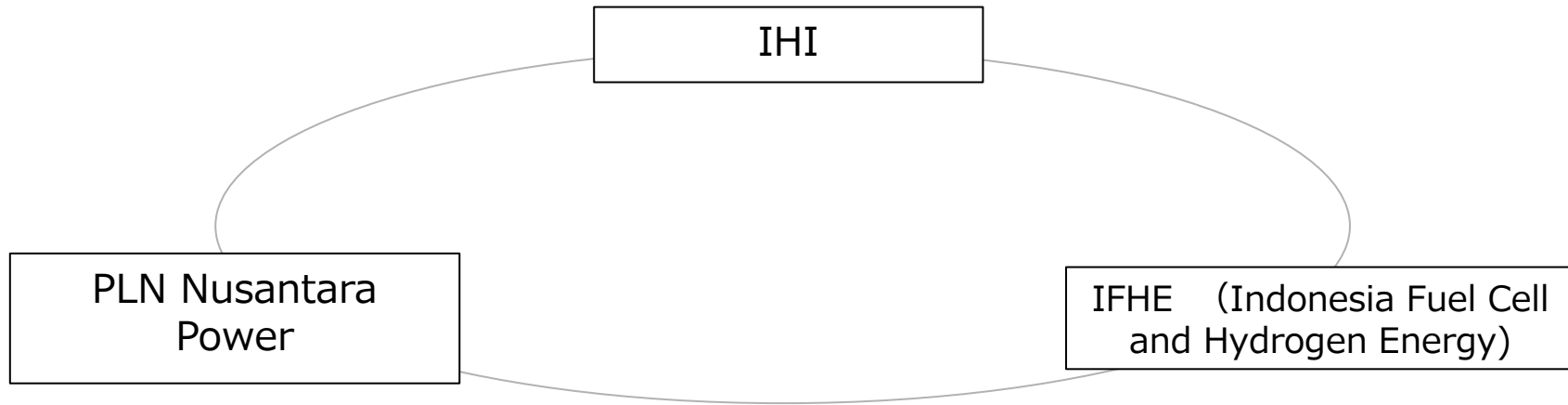
Paiton Power Plant



- ③ Biomass co-firing in coal-fired boilers

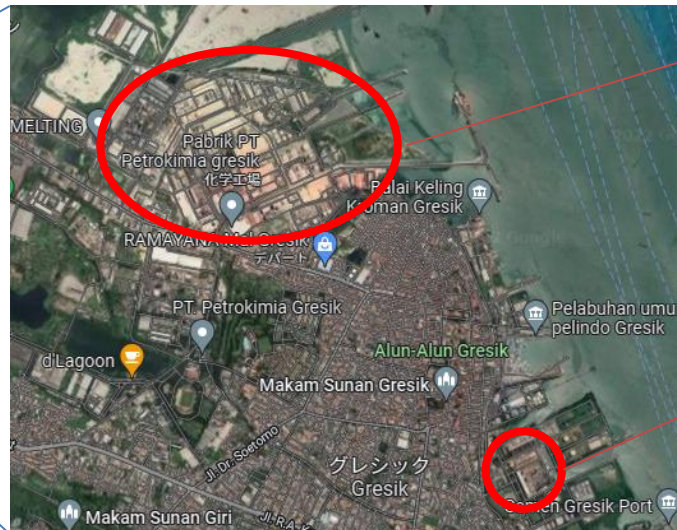
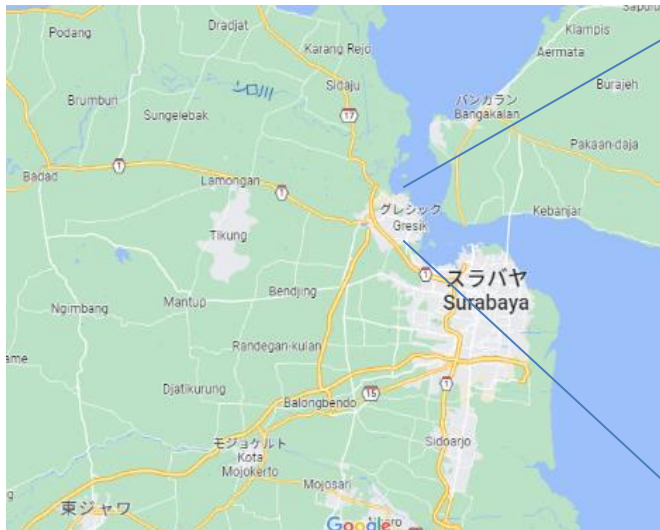
MoU on cooperation between PLN Nusantara Power/IFHE/IHI

- **Partners:** PLN Nusantara Power, IFHE (Indonesia Fuel Cell and Hydrogen Energy)
- **Outline:** To form a comprehensive cooperative framework for the construction of a clean energy-based power system in Indonesia. Contents include the production and utilization of hydrogen & ammonia, biomass co-firing & mono-firing, and performance improvements of existing thermal power plants.
- **Purpose/Aims:** To pursue realistic, economical solutions by involving utility companies and research institutes on the consideration of utilizing new energy sources such as hydrogen, ammonia and biomass, and for the improvement of existing power plants.



MoU for Green Ammonia Production and Co-firing between IHI and Pupuk Indonesia

- **Partner:** PT Pupuk Indonesia (Persero)
- **Outline:** Conduct technical study and feasibility assessment for the construction of a stand-alone green ammonia production plant on the site of an existing fertilizer facility, and for a technical study on ammonia co-firing in the same facility's existing coal-fired power plant.
- **Purpose/Aims:** To promote the production and utilization of new fuel ammonia contributing to the decarbonization of Indonesia and abroad.
- **Other:** Conduct the Feasibility Study by March, 2024.



Study to introduce the green ammonia production and ammonia co-firing in existing fertilizer company (Petrokimia Gresik, subsidiary company of Pupuk Indonesia)

(Reference)
In Oct.2022, IHI conducted ammonia co-firing in Gresik Power Plant, PLN Nusantara Power, which is located near to Petrokimia Gresik.

【Indonesia】 Chiyoda Corporation and PT Pertamina(Persero) Joint Study Agreement for Developing of Carbon Recycle Technology



- Joint Study Agreement between Chiyoda Corporation and PT Pertamina(Persero) regarding developing of decarbonization Technology – CO₂ Reforming of Methane and CCU Technology in Pertamina's Upstream Field to produce value added chemical products. This Joint Study is a concrete development from the memorandum of understanding regarding cooperation in the field of decarbonization toward the realization of net zero with PT Pertamina(Persero) in January 2022.
- Propose a CCU or carbon recycling technology for utilizing Gas from Pertamina's stranded fields with high CO₂ content and Conduct a Feasibility Study on the applicability of Chiyoda's CO₂ Reforming Technology.
- Chiyoda and Pertamina is currently executing a Feasibility Study of CCS in South Sumatra jointly as well.

<Corporation history between Chiyoda and Pertamina>

Jan 2022 Signed MOU of collaboration
for decarbonization technologies
(photo shown in right)

Sep 2022 Signed JSA for CCS project in
South Sumatra

Jan 2023 This time: Concluded JSA for
carbon recycling technology
(CCU/CO₂ Reforming of Methane)

MOU with PT Pertamina, Indonesia to Collaborate in Technical
Developments Aiming for Net Zero Carbon Emissions



Online signing ceremony at Task Force event in Business 20* Indonesia 2022

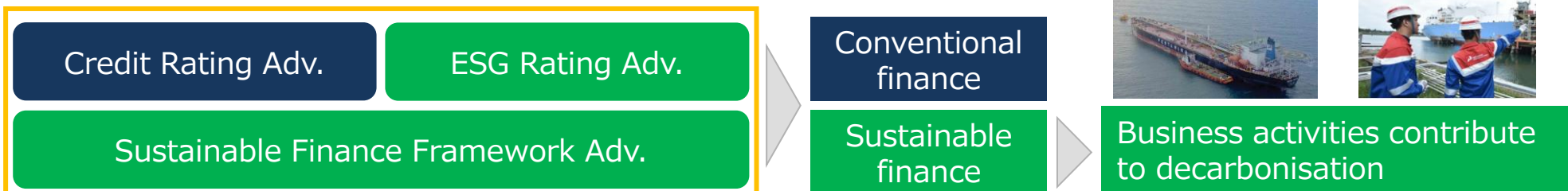
Mizuho Bank and Pertamina International Shipping: ESG and Credit Rating Advisory

- **The outline** : Mizuho assists Pertamina International Shipping (“PIS”) in its decarbonisation initiative by broadening its capital sources including sustainable finance through ESG advisory. Specifically, improving transparency of governance through advice on credit rating accreditation, and strengthening ESG initiatives through advice on ESG rating accreditation and setting sustainable finance framework.

PIS is the group company of Indonesia state owned oil & gas company, PT Pertamina (Persero), and strives to decarbonise its business.

- **The significance** : This advisory aims to contribute to the decarbonisation of Pertamina Group and Indonesia from financial side by leveraging Mizuho’s expertise on the corporate finance, decarbonisation and ESG.

<Contribute to the decarbonisation of Pertamina Group from financial side>

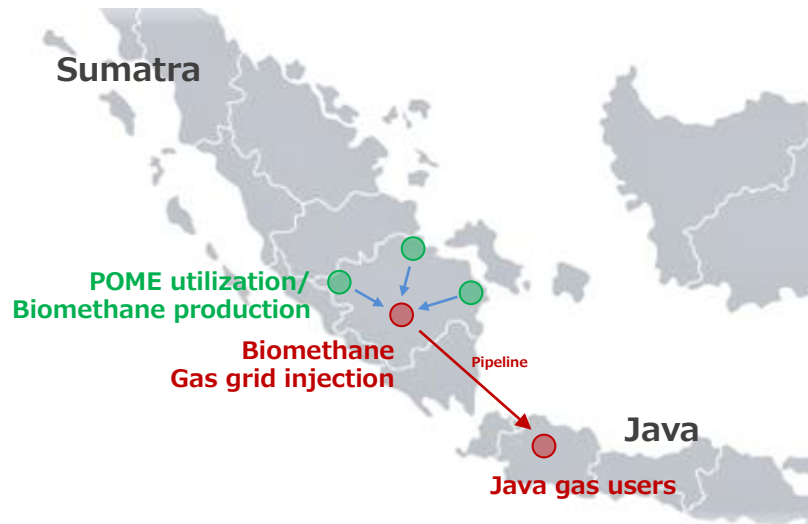


Scope of this advisory

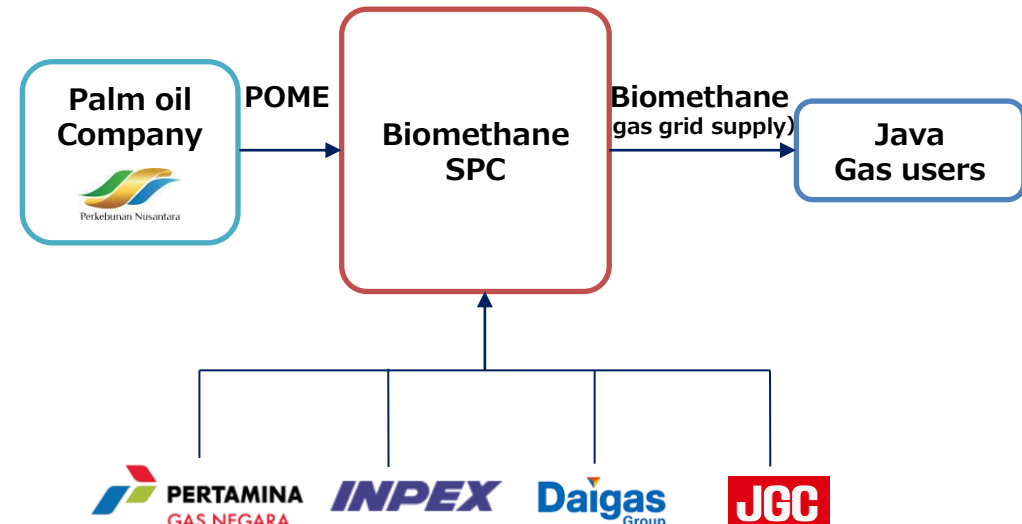
MOU on feedstock supply for decarbonizing Indonesia gas grid

- **MOU outline** : PGN, JGC HD, Osaka Gas, and INPEX, together with PTPN, a major state-owned palm oil company in Indonesia, will pursue an opportunity to collaborate toward the realization of a biomethane fuel supply via gas grid by utilizing biomass resources.
- **Aim of Cooperation** : Contributing to carbon neutrality by recovering methane emitted from the palm oil industry, a key sector in Indonesia, and promoting the use of clean biomethane fuel.
- **Schedule** : A detailed feasibility assessment will be concluded by the end of 2023 and a decision will be made on SPC establishment, etc.

<Project outline>



<Business scheme>

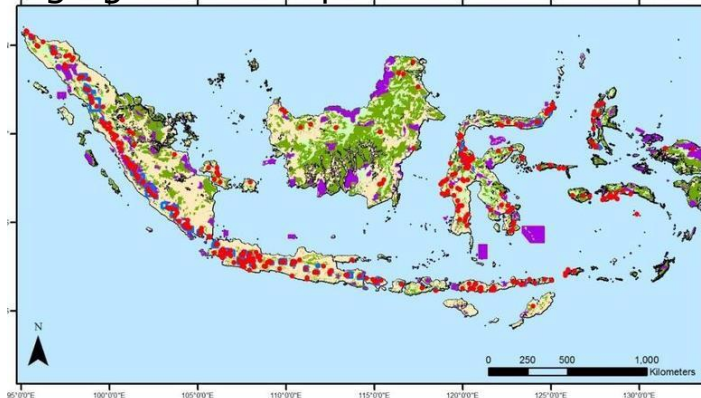


MEMORANDUM OF UNDERSTANDING ON COMMERCIAL DEVELOPMENT OF GREEN HYDROGEN AND GREEN AMMONIA

- **Outline:** In order to achieve energy transition and net zero emissions in Asia, TEPCO HD and Pertamina New and Renewable Energy (PNRE) will explore the commercial production, transportation and sale of green hydrogen and green ammonia using renewable energy (mainly geothermal power generation) in Indonesia.
- **Significance/Aim:** In promoting this project, we have already concluded a Joint Study Agreement with PNRE, and are proceeding with the NEDO "International Demonstration Project on Japan's Energy Efficiency Technologies". Under this MOU, using the results of the NEDO demonstration project, TEPCO's hydrogen production technology and electric power business know-how will be combined with PNRE's geothermal interests and technology to realize cost-competitive green hydrogen and green ammonia business, and help achieve net zero emissions in Asia.

<Illustration>

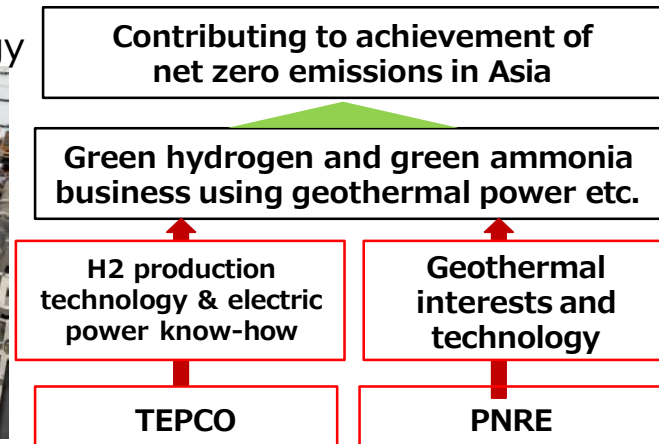
High geothermal potential in Indonesia



TEPCO's H2 production technology



<Scheme>



Green Ammonia Project at Pupuk Iskandar Muda (PIM) under Pupuk Indonesia Holding Co. (PIHC)

Outline of the Memorandum :

TOYO proposed the concept to produce green ammonia by utilizing the existing facilities of ammonia process plant, and got award from METI to implement the Feasibility Study through its energy infrastructure support program. TOYO accordingly implemented the Feasibility Study and generally agreed with PIHC to jointly pursue the project development.

Purpose and Aim by the collaboration :

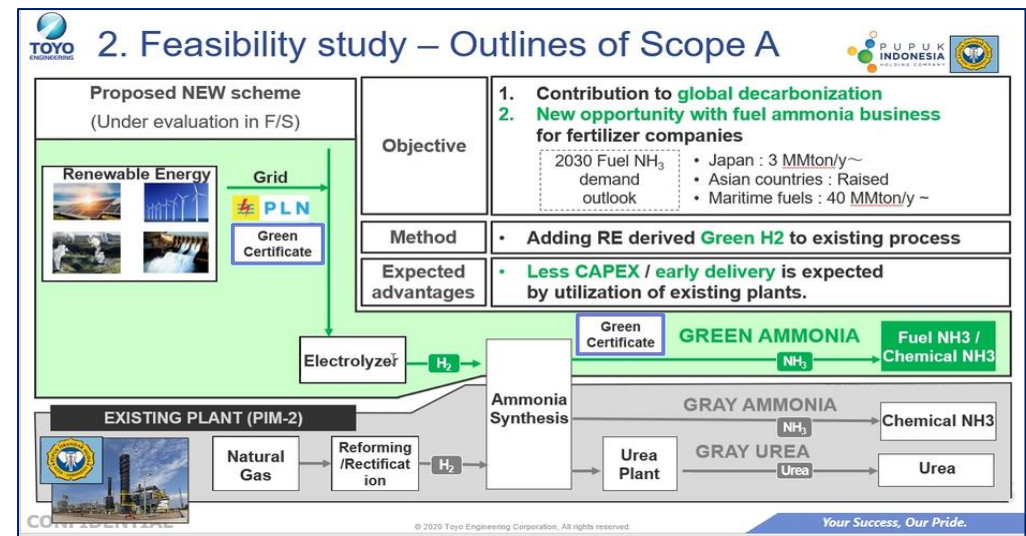
By adopting the aforementioned concept, it becomes possible to produce the green ammonia in prompt and competitive manner, which will contribute to the carbon neutralization in Japan and Asian countries, and to the development of clean industry in Indonesia. TOYO, PIHC and PIM would like to jointly proceed the project development with targeting the production start in year 2025. Furthermore, Toyo and PIHC will pursue to extend the green ammonia production by applying same methodology to the other plants under PIHC group.



Location of the site (PIM)



PIM existing plant



Project Scheme

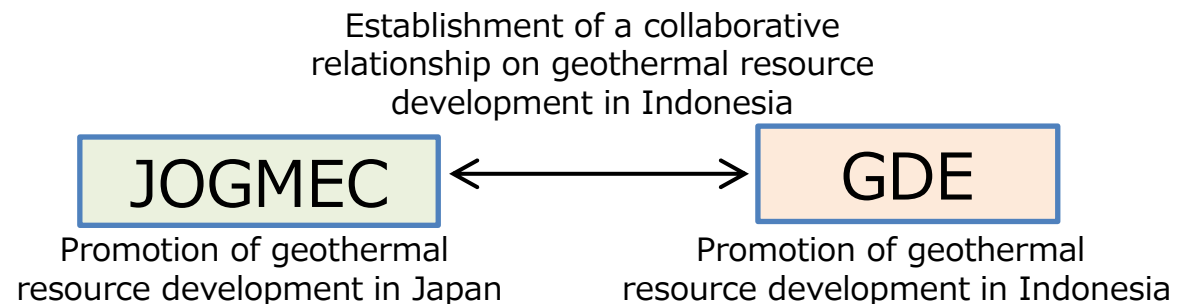
MOU Between Japan Organization for Metals and Energy Security (JOGMEC) and Geo Dipa Energi (GDE) Concerning Cooperation on Geothermal Resource Development

- **Outline of MOU** : JOGMEC and GDE will work on an establishment of a collaborative relationship in the technical field of geothermal resource survey and exploration in Indonesia.
- **Objectives** : To establish a collaborative relationship between JOGMEC and GDE on geothermal resource development in Japan and Indonesia for the promotion of energy transition to secure the stable supply of energy which is crucial in realization of sustainable economic growth, and implementing measures against climate change simultaneously.

<Image of geothermal resource development>



<Scheme>



MOU for the expansion of Sarulla Geothermal Project

- **The outline of MOU** : ITOCHU Corporation, Kyushu Electric Power Co., Inc., INPEX CORPORATION , Medco Power Indonesia, Ormat Geothermal Indonesia will collaborate to engage in discussions and to explore on the possibility of expansion of the Sarulla Geothermal, considering also the successful recovery of the financial and operational conditions of the existing project.
- **The significance of collaboration** : Through the development of the geothermal project which has a high contribution to the GHG reduction as base load renewable energy and both Indonesia and Japan have resources for geothermal, it will lead the energy transition in Indonesia and serve as parts of the AZEC concept.

<Project Site>

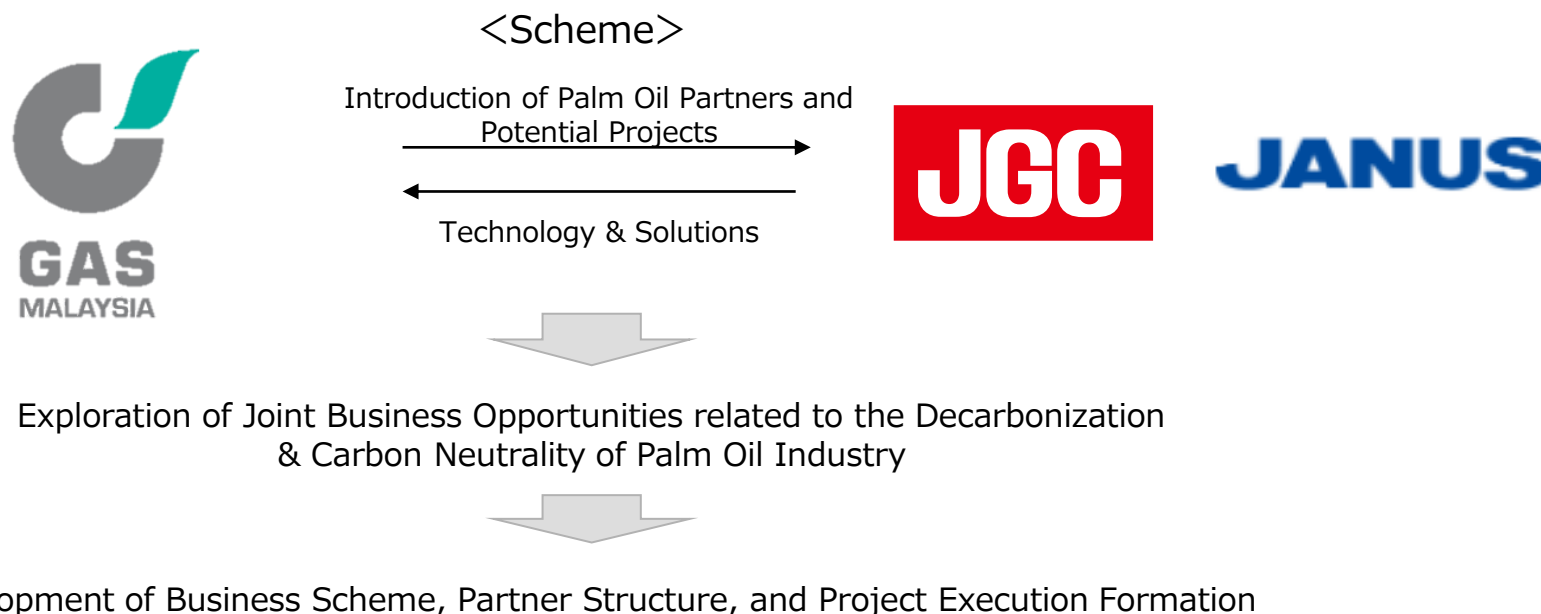


<Existing Project>



MOU on the Promotion of Carbon Neutrality through the Effective Utilization of Palm Oil Waste

- **MOU/Corporate Alliance Overview** : JGC Group and Gas Malaysia have agreed to conduct a feasibility study on the production and sales of biofuels and biochemicals through effective utilization of unutilized wastes (POME, EFB, waste wood, etc.) generated by the palm oil industry in order to promote decarbonization in Malaysia
- **Significance and Aim of this Cooperation** : JGC Group, with its capabilities for the effective utilization of organic waste including palm residue, and Gas Malaysia will cooperate to explore joint business opportunities and conduct joint studies with a view to future commercialization, thereby contributing to making the palm oil industry sustainable and the country carbon neutral.
- **Others** : A detailed project plan and scheme will be developed by the end of 2023, with a view to establishing an SPC.



PETRONAS and JOGMEC MOC in ENERGY TRANSITION INITIATIVES TOWARDS ACHIEVING NET ZERO CARBON EMISSION TARGETS

- **The Outline of MOC** : PETRONAS and JOGMEC have agreed to conduct joint research on projects targeting carbon-neutral fields such as clean energy such as hydrogen/ammonia, GHG emissions management in energy projects, and various CCS projects.
- **The Significance of the collaboration** : To enhance PETRONAS and JOGMEC collaboration to promote and develop sustainable energy sources and technologies to achieve respective mutual energy transition and decarbonization targets. This joint-effort also aims to spur business opportunities and provide technical and financial supports for Japanese companies to participate in PETRONAS projects, both inside and outside of Malaysia.

<Area of Cooperation>



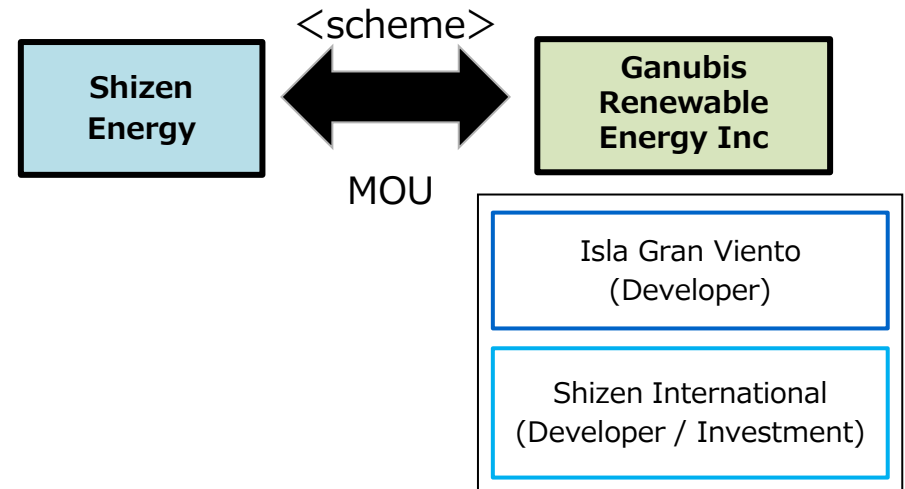
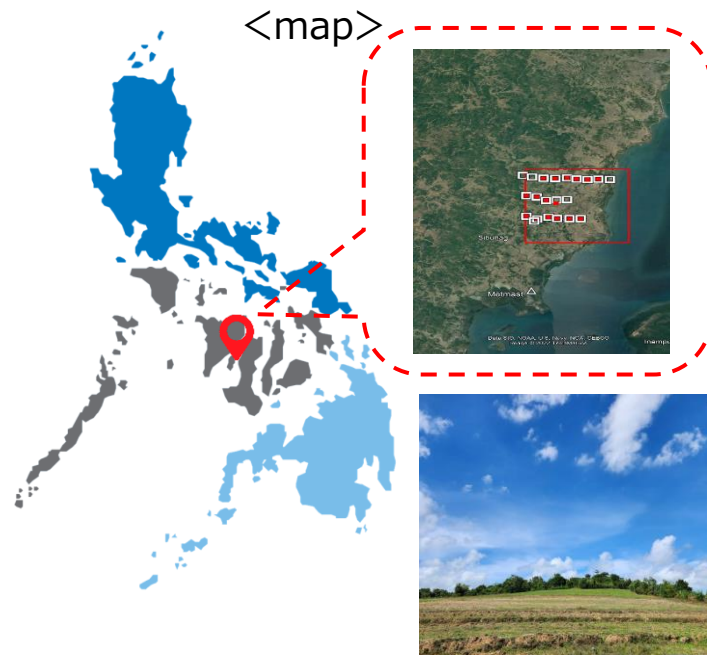
Green Hydrogen/ Ammonia
Blue Hydrogen/ Ammonia
CCS (Carbon Capture Storage)
GHG emission management

<Scheme>



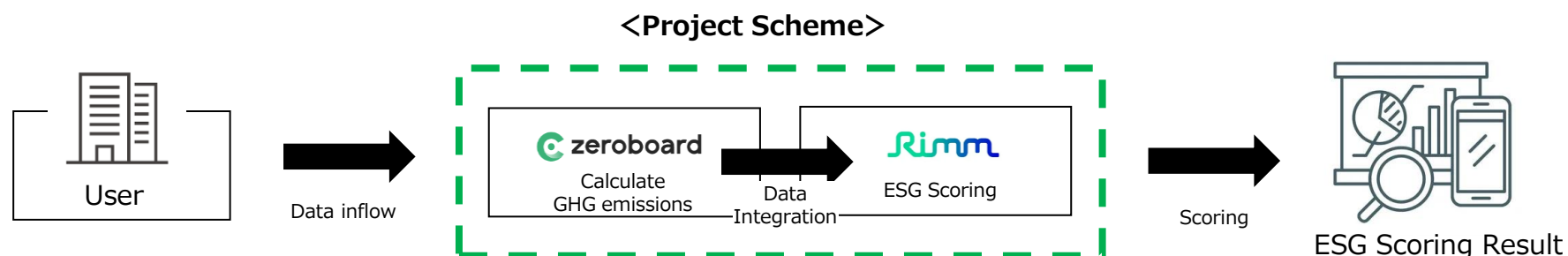
Shizen Energy and Ganubis Renewable Energy Inc. Agree to Jointly Develop a 96 MW On-shore Wind Power Plant in the Philippines

- **MOU Summary:** Shizen Energy will agree with Ganubis Renewable Energy Inc., which is a partnership between Shizen International and Isla Gran Viento, outlines a joint effort to develop an on-shore wind power plant in the Philippines with a capacity of up to 96 MW.
- **Significance and Aim of the Cooperation:** The successful execution of the project outlined in the MOU will make the Philippines the proud host of one of the largest on-shore wind power plant in Southeast Asia. This landmark achievement will contribute the country's green technology initiatives and the nation's zero-carbon goals.



Zeroboard (Japan)/RIMM (Singapore) MoU

- **MOU Summary** : Zeroboard, provider of a cloud service for calculating and visualizing GHG emissions, has formed a business alliance with RIMM, a provider of ESG scoring services, to build an advanced ESG management support service.
- **Aim of MoU** : RIMM will integrate with and leverage Zeroboard's carbon calculating function to provide an advanced ESG scoring service, aimed at promoting ESG management in Asia.
- **Other** : Aim to integrate function by the end of 2023.



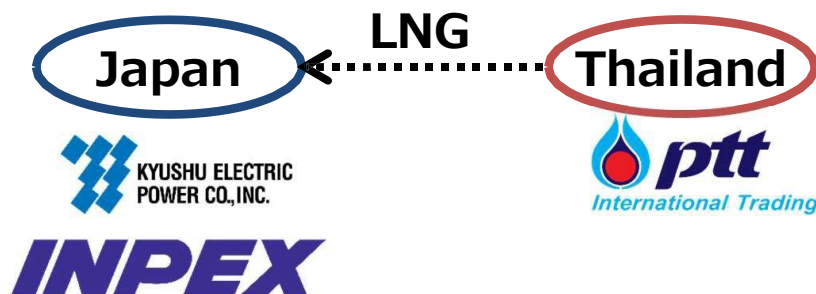
MOU between Kyushu Electric Power, PTT and INPEX for cooperation in LNG business



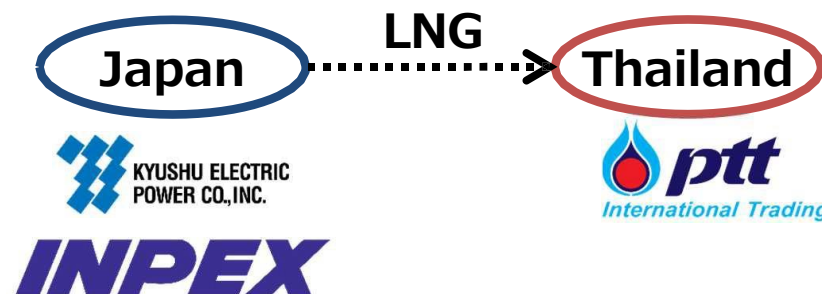
- **Overview of the MOU:** Collaboration/cooperation between Kyushu Electric Power, PTT International Trading, and INPEX in LNG business
- **Goal:** Three companies, which have different LNG demand seasonality and location, will collaborate and cooperate through LNG trading in order to optimize inventory management

<example of collaboration>

Tight inventory



Tight inventory

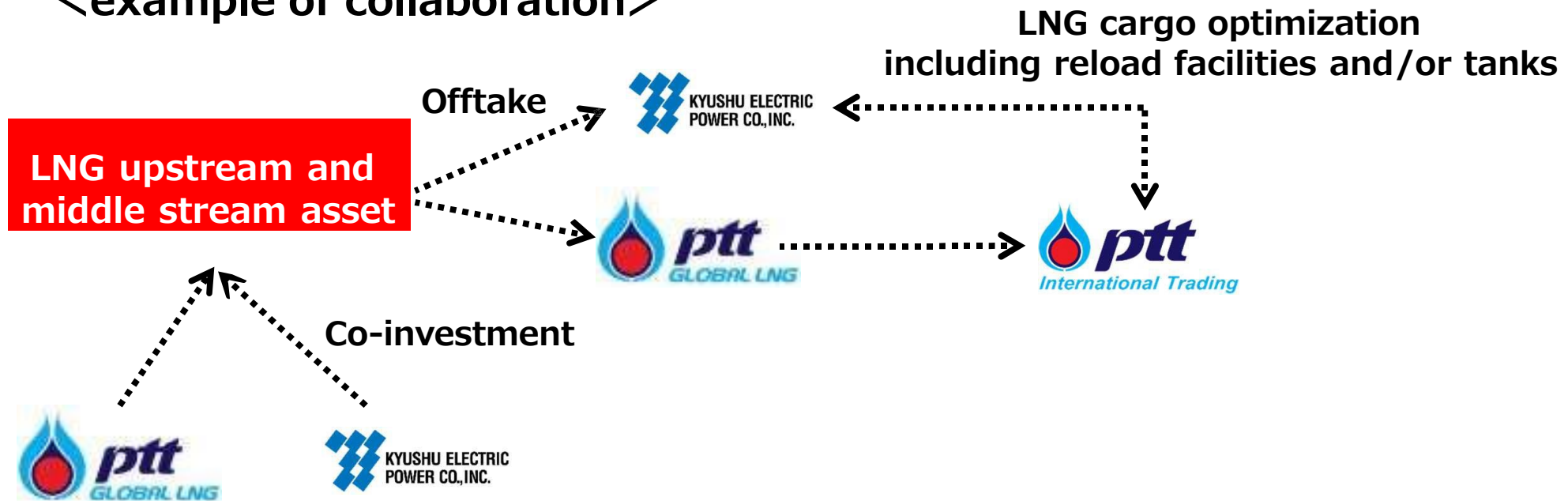


MOU between Kyushu Electric Power, PTT Global LNG Company and PTT International Trading for cooperation in LNG business



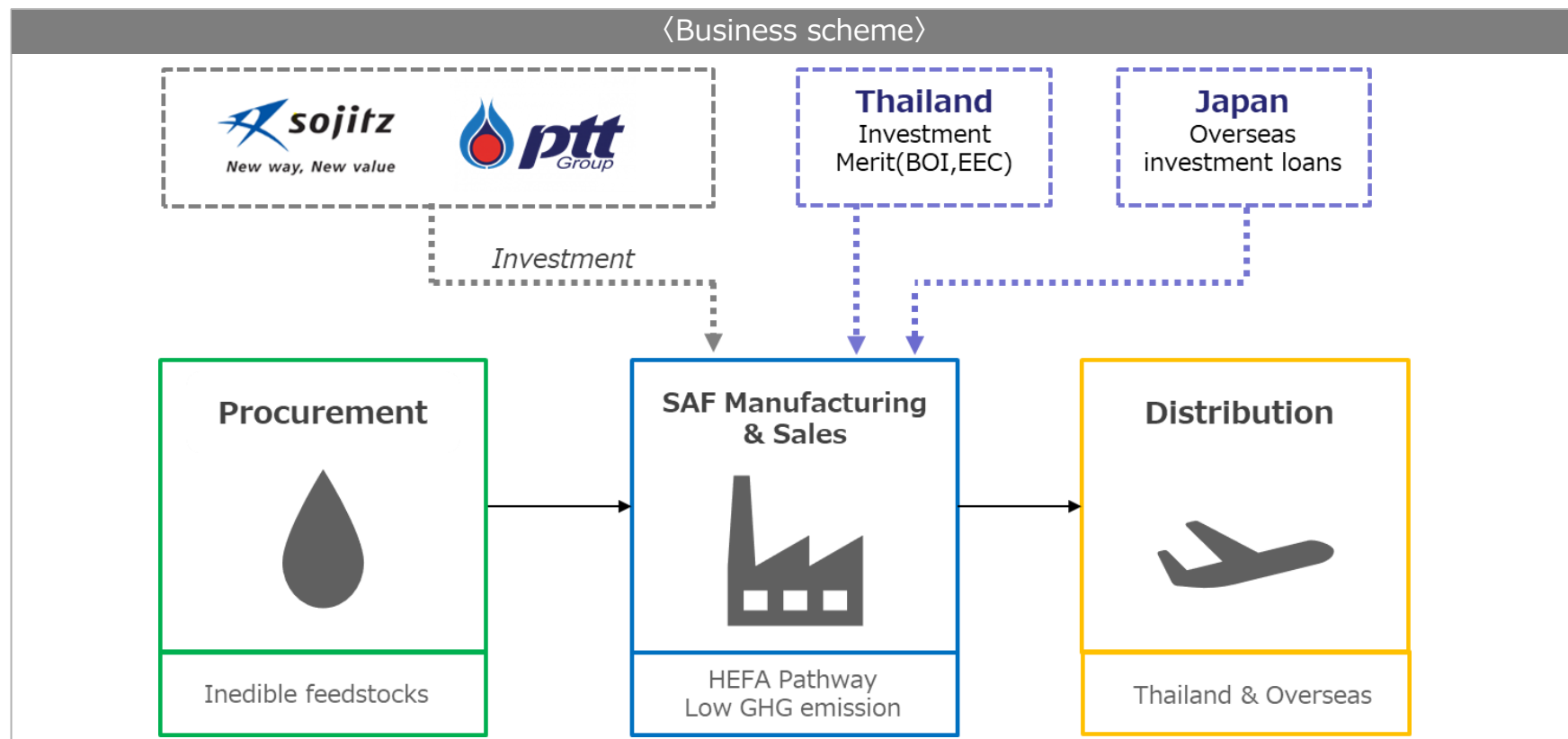
- **Overview of the MOU:** Collaboration/cooperation between Kyushu Electric Power, PTT Global LNG Company and PTT International Trading in LNG business
- **Goal:** Kyushu and PTT Group, which have similar ambitious to have more LNG upstream and middle stream asset + utilize reload facilities and/or tanks, will collaborate and cooperate through short to long term area.

<example of collaboration>



Joint Investment Study for Producing Bio Jet Fuel from Inedible feedstocks

- **Outline** : PTT Group (Thailand), and Sojitz Corporation (Japan) agree to discuss the potential collaboration to jointly develop the business opportunity in Sustainable Aviation Fuel (“**SAF**”) project utilizing a hydroprocessed esters and fatty acids (“**HEFA**”) process in Thailand to contribute carbon neutrality in the aviation industry.
- **Aim** : ① Realization of competitive SAF manufacturing utilizing the strengths of each company. ② Substantial reduction in greenhouse gas emissions through SAF production using inedible feedstocks. ③ Realization of stable supply of SAF in Asia.



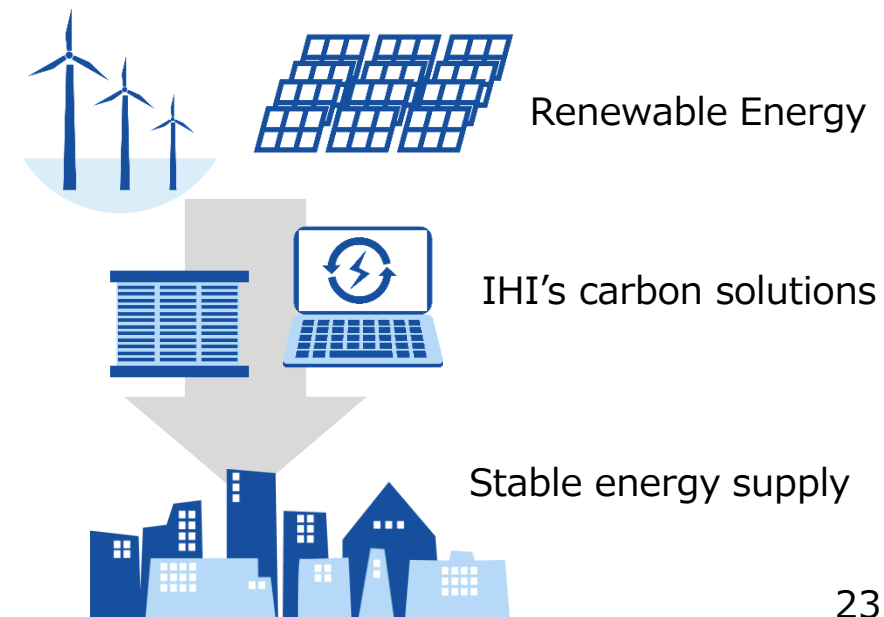
MoU for Cooperation on Decarbonization Projects with EGAT

- **Outline:** Thailand is promoting decarbonization efforts to achieve GHG emission reduction targets of 40% by 2030, and Net ZERO by 2065. EGAT plays an important role in this process, and this MOU establishes a framework for discussion and business matching platform to promote the study and realization of measures to achieve these goals.
- **Purpose/Aims:** To kickstart discussions and information exchange regarding several applicable decarbonization and energy storage solutions. Ultimately, the aim is to reach a common understanding on a comprehensive decarbonization and energy transition roadmap for Thailand and EGAT.

Sirindhorn Dam Hydro & Floating PV by EGAT

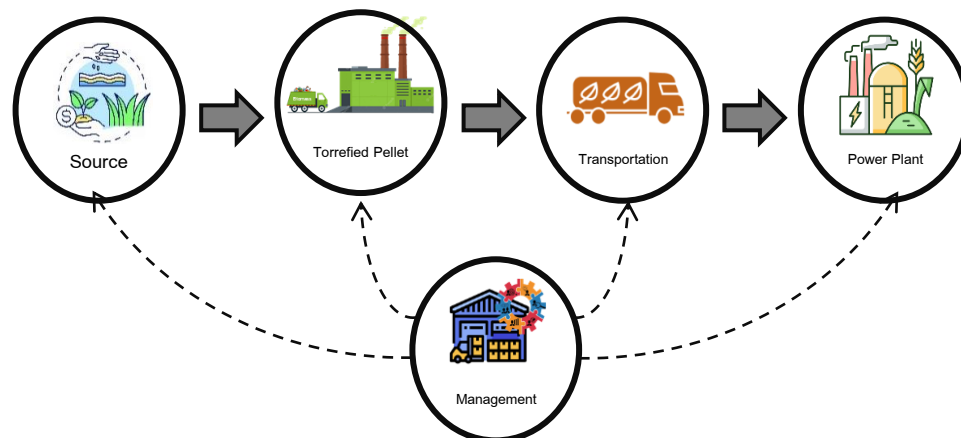


<https://www.egat.co.th/home/en/20211103-pre/>



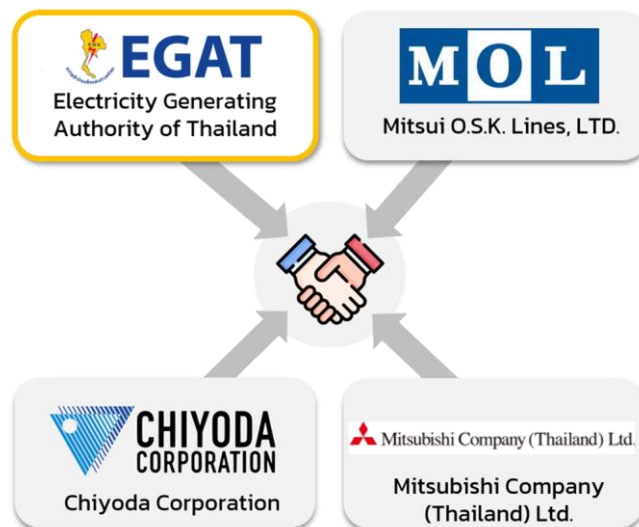
DEVELOPMENT OF BIOFUEL TECHNOLOGY AND VALUE CHAIN MANAGEMENT FOR POWER GENERATION

- **Overview of MOU** : Development of project focusing on biofuel technology and value chain management for power generation in Thailand and/or any other area in order to trade it to domestic and/or international industries for the utilization throughout the value chain as a fuel for power generation.
- **Purpose** : Toward the realization of decarbonization target in Thailand, TTCL Public Company Limited (TTCL) and Electricity Generating Authority of Thailand (EGAT) wish to strengthen their relationship and cooperate with each other in order to study and exchange the information and ideas relating the potential business opportunity, joint investment, market targeting, procurement, and the supply chain of biofuel cycle within the area including source of biofuel, biofuel processing/production, management, storage, transportation, and client.
- **Contribution to SDGs** : Other than reducing GHG, this project can contribute the solving air pollution problem by preventing open burning, the reducing poverty by additional income to farmers and the introducing torrefaction and/or other innovated technology.



The Development of Clean Hydrogen/Ammonia Value Chain

- **Project Overview** : Development of project focusing on producing clean hydrogen/ clean ammonia from renewable energy in southern provinces of Thailand in order to trade it to domestic and/or international industries for the utilization throughout the value chain.
- **Purpose of MOU** : Toward the realization of decarbonization target in Thailand, Chiyoda Corporation, Mitsui O.S.K. Lines, and Mitsubishi Company (Thailand) Limited aims to study and provide expertise to Electricity Generating Authority of Thailand (EGAT), the Thailand's leading state-owned enterprise, to cooperate and exchange the ideas relating the supply chain of clean hydrogen/ clean ammonia in southern provinces of Thailand, including the production, storage, transportation and utilization.



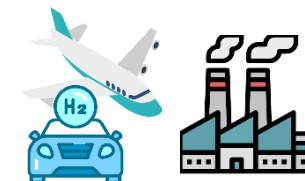
Renewable energy



H₂ Production and Storage



Logistics & Transportation



Utilization

MEMORANDUM OF UNDERSTANDING

For the development of the Project Truong Thanh Wind Farm
with a total expected capacity of 2.0 GW in Tra Vinh province, Vietnam

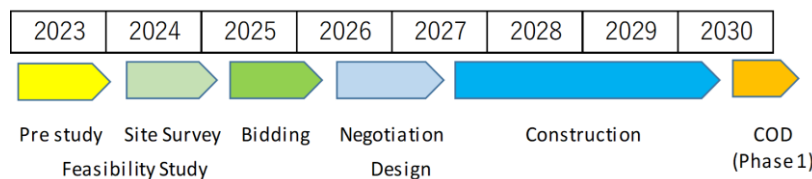
- **Outline of MOU** : TTVN and a group of Japanese companies led by Kumagaigumi and participated by INPEX and Kansai Electric Power signed MOU to cooperate in the development of a 2GW offshore wind power generation project in the offshore of Tra Vinh Province in Vietnam.
- **Purpose and Objectives** : The project is the first large-scale offshore wind power project in Vietnam, planned to generate 2 GW in total, 800 MW in Phase 1. Through the promotion of this project, Vietnam's economic development and Japan's energy infrastructure exports are expected to be further promoted.
- **Others** : “Feasibility Study for Overseas Development of High-Quality Energy Infrastructure”, “Asia Green Growth Promotion Project ” surveys underway supported by METI and ANRE.



Location



Offshore Wind Power Project(Image)



Estimated Project Schedule



MOU Contracting Party



Meeting with TRA VINH Provincial
People's Committee, Nov. 2022

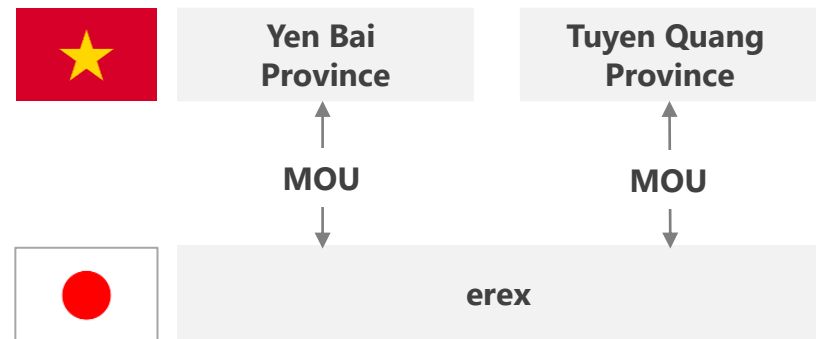
MOU among erex Co., Ltd., Tuyen Quang Province, and Yen Bai Province, Vietnam for Cooperation in Biomass Fuel Developments

- **Summary of the MOU/Agreement:** The MOU confirms mutual cooperation to develop biomass fuels in existing in Tuyen Quang and Yen Bai provinces in Vietnam and to realize projects to utilize unused resources from agriculture and forestry
- **Significance and Aim of the Cooperation:** erex Co., Ltd. aims to construct biomass power plants in both provinces, and both provinces aim to develop biomass resources from the perspective of regional revitalization and carbon neutrality. Through the MOU, erex and the two provinces will cooperate to develop unused biomass resources, aiming to achieve CO2 reduction targets and sustainable developments
- **Others:** A task force team will be formed this spring among the two provinces and erex to accelerate the study.

The following surveys and researches will be conducted by each province and erex

- ① Surveys to attract investments in the biomass sector
- ② Research on sustainable supply of biomass resources in each province
- ③ Survey on wood pellet plant investment feasibility in each province

MOU Relationship Diagram



JOGMEC concluded MOU with PetroVietnam to seek further development on CCS/CCUS projects

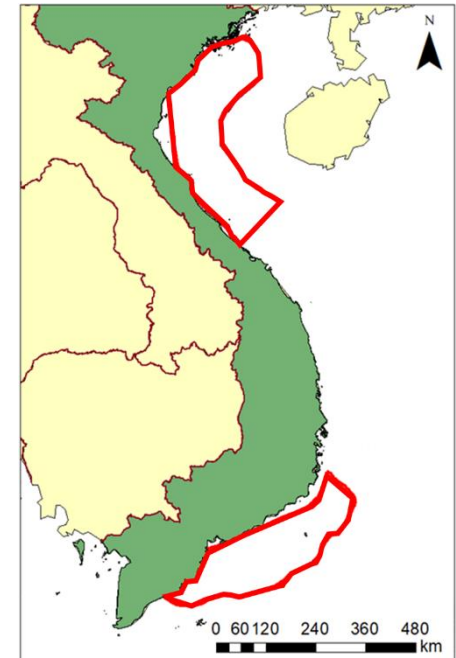
- Japan Organization for Metals and Energy Security (“JOGMEC”) has signed a Memorandum of Understanding (MOU) with PetroVietnam to discuss the continuation and development of the joint studies for CCS/CCUS projects in Vietnam.
- The parties have conducted the joint survey to evaluate feasibility of the CCS/CCUS project in Vietnam since November 2022, and aim to accelerate the deployment of CCS/CCUS further by conducting next-phase study.



Signing for further collaboration including CCS/CCUS projects

Left : Mr. ASAWA Satoshi, Executive Vice President, Energy Business Unit, JOGMEC

Right : Mr. Le Ngoc Son, Vice President, PetroVietnam



(Survey Area)