

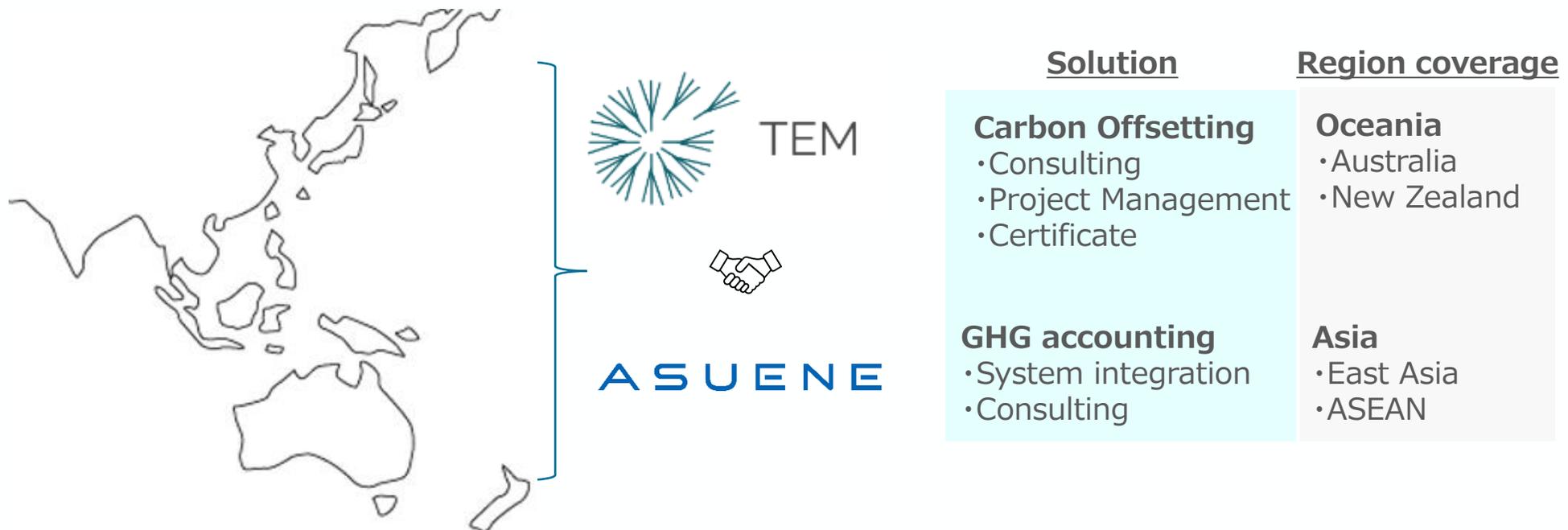
MOUs towards 2nd AZEC Ministerial Meeting

August 2024

Agency for Natural Resources and Energy

Cooperation outline : Signed a collaboration agreement with TEM, a local Australian company, for GHG calculation and Carbon Offsetting in APAC region.

Purpose or objectives of MOU : Jointly support the supply of carbon credits and RECs for the promotion of corporate GHG accounting and emissions offsetting across APAC.



- **Project outline** : Hitachi Energy selected to supply Marinus Link Pty Ltd a high-voltage direct current (HVDC) project, which will augment the connection capacity up to 1,500MW between mainland Australia and Tasmania's grid.
- **Objectives** : To transmit clean renewable energy including Tasmania's world-class wind and hydro storage resources. In line with Australia's Net Zero ambitions, this link will result in saving up to 140 million tons of CO₂ equivalent emissions by 2050.
- **URL** : [Hitachi Energy's HVDC technology to power Marinus Link, a key step toward Australia's Net Zero ambitions \[Hitachi Energy Ltd.\] : May 23, 2024](#)



HVDC Light® Valve Hall

Cooperation outline : Comprehensive MOU focusing on Natural Gas, Hydrogen, Ammonia and CCS.

Purpose or objectives of MOU : Strengthening the relationship between JOGMEC and Northern Territory, resource-rich region with high potential for Hydrogen, Ammonia and CCS.

Other points : JOGMEC and INPEX commenced joint research in 2022 to assess the CO2 storage potential in the Bonaparte Basin, aiming for GHG emissions reduction at Australian LNG operation.

URL : [Memorandum of Understanding signed by JOGMEC and Northern Territory Government : News Releases | Japan Organization for Metals and Energy Security \(JOGMEC\)](#)

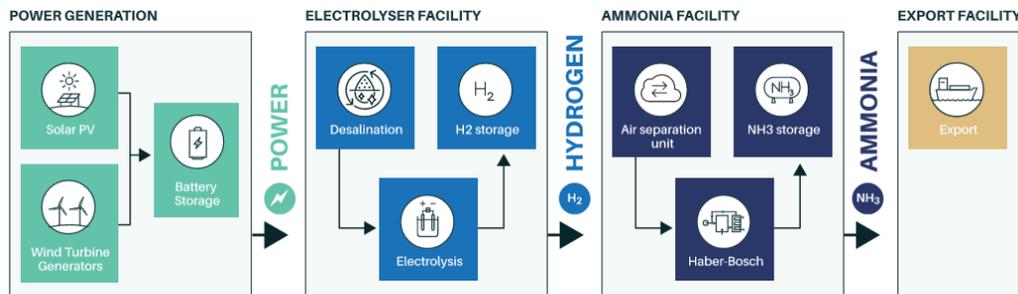


<MOU signing of JOGMEC and Northern Territory, Australia>

Outline : Murchison Hydrogen Renewables Pty Ltd, an Australian subsidiary of Copenhagen Infrastructure Partners, and Sumitomo Corporation have entered into a Heads of Agreement for the investment to and offtake from Murchison green ammonia project in Western Australia.

Purpose : The project is one of the most advanced gigawatt-scale Power to Ammonia projects to produce competitive green ammonia in Western Australia, using world-class onshore wind and solar resources with a complementary production profile. Both parties will collaborate together to build supply chain and help decarbonize Japanese hard-to-abate industries.

▼ Supply Chain Structure

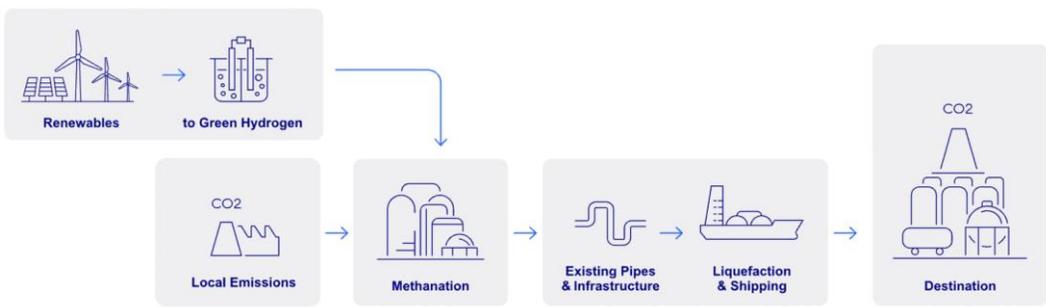
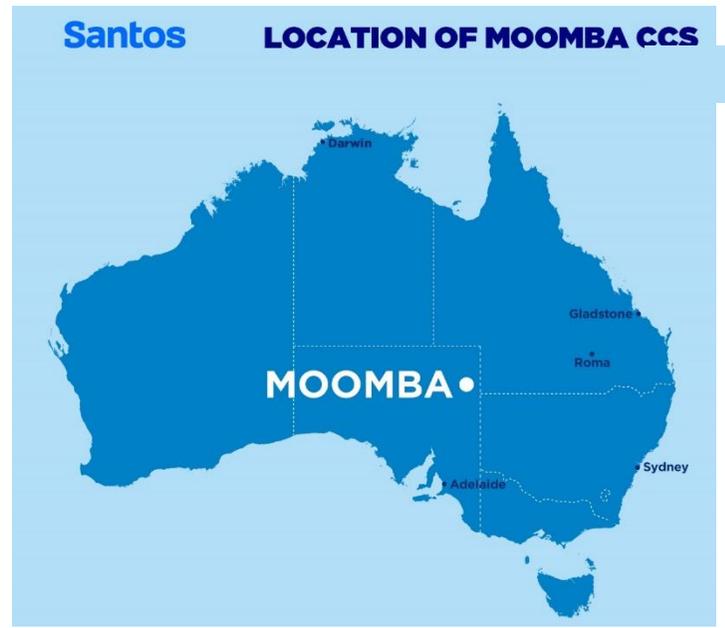


▼ Image of Large-scale ammonia production plant



Joint Study Agreement for Pre-FEED Study on e-methane production in Cooper Basin

- **Overview** : Following the completion of Feasibility Study, Santos, Tokyo Gas, Osaka Gas Australia and Toho Gas signed the Joint Study Agreement in July 2024 to conduct Pre-FEED activities for the e-methane production (methanation) in Moomba, in the Cooper Basin.
- **Purpose** : Produce and export e-methane to Japan with utilization of abundant renewable energies in Australia.

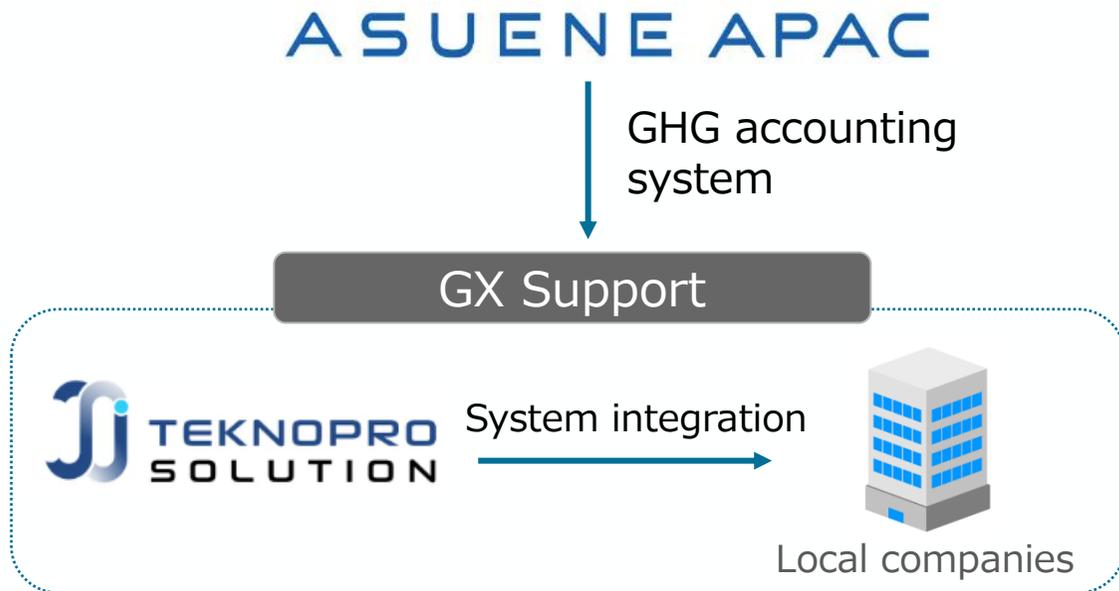


Cooperation agreement to promote GX management with GHG calculation

Cooperation outline : Signed a collaboration agreement with Teknopro, a local Indonesian company, for GHG calculation of ASUENE.

Purpose or objectives of MOU : Promoting the use and implementation of ASUENE's GHG calculation solutions in companies that have implemented location-based services and ERP in Indonesia.

URL : <https://prtmes.jp/main/html/rd/p/000000367.000058538.html>



Signing ceremony

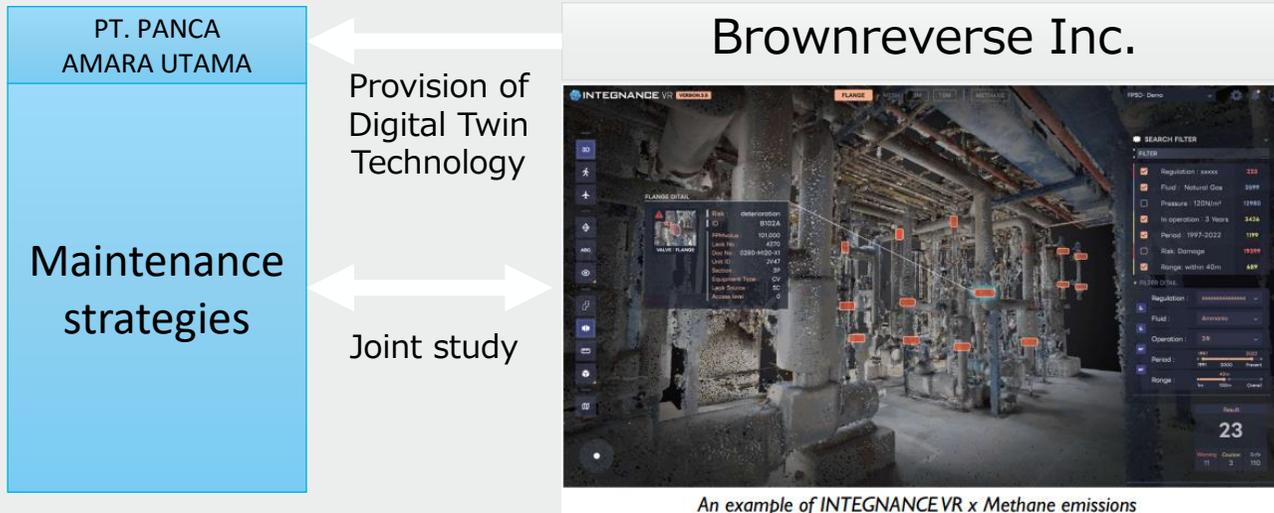


Cooperation outline : Brownreverse Inc.(BRS) and PT. PANCA AMARA UTAMA(PAU) aim to collaborate on the validation of “environmentally conscious maintenance” at PAU's ammonia plant using BRS’s technology. This cooperation involves providing and utilizing 3D models and methane emission data to study the environmental impact.

Purpose or objectives of MOU : To validate the effectiveness of environmentally considerate maintenance using Digital Twin technology. To set an example that expands maintenance practices considering environmental sustainability and minimizing environmental impact.

- Project Scheme**

Step 1



Step 2

To expand practices that consider and minimize environmental impact in the maintenance of industrial facilities.

- Future Schedule**

Step 1 (until March 2025): Visualize methane emissions on the digital twin and study maintenance strategies.

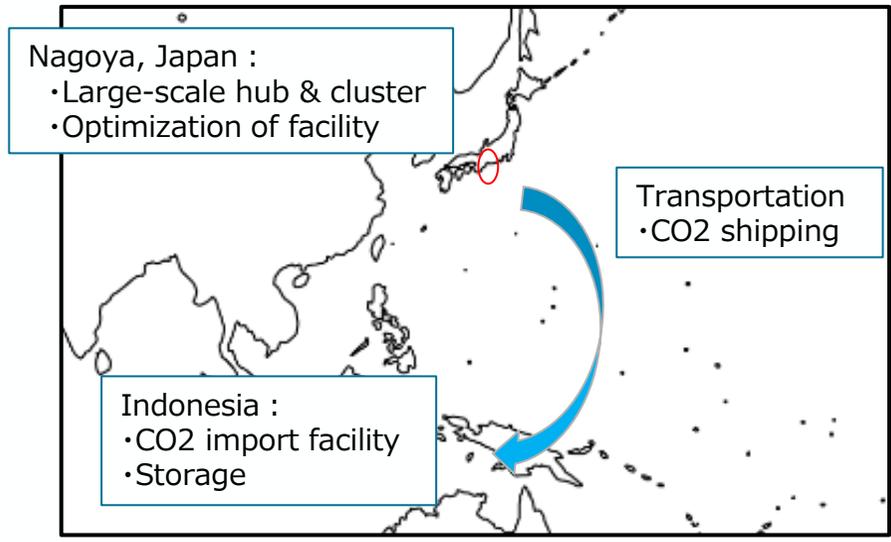
Step 2 (from April 2025): Expand the role model of "environmentally conscious maintenance."

Cooperation between Chubu Electric Power Co., Inc. and BP Berau Ltd. on international CCS hub & cluster model

Cooperation outline : Following the successful completion of the Nagoya CCS feasibility study this year, both parties would like to further collaborate to explore a hub & cluster approach to a CCS project. The parties will explore the necessary industry collaboration for cost optimization across the value chain and development of business models to enable commercial CCS projects from Nagoya, Japan to Tangguh, Indonesia.

Objectives : To evaluate potential opportunities which enable a commercially viable CCS project to support decarbonization through cross-border CCS from Nagoya, Japan to Tangguh, Indonesia.

Map of project



Result of Nagoya CCS FS

CO2 Volume	5-20 MTPA (toward 2050)
CO2 Vessels	Nearly 20 vessels (50k-80k cbm) (toward 2050)

Scope of cooperation

- ◆ Deepening engagement with industry
- ◆ Identification of legal requirements for large-scale hub & cluster
- ◆ Identification of possible business models including potential incentives and funding models required to allow for a commercial CCS project
- ◆ Optimization of onshore infrastructure
- ◆ Optimization in large size of CO2 liquefaction and shipping
- ◆ Optimization in procurement and operation of CO2 vessels



Memorandum on the roadmap for CCO/SAF Projects derived from non-standard coconuts with the Indonesian National Research and Innovation Agency



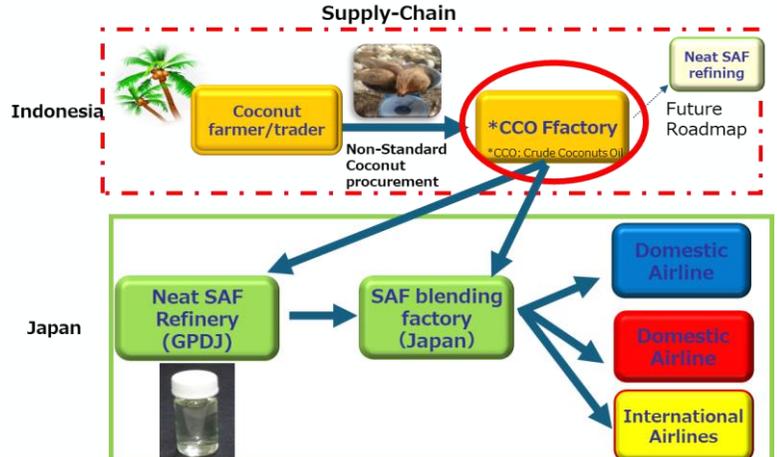
Cooperation Outline: The roadmap for establishment for a Crude Coconuts Oil (CCO) factory derived from non-standard coconuts and SAF project are developed by Indonesian National Research and Innovation Agency (BRIN), Green Power Development Corporation of Japan(GPDJ), and Indonesian ABE Corporation(ABE, a company specializing in agro and biofuel innovation, production, and sales). This roadmap will also include initiatives aimed at contributing to greenhouse gas reduction benefits for both countries.

Significance and Objectives of this MOU: This MOU aims to establish a CCO factory for SAF in Indonesia, led by the Japanese side, and export the produced raw materials for the SAF project in Japan. This initiative will secure the raw materials needed for domestic SAF fuel production. Additionally, utilizing the technology and expertise from Japan's SAF project, technical support will be provided to Indonesia's SAF project in the future.

Additional Information: A working group (WG) will be established comprising BRIN, the project promoters GPDJ /ABE, and related parties concerned in Indonesia. This WG will conduct regular quarterly meetings to advance the project. This MOU is scheduled to be signed among these three parties in July in Jakarta.

URL : www.brin.go.id (BRIN/Badan Riset dan Inovasi Nasional)
<https://abe.biz.id> (PT. ABE/ ABE Indonesia Berjaya; Indonesian private company)
<https://gpdj.jp/saf> (GPDJ, Japan)

Definition of Non-Standard Coconut			
too small	Sprouted	Cracked	Rotten
[reference] Standard Coconut			



MOU on cooperation for the CCO business for feed stock of SAF derived from Non-Standard Coconuts with the Central and Local Governments of Indonesia

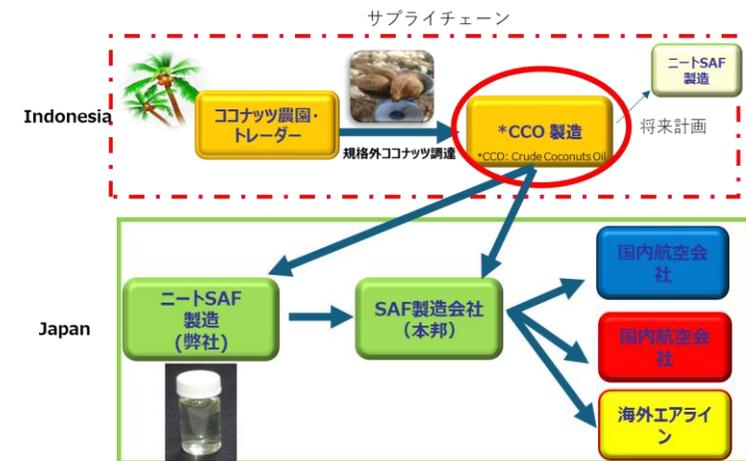
Overview of Corporate Partnership: Green Power Development Corporation of Japan (GPDJ) and IJBNet (an Indonesian partner company) will establish a Crude Coconut Oil (CCO) plant in South Sumatra, which will be used as a feed stock for Sustainable Aviation Fuel (SAF). This project will be promoted in cooperation with Coordinating Ministry for Economic Affairs of Indonesia (Deputy Minister for Agribusiness) (CMEA) and Government of South Sumatra(GSS). CMEA,GSS,GPDJ and IJBNet jointly agree to promote this project.

Significance and Aim of the Cooperation: CCO plant will be established under Japanese leadership, and the feed stock will be exported to Japan for SAF production. Additionally, Japan will provide technical support to Indonesia's SAF business using the technology and expertise developed in Japan.

Additional Information: Using the CLS (Closed Loop System) program promoted by Coordinating Ministry for Economic Affairs, the project will be implemented with the supports of Indonesian Central and Local Governments for the development of logistics facilities from plantations to the CCO plant in South Sumatra. The project will be established jointly with local partner companies including IJBNet.

URL : <https://www.ekon.go.id> (CMEA/Coordinating Ministry for Economic Affairs)
<https://www.sumselprov.go.id> (Government of South Sumatera Province)
<https://ijb-net.org> (IJBNet/ Indonesia Japan Business Network)
<https://gpdj.jp/saf> (GPDJ)

規格外ココナッツ (Non-Standard Coconut) の定義			
未成熟 (too small)	芽が出ている (Sprouted)	割れている (Cracked)	腐っている (Rotten)
			
			
【参考】 規格品ココナッツ (Standard Coconut)			
			





Cooperation outline : To conduct a study involving the entire ammonia value chain from the supply to combustion of green ammonia, including demonstration at the Labuan coal-fired power plant (“Site”). PT PLN Indonesia Power will provide access to the Site, PT Pupuk Kujang will handle the procurement of ammonia, and IHI will be responsible for studying ammonia combustion and supplying an ammonia burner for demonstration.

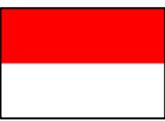
Purpose and Objective of MOU : To contribute to achievement of carbon neutrality in Indonesia by studying on the entire ammonia value chain and on the application of ammonia combustion which is one of the decarbonization options at coal-fired power plants.

<Demonstration Site>



<Project Scheme>

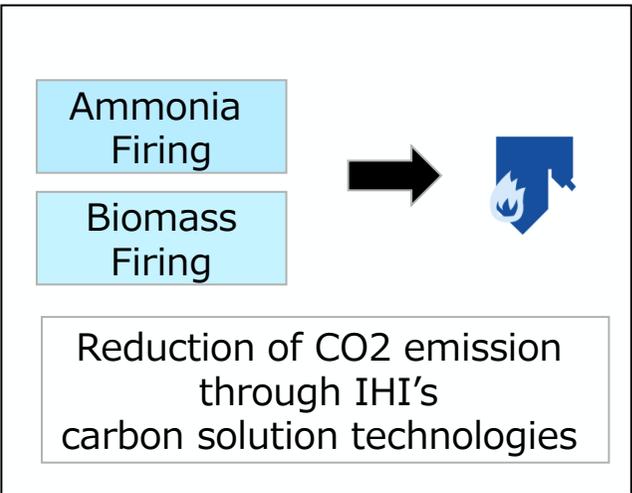




Cooperation Outline : To conduct a study and plan a decarbonization roadmap including CO2 reduction plan through ammonia/biomass combustion at the coal-fired power plant owned by PT PLN Nusantara Power ("PNP").

Purpose and Objective of MOU : To contribute to achievement of carbon neutrality in Indonesia through discussing and planning feasible decarbonization map with PNP.

<Project Image>



Plan Decarbonization Map to PNP's power plant





MOU among 3 companies for Feasibility Study for development of CCGT Power Plant in Indonesia

Cooperation outline : To achieve a future carbon-neutral and net-zero society in Indonesia, Electric Power Development Co., Ltd., PT Adaro Power, and Itochu Corporation will conduct FS to develop a Combined Cycle Gas Turbine (CCGT) power plant in Central Java, Indonesia.

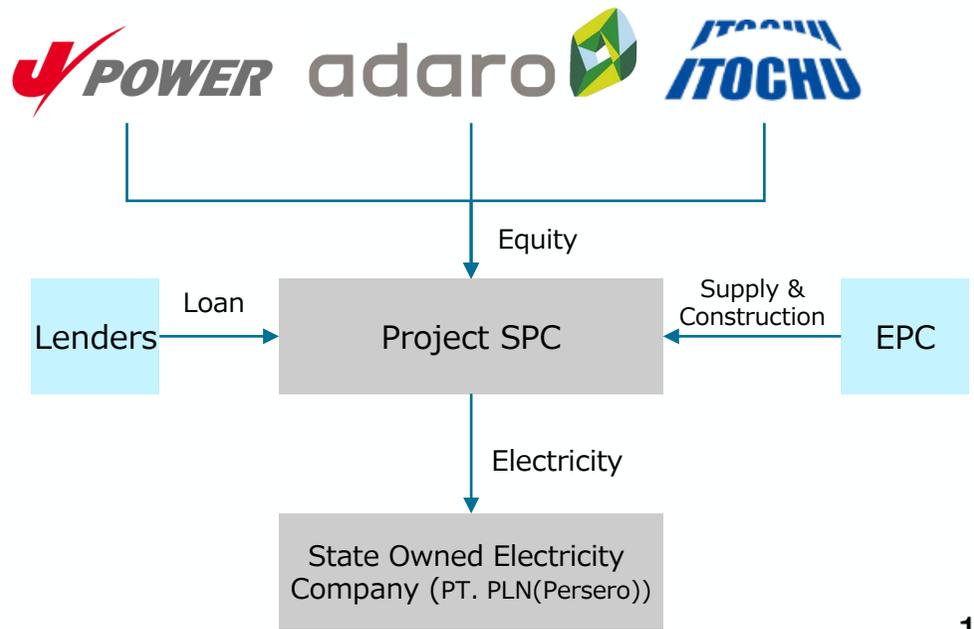
Purpose or objectives of MOU : The companies plan to develop the project to contribute to the energy transition in Indonesia by potential future hydrogen co-firing.

Project Site



Central Java, Indonesia

Assumed Project Scheme



Outline : As a subsequent document to MOU which was concluded between PLN and JBIC in November 2022, the Protocol confirms the further cooperation to achieve energy transition in Indonesia.

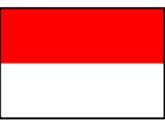
Objectives : The protocol aims to accelerate financial supports for development of green infrastructure including renewable energy and transmission lines / smart grid, energy efficiency, and green transportation. It also approaches quality support for capacity building.



MOU between PLN and JBIC to strengthen the partnership between the two organizations, at the series of G20 "Energy Transition Day" events held by PLN in Bali, Indonesia.



Transmission Line Seminar hosted by JBIC

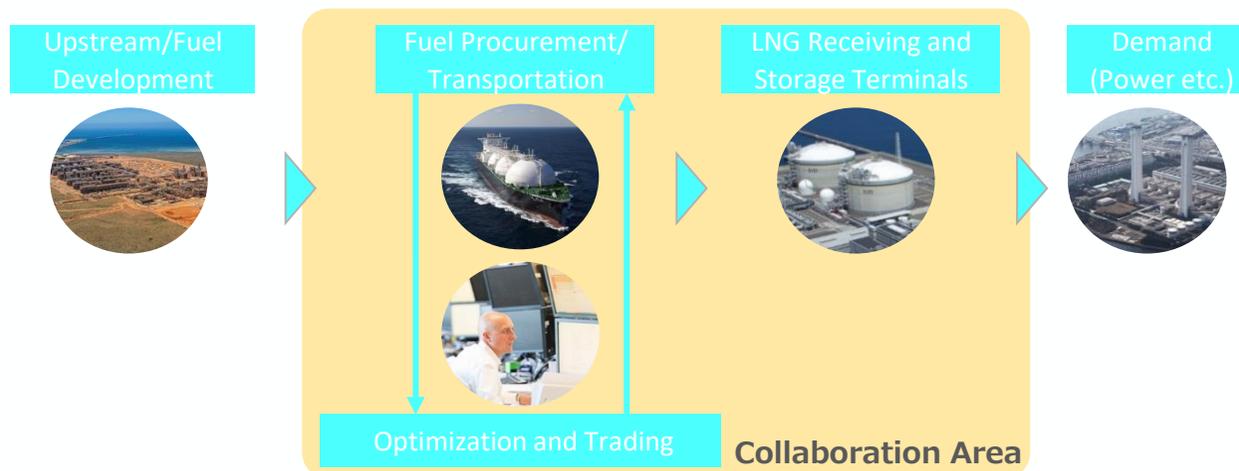


MOU between JERA and PLN EPI on LNG Value Chain Collaboration

Cooperation outline : To explore collaboration with PLN EPI to establish an LNG value chain as a key energy transition fuel toward the achievement of net zero emissions by 2060 in Indonesia. Area of interests are ① LNG procurement and optimization, ② development and operation of LNG receiving terminals, and ③ development of potential ammonia and hydrogen for future fuel substitution.

Purpose or objectives of MOU : As Indonesia is highly dependent on coal-fired power generation, LNG is becoming increasingly important as a transition fuel. In anticipation of growing LNG demand in Indonesia, JERA who has expertise in LNG, will collaborate with PLN EPI to optimize LNG procurement and to develop LNG receiving terminals. This initiative aims to establish not only an LNG value chain, but also future value chain for ammonia and hydrogen which will contribute to achieving net-zero emissions in Indonesia.

URL : [Collaboration with PT PLN Energi Primer Indonesia on LNG Value Chain Development | Press Release\(2024\) | JERA](#)



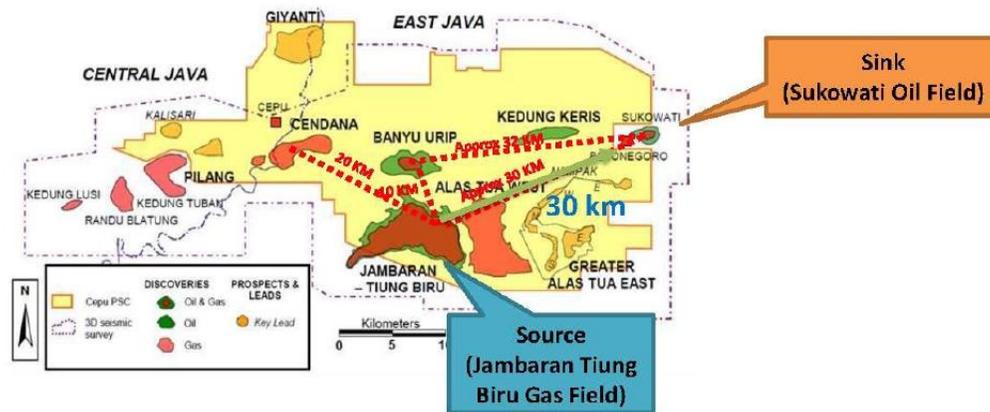
MOU signing ceremony at Bandung, Indonesia (February 2024)

Cooperation outline : JOGMEC, JAPEX, PT Pertamina (Persero) and PT Pertamina EP have agreed to implement an inter-well CO₂ injection field test in the Sukowati oil field in East Java, Republic of Indonesia in FY2024.

Purpose or objectives of MOU : The parties intend to jointly develop the first commercial CO₂ enhanced oil recovery project in Southeast Asia, and the test to be implemented in this study will be an important milestone to achieve this goal.

Other points : Encouraging results from the preliminary study conducted in FY2023, including a small-scale injection test at a single well, lead to this relatively larger-scale inter-well injection test.

Sukowati CO₂-EOR Project



Source: CCUS Activities in Indonesia presented at JAPAN-ASIA CCUS FORUM 2020

Well Pad in Sukowati Field

(Small-Scale CO₂ Injection Test in FY2023)



Source: Pertamina

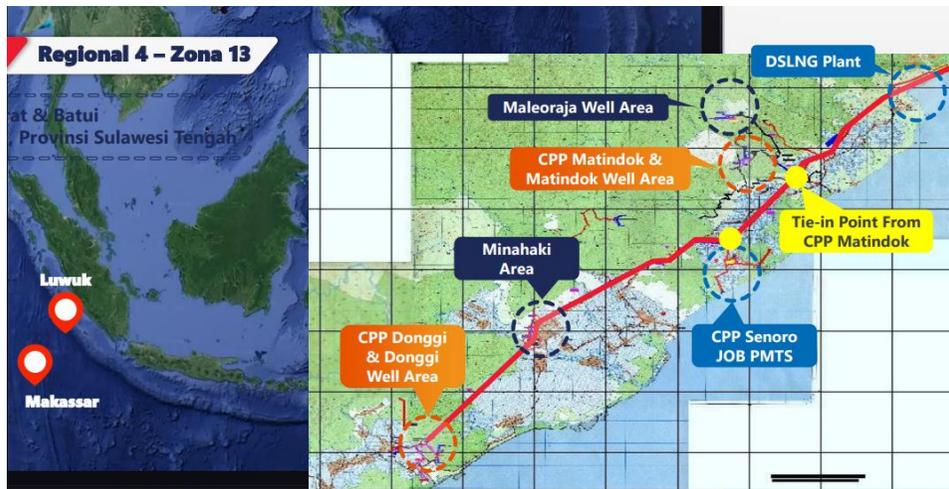
Joint Study Agreement for Methane emission measurement in Donggi-Matindok field and JOB Tomori field in Indonesia

Cooperation outline : JOGMEC and Pertamina agree to conduct joint research on methane emission measurement and carbon intensity quantification

Purpose or objectives of MOU : JOGMEC and Pertamina will contribute to cleaner natural gas brought into Japan by working together to build Pertamina's methane emission measurement system in Pertamina's working area.

Other points : Project will be started at operation facilities in Indonesia (Donggi Matindok and JOB Tomori Field) from 2024.

Donggi-Matindok field and JOB Tomori field



Project structure



Memorandum of Cooperation between MEMR, BRIN, IFHE, and JICA for partnership towards promoting Hydrogen and Ammonia Development

Cooperation outline : The Parties will strengthen their comprehensive cooperation in; (i)Research and development of policies, regulatory framework and standards on new energy (hydrogen and ammonia), (ii)Public and private stakeholder engagements for both Indonesia and Japan, (iii)Knowledge and capacity development for the latest technologies and policies, (iv)Formulation of new program/project for financing necessary infrastructures to accelerate the market creation for new energy (hydrogen & ammonia).

Purpose : Based on the Indonesia Hydrogen Roadmap, MOC intends to develop cooperation in the field of promoting new energy(hydrogen and ammonia) toward decarbonization in Indonesia with the view to achieve the purpose of Article 2 of Paris Agreement and net zero target by 2060 in Indonesia.

Other points : JICA will launch Data Collection Survey regarding supply chain of Hydrogen and Ammonia within 2024 based on the MOC.



MOC signing



Letter of Intent between Pertamina and JICA for partnership towards promoting energy transition in Indonesia

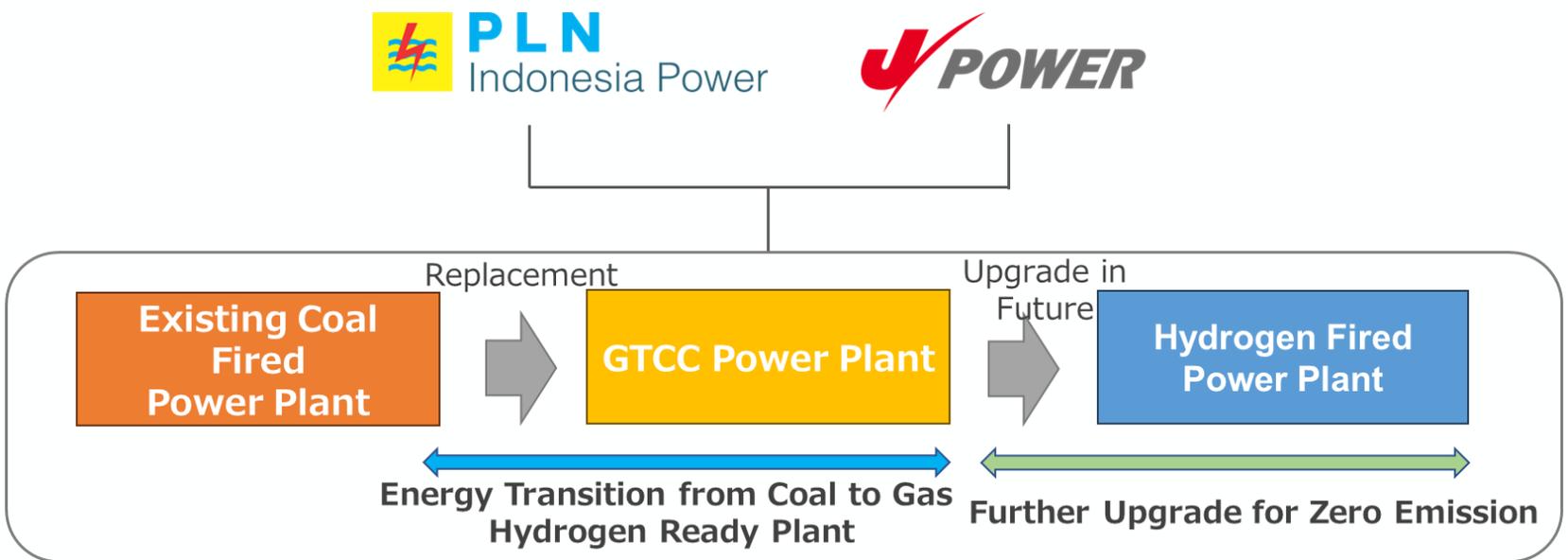
Cooperation outline : The Parties will discuss and explore potential collaboration such as; (i) financing support for energy transition programs, (ii) conducting research or technical assistance for new energy (Hydrogen & Ammonia), CCS/CCUS, renewable energy, biomethane, and battery (iii) connecting technology partner and market in Japan, (iv) potential collaboration in marine & logistic sector, (v) capacity development program for energy transition, etc.

Purpose : To develop cooperation in the field of promoting energy transition in Indonesia with the view to achieve the purpose of Article 2 of Paris Agreement and net zero target by 2060 in Indonesia.



JDSA for a feasibility study between PT PLN Indonesia Power and JPOWER for the project to convert existing coal-fired power plant to CCGT

- Joint Development Study Agreement (JDSA) is an agreement between PT PLN Indonesian Power and Electric Power Development Co.,Ltd. (JPOWER) to conduct a feasibility study for the project to convert the existing subcritical coal-fired power plant to a state-of-the-art Gas Turbine Combined Cycle that enables to reduce CO2 emissions to approximately one-third.
- In addition, we will conduct a feasibility study on possibility of future implementation of state-of-the-art combustion technology that enables hydrogen combustion to further reduce CO2 emissions.

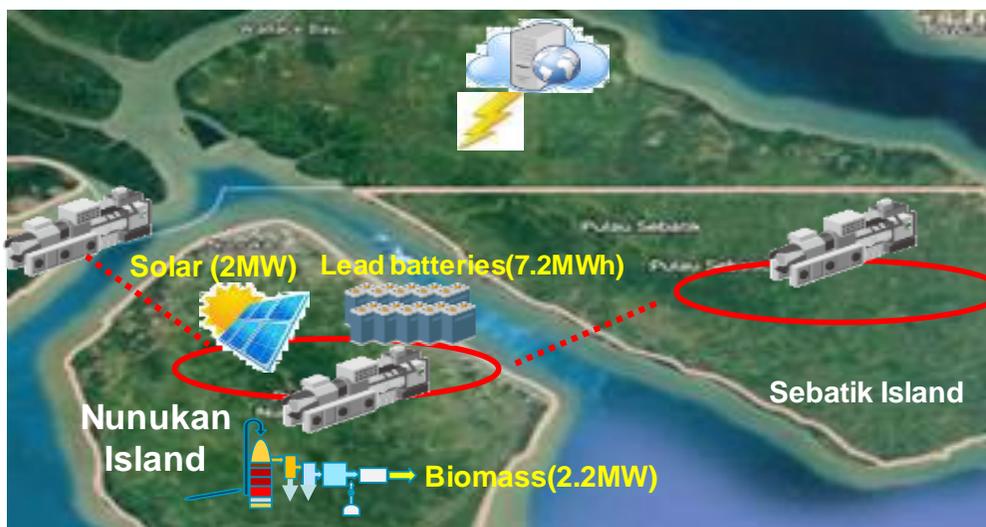


JDSA for Detail Study of Hybrid Power Plant : Solar PV + Biomass + BESS + Energy Management System in North Kalimantan

Cooperation outline : As the progress of the "MoU" on Renewable Energy Business Development" signed with Indonesia Power Company (PLN Group) in 2023, FS sponsored by NEDO to utilize renewable energy as a base power source on Nunukan Island, North Kalimantan is on going to next step (equipment demonstration).

Purpose or objectives of MOU : There is a possibility that it will be expanded not only to Indonesia, which is an island country, but also to other regions and Japan.

Other points : NEDO demonstration will be started after final approval in next year. It will be Hybrid System by "Kyudenko EMS" which are Biomass(by EFB) + PV + Large scale Battery for achieving RE100% in future.



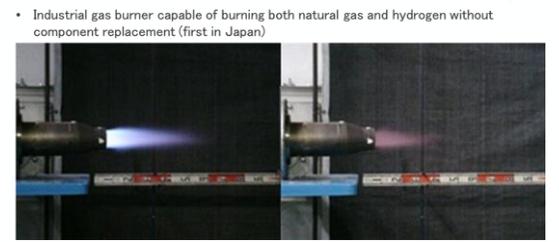
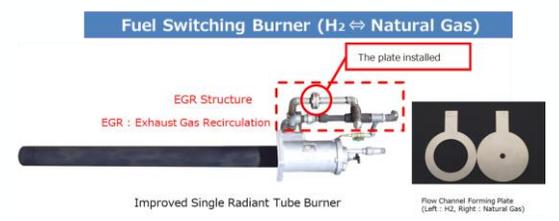
Overview : LNG Japan Corporation and Toho Gas Co., Ltd. have invested in PT Bayu Buana Gemilang, a company that supplies industrial natural gas in Indonesia. By expanding the natural gas infrastructure, we aim to reduce carbon emissions in the industrial sector. Moreover, we plan to explore business opportunities in areas such as biogas, hydrogen, and e-methane, which have the potential to further advance decarbonization.

Purpose and Goal : We will promote the utilization of Indonesia’s domestic natural gas resources through pipeline supply and contribute to the realization of a low-carbon society. Furthermore, in alignment with the country’s goal of net zero CO2 emissions by 2060, we aim to encourage collaboration between Japanese and Indonesian companies in the development of renewable and new energy businesses (such as biogas, hydrogen, e-methane, etc.) to help create a decarbonized environment as an energy supplier.

Business Area



Sample Technology



Joint Study Agreement (“JSA”) for the Implementation of BECCS Project in South Sumatra, Indonesia

Outline of the JSA : To jointly conduct a feasibility study for a BECCS* project in South Sumatra, Indonesia. The project involves **capture** of bioenergy-derived CO₂ emitted from a pulp mill operated by Marubeni, **transportation** and **storage** of the CO₂ into deep saline aquifers near Limau Niru oil field.

*BECCS=Bioenergy with Carbon Capture and Storage. It is one of the negative emission technologies that achieves carbon negativity by capturing and storing bioenergy-derived CO₂.

Parties involved in the JSA : Marubeni Corporation, Japan Petroleum Exploration Co.Ltd., PT Pertamina (Persero), PT Pertamina Hulu Energi

Objectives of the JSA : By realizing carbon negativity, aiming to contribute to the reduction of CO₂ emissions and generate revenue through the creation and trading of carbon-negative credits.

Map and Project Site :

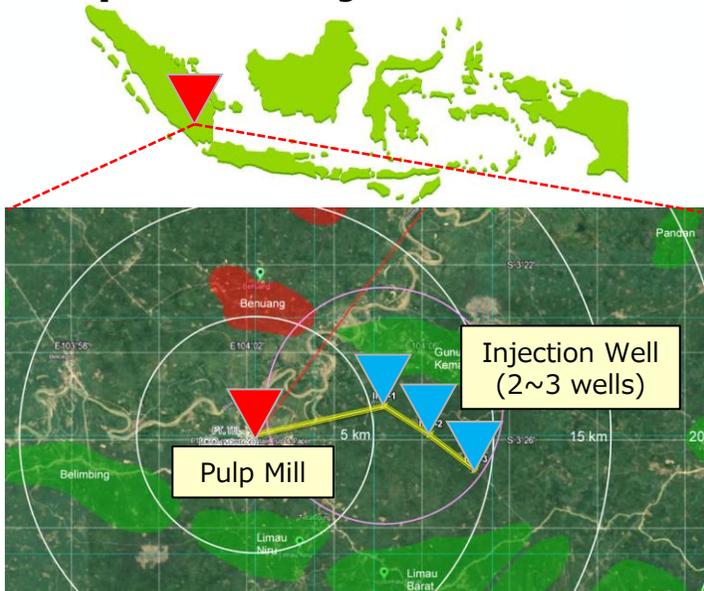
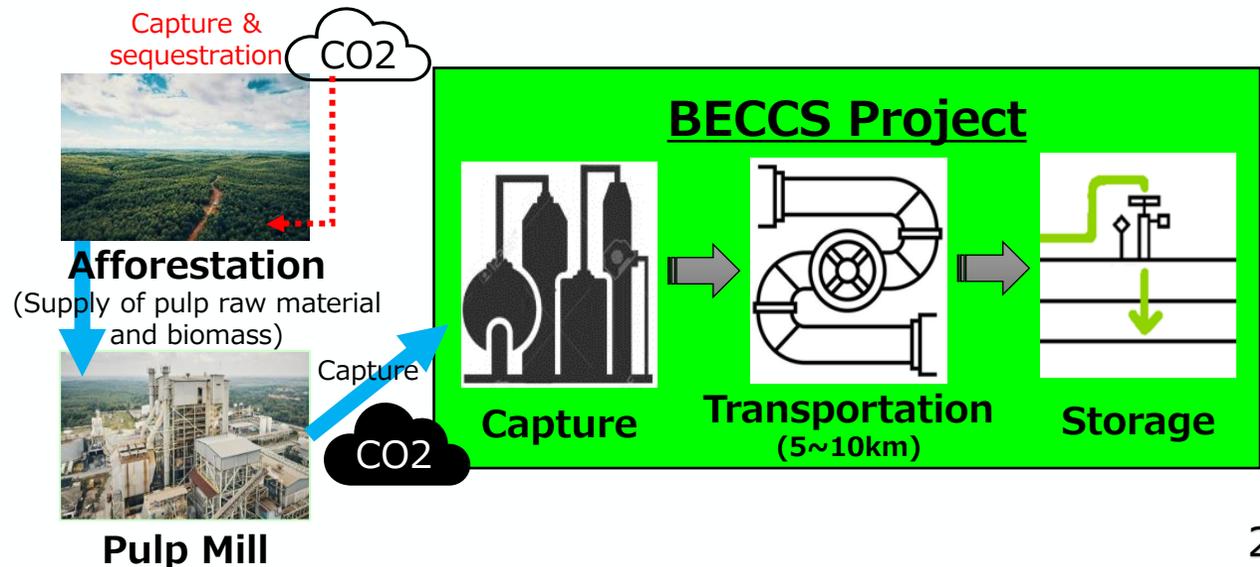


Illustration of Project Concept :



New comprehensive cooperation in the energy sector was confirmed in both countries by replacing the MOCs with the Indonesian Ministry of Energy and Mineral Resources ((1) MOC in the Energy Sector (June 2019) and (2) MOC on Energy Transition (January 2022)).

Both countries shared the importance of the AZEC principles of **"aiming for common goals through various pathways"** and **"simultaneously achieving economic growth, energy security, and decarbonization"**.

Main area of cooperation

1. **Formulation of energy transition roadmap**
2. Renewable energy, energy efficiency, and other clean energy technologies, such as **hydrogen, ammonia, Carbon Recycling, and CCS/CCUS**
3. Other energy including **oil, gas, and electricity**

Main forms of cooperation

1. **Encouraging cooperation between business entities of both countries**, such as promotion of energy investment and joint project, which contribute to the acceleration of energy transition efforts.
2. **Exchanging information** on energy policy improvement, **identifying possibilities for cooperation**, and **knowledge sharing** on energy transition efforts such as hydrogen, ammonia, Carbon Recycling, CCS/CCUS, and low and zero emissions technologies.
3. Promoting renewable energy and energy efficiency projects, and **exchanging information** on the areas such as solar, wind, geothermal, bioenergy, hydropower, hydrogen, electric vehicles, charging infrastructure, and energy efficiency.
4. **Promoting decarbonization projects in industrial park**
5. **Promoting cooperation in oil, gas, and LNG projects, as well as development of power generation and grid**
6. Conducting efforts related to **joint training, exchanging students and researchers for energy technologies and policies**, including oil, renewable energy, energy efficiency, and nuclear energy



MOU between NEDO and MEMR concerning cooperation in the decarbonization of the energy sector



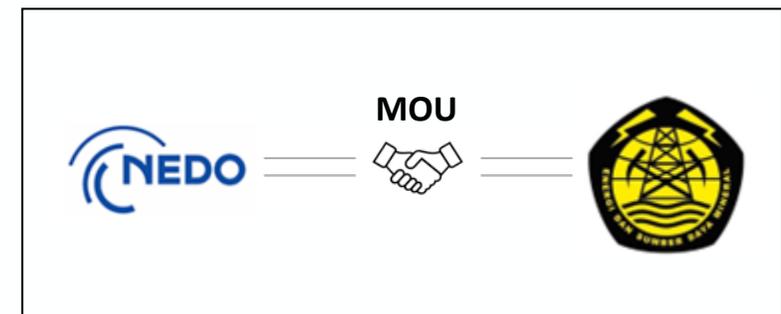
MOU overview : MOU between NEDO and MEMR (Ministry of Energy and Mineral Resources) to enhance cooperation on decarbonization efforts in the energy sector including hydrogen utilization, electrification of remote islands, and next-generation fuels.

Significance : To enhance cooperation on decarbonization efforts in the energy sector through collaborative activities in utilizing available energy sources including renewable energy, clean technologies, energy efficiency, and options that could help enhance energy security while reducing greenhouse gas emissions.

Others : This MOU refers to the Memorandum of Cooperation between the Ministry of Energy and Mineral Resources of the Republic of Indonesia and the Ministry of Economy, Trade and Industry of Japan on the Realization of Energy Transitions.

● Forms of cooperation

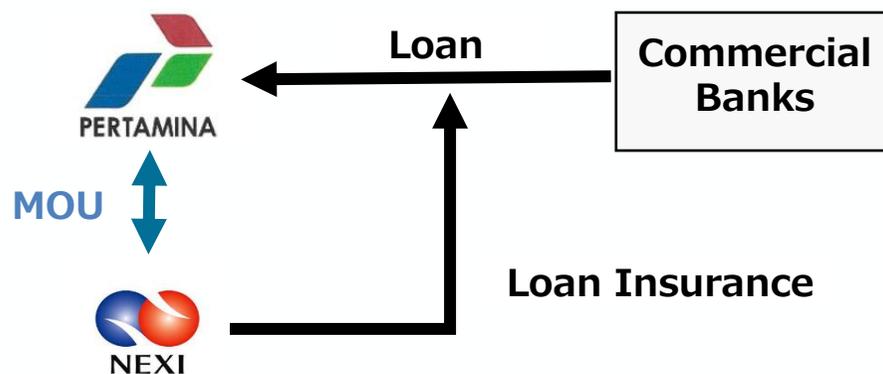
1. Project financing;
2. Conducting demonstration projects, detailed studies, technical advisories, and pilot projects;
3. Exchanging of information and experts;
4. Conducting capacity building programs such as technical visits, secondment, workshops, and seminars;
5. Other forms of cooperation as decided by the Participants.

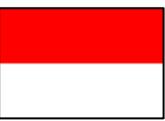


Cooperation outline : Nippon Export and Investment Insurance (NEXI) and PT Pertamina, the state-owned energy company of the Republic of Indonesia, signed MOU at the timing of AZEC Ministerial Conference in December 2023. NEXI and PT Pertamina [amend/will amend] this MOU to continue further discussion on NEXI's financial support by Loan insurance.

Purpose or objectives of MOU : This MOU [further strengthens/will further strengthen] the cooperation between NEXI and PT Pertamina in the natural resources sector, and [supports/will support] PT Pertamina's activity to achieve the Energy Transition in Indonesia.

[Scheme]





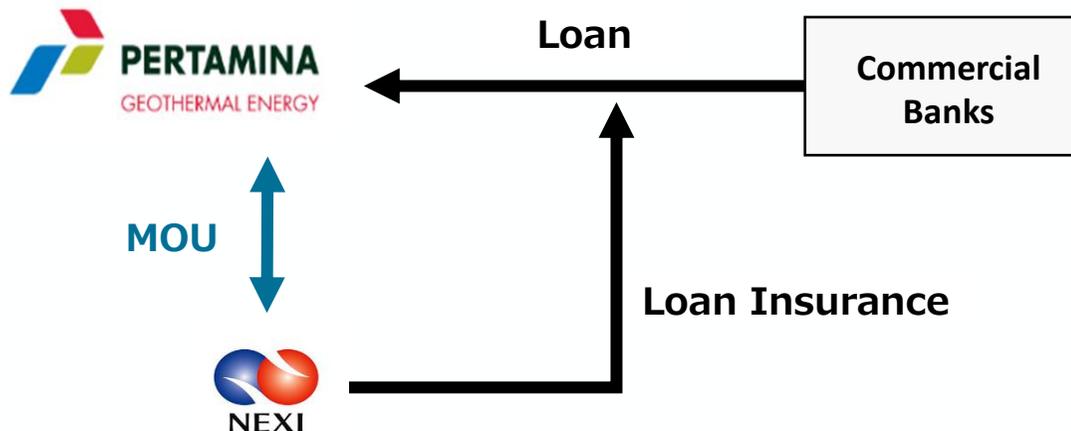
NEXI signs MOU with PT Pertamina Geothermal Energy

Cooperation outline : Nippon Export and Investment Insurance (NEXI) and PT Pertamina Geothermal Energy (PGE) [agree/will agree] to cooperate in the field of geothermal power as a part of AZEC Concept.

Purpose or objectives of MOU : This MOU [further strengthens/will further strengthen] the cooperation between NEXI and PGE through geothermal power projects, and [supports/will support] PGE's activity to achieve the Energy Transition in Indonesia.

Other points : NEXI and PGE will discuss possibility to apply NEXI's Loan insurance based upon this MOU.

[Scheme]



Cooperation Outline : PT Pertamina International Shipping, a marine logistics subsidiary of PT Pertamina (Persero) and NYK Line signed MoU to collaborate in the field of liquefied CO2 (LCO2).

Contract Parties : PT Pertamina International Shipping (PIS) , NYK Line

Purpose of MOU : Indonesian government plans to become the largest storage operator in Asia by attracting demand for CO2 landfills from the surrounding areas. This MoU is intended to contribute to decarbonized society from the perspective of LCO2 transportation.

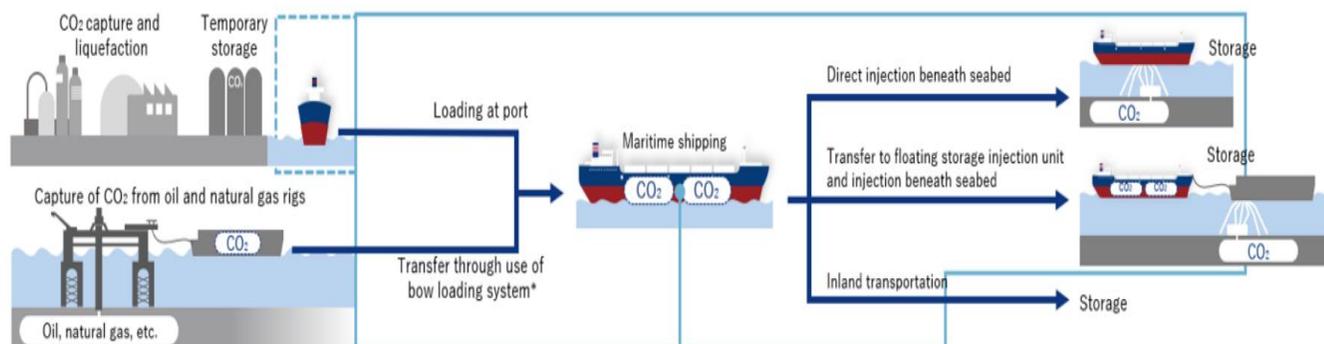
URL : [NYK Signs MoU with Indonesian State-Owned and Subsidiary of Pertamina for Cooperation in Liquefied CO2, LNG Transportation and Ship Management | NYK Line](#)

<Signing Ceremony>



from left,
PIS President Commissioner Mochtar Husein,
PIS CEO Yoki Firnandi
NYK Managing Executive Officer Hironobu Watanabe,
Pertamina President Director & CEO Nicke Widyawati

<Image of LCO2 transportation in CCS Value chain>



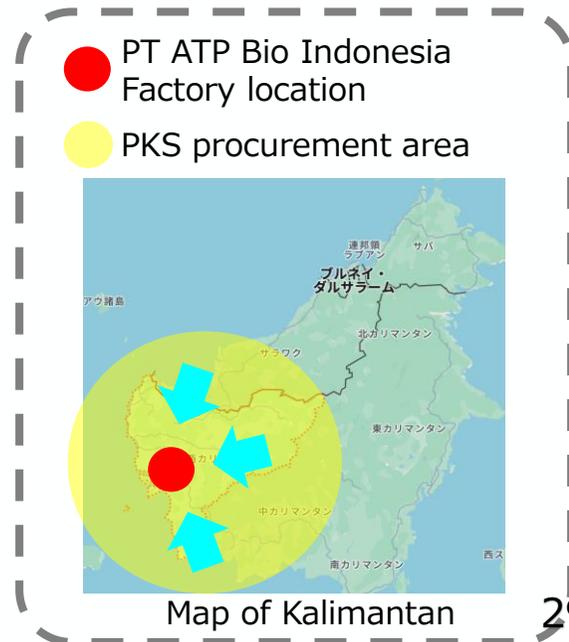
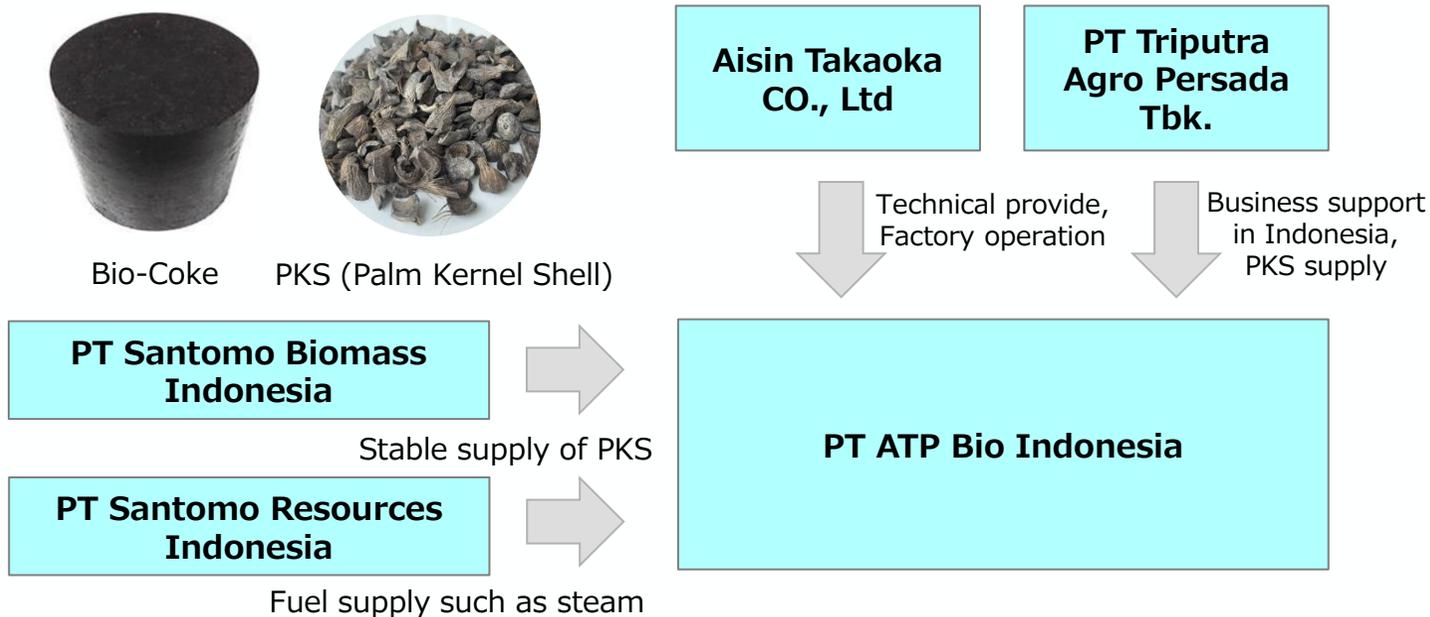


MoU for a project which PT Santomo Biomass Indonesia supply PKS, and PT Santomo Resources Indonesia provide necessary gas to PT ATP Bio Indonesia plant in West Kalimantan

Cooperation outline : For PT ATP Bio Indonesia's PKS derived Bio-Cokes production, PT Santomo Biomass Indonesia provides a stable supply of PKS while PT Santomo Resources Indonesia provides the gas and other fuels.

Purpose of MOU : The production of PKS derived Bio-Cokes in west Kalimantan, will lead to the realization of a sustainable society through the reduction of CO2 emissions and the effective utilization of waste materials.

Schedule : PKS and gas supply, and production of Bio-Cokes is scheduled to start in early 2025.



MoU for the construction of a wood pellet factory planned to be built inside the sawmill area in East Java which will use the wood wastes generated directly from the sawmill

Cooperation outline : PT Santomo Biomass Indonesia will construct a new wood pellet factory inside PT Seng Fong Moulding Perkasa's sawmill area, thereby reducing raw material transportation costs and CO2 emissions.

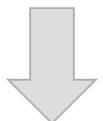
Purpose of MOU : By constructing a wood pellet plant within a sawmill, the project aims to realize stable procurement of wood wastes, reduction of costs and CO2 emissions during transportation of raw materials.

Schedule : Construction of the plant is scheduled to begin during 2024, with production and supply of pellets to begin in early 2025.



Saw dust generated in PT Seng Fong Moulding Perkasa

PT. Santomo Biomass Indonesia

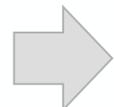


Investments and operation



Image of final product of wood pellet

PT. Seng Fong Moulding Perkasa



Supply raw materials

Wood pellet factory

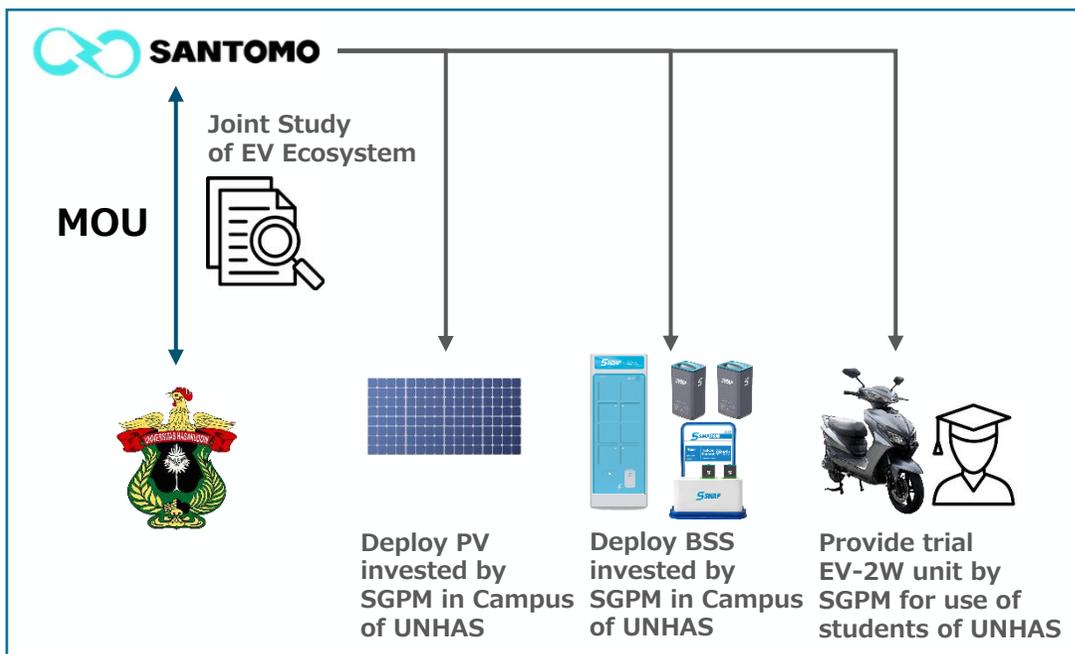


Supply wood pellet

Factories in west Java

- **Cooperation Outline**
 - Cooperation for both Co-Study of EV ecosystem and implementation of EV-Motorcycle, Battery Swapping Station (BSS) and Solar PV.
- **Purpose or Objectives of MOU**
 - Discuss how to realize circular-decarbonized-EV society through Co-Study and trial of EV-2W using green energy provided from Solar-PV.
- URL : <https://san-tomo.com/posts/ZpoVQFOb>

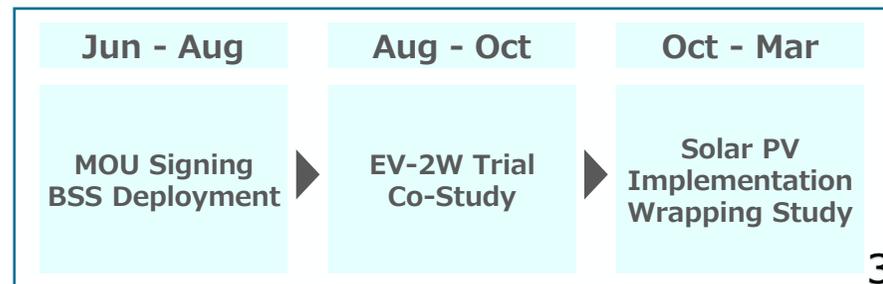
Scheme



Project Location



Schedule





MOU between SHI & PT.PLN Nusantara Power on conversion from coal to biomass

- **The overview of MOU** : The objective is to realize coal phase-out of the thermal power plants owned by PT. PLN Nusantara Power (PNP) by designing conversion to wood chip fired power plant through cooperation between SHI & PNP. Also including making of fuel conversion roadmap, conducting fuel combustion tests and making plan for specific conversion cases.
- **The Purpose of cooperation** : The goal is to achieve power price level as low as that of coal power plant by utilizing relatively cheap local wood chip and other biomass fuel in Indonesia and contribute to Indonesian Net Zero Target.
- **Other Points** : We are to specify existing power plants in Indonesia and applying the output of our feasibility study of conversion to full biomass combustion that has been carried out since 2023.

<Modification from PC Boiler to CFB Biomass Boiler>

Modification PC Boiler to CFB Boiler Design Concept

No	Item	Existing Design	Modification Design
1.	Load Output	400 MW	311 MW
2.	Fuel	100% Coal	100% Wood Chips
3.	Fuel Gross Caloric Value	6,040 kCal/kg	2,500 kCal/kg
4.	Fuel Flow	158 t/h	314 t/h
5.	Main Steam Pressure	16.9 Mpa	15.79 Mpa
6.	Main Steam Temperature	538°C	538°C
7.	Main Steam Flow	1,183 t/h	882 t/h
8.	Feedwater Flow	1,183 t/h	882 t/h



Modification Concept is to combine PC boiler technology (low biomass fuel operated) with CFB Boiler (High biomass fuel operated). To make the lifetime Payton I&2 increased because can operates with more environmentally friendly, while still optimizing the use of boiler existing equipment.

- Modification Benefit:**
- Operate with 100% Biomass Wood Chips
 - The price Wood chips Biomass cheaper if compared with another biomass.
 - Most of the part power plant equipment can be reused (All Turbine system, steam drum, Economizer, Superheater, Reheater, Steam coil, Tube ESP & Ash system, Chimney).

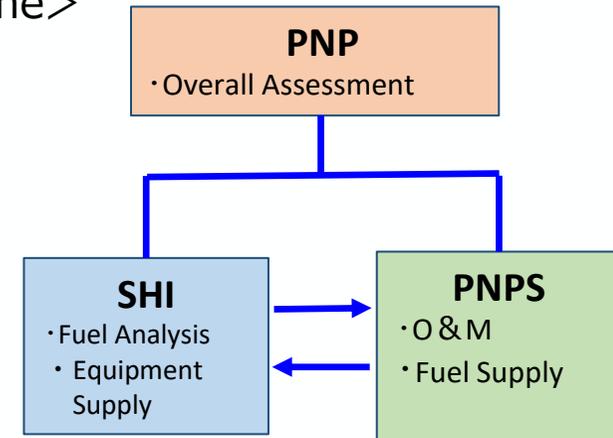
Design Result:

- Decreasing output capacity about 80% from design existing

Project Duration:

- 4 year (1 year for detail design & data analysis and 3 years for civil, construction and test commissioning)

<Scheme>



Note) PNPS : PT.PLN Nusantara Power Services 32

MOU regarding cooperation to support the development of LNG and e-methane VC

Cooperation outline :

PLN EPI, a PLN subsidiary that operates in fuel procurement and transportation, and Tokyo Gas Asia will advance the planning of small-scale LNG value chain throughout Indonesia, as well as the examining of decarbonization measures (e-methane). The collaboration also includes PLN EPI human resources development to support the LNG value chain development and e-methane study.

Purpose or objectives of MOU :

Indonesia has a strong demand for electricity and a continued need for base-load power. Promoting the expansion of LNG usage contributes to both economic growth and energy transition. With an aim to develop a carbon-neutral value chain, e-methane study will be conducted as well.



Cooperation Areas

- Small-scale LNG value chain
- E-methane
- Human resources development



Strategic Technology Partnership between PT PLN Nusantara Power ("PLN-NP") and Toshiba Energy Systems & Solutions Corporation ("TESS") for introducing Carbon Capture technology to PLN-NP power generation assets



Brief of the MOU : PLN group is establishing the de-carbonization strategy in accordance with the road map of Indonesian Government's Carbon Neutral Plan by 2060. Towards this ambitious target, PLN-NP is in the stage for seeking the opportunity to introduce de-carbonization technologies including CCUS to its own facilities in this long term energy transition period. Thus, TESS is confident that its Carbon Capture related knowledge and technology will certainly contribute to PLN-NP's strategy.

Aim of this MOU : This MOU is to establish the framework of the strategic technology partnership for future introduction of Carbon Capture technology between PLN-NP and TESS. Both parties will conduct the Feasibility Study under this MOU including the future implementation of its pilot plant to the existing PLN-NP power generation assets.

*Candidate plant (TESS OEM)



Paiton



Carbon Capture Facility in Mikawa Power Plant

Joint Development Agreement(JDA) for Green Ammonia Initiative from Aceh(GAIA) by Pupuk Indonesia(PIHC), ITOCHU and TOYO

Collaboration Outline : Agreed to jointly develop, including basic engineering design (FEED), a project to produce green ammonia by leveraging existing ammonia plant of Pupuk Iskandar Muda(PIM) which is PIHC's subsidiary

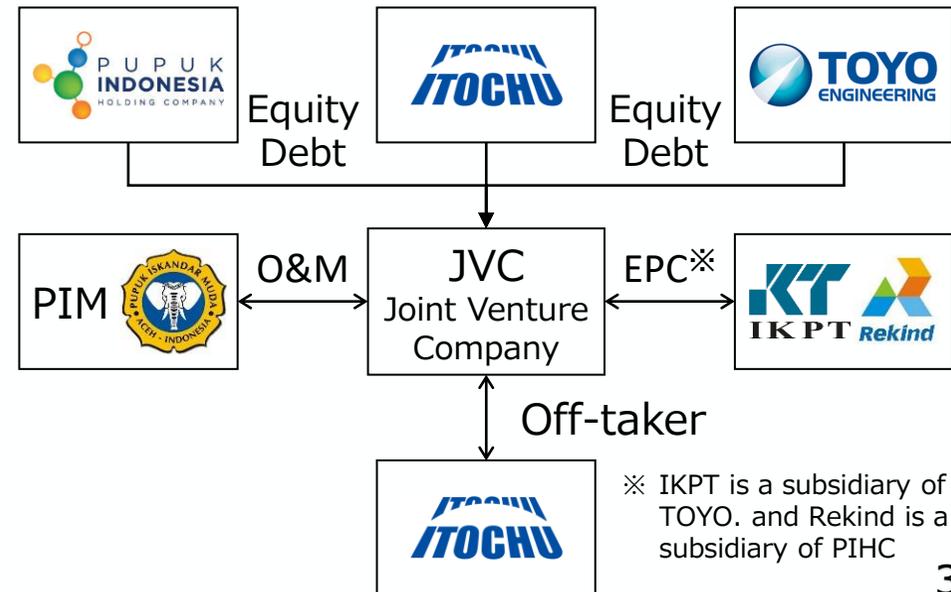
Purpose and Strategy : Utilize the part of capacity of PIM's existing ammonia plant (designed and constructed by TOYO) in the Special Economic Zone (SEZ) to produce green ammonia and integrate with ITOCHU's bunkering business. Aim to replicate this green ammonia initiative at other PIHC's existing plants in the future

Schedule : JVC establishment: Nov. 2024, FID: Mar. 2025, COD: Nov. 2027

【Location of PIM's Existing Ammonia Plant】



【Structure Outline】





MoU for Joint Study on the Opportunity of Developing Full Potential of Geothermal Energy between PT Medco Power Indonesia (MPI) and TOYO Engineering Corporation (TOYO)

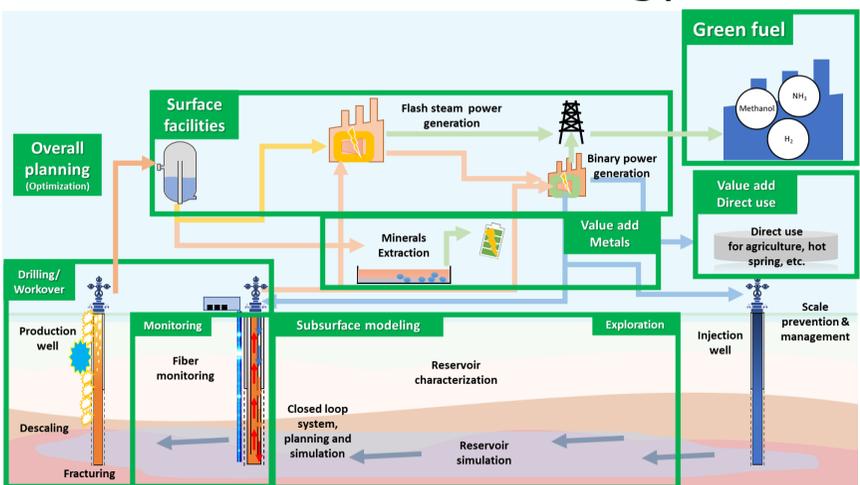
Cooperation outline : Execution of joint study on the opportunity of developing full potential of geothermal energy

Purpose of MOU : Promotion of joint study with MPI to fully utilize the potential of geothermal energy and to contribute the realization of a sustainable society and the economic development in Indonesia.

In future, geothermal technologies to be proven in Indonesia will also enhance the full-scale geothermal power generation in Japan.

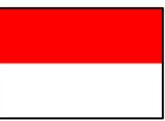
URL : <https://prtimes.jp/main/html/rd/p/000000064.000107878.html>

Image of Developing Full Potential of Geothermal Energy



Signing Ceremony at MPI's headquarters

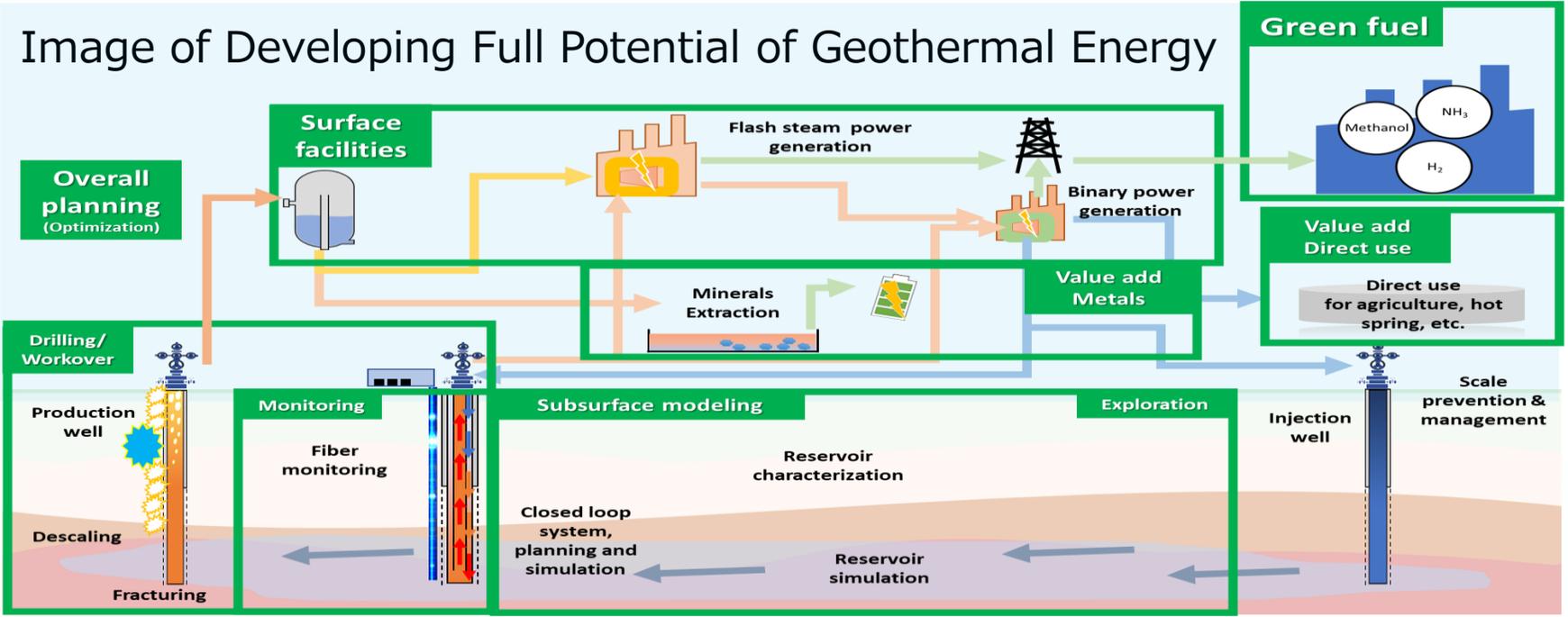




Letter of Intent (LoI) between The Survey and Testing Center for Electricity, New, Renewable Energy and Energy Conservation of The Ministry of Energy and Mineral Resources (BBSP KEBTKE) and TOYO Engineering Corp. (TOYO)

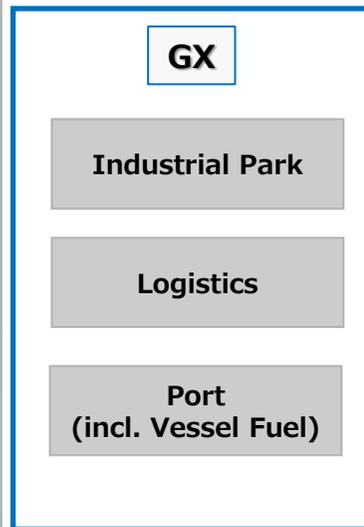
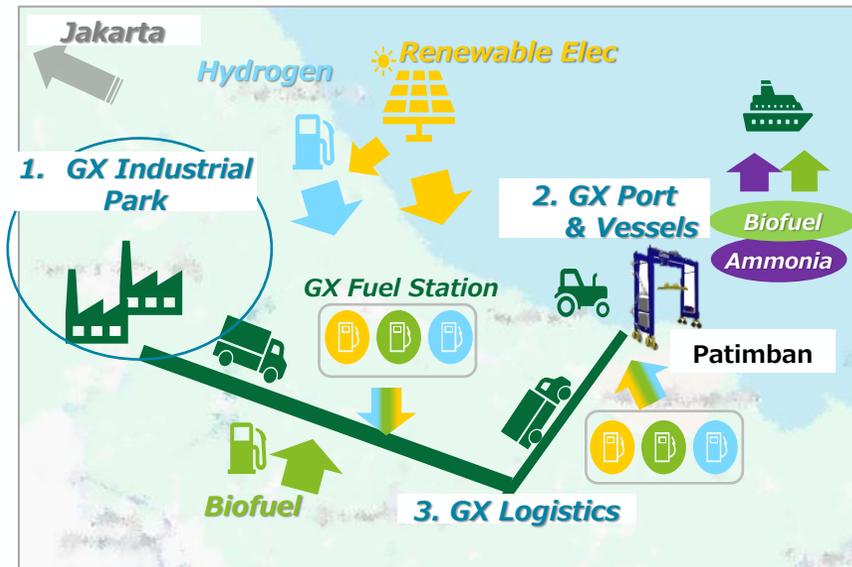
- **Cooperation outline** : Joint execution between MEMR and TOYO for preparation of Geothermal Master Plan for MEMR.
- **Purpose or objectives of LoI** : Cooperation with the Ministry of Energy and Mineral Resources (MEMR) for developing Geothermal Master Plan for MEMR, as part of Net Zero Emission (NZE) 2060 goal set by Government of Indonesia.
- **It will contribute to further strengthening the relationship between the two governments (METI/MEMR) through Global South Master Plan Development.**

Image of Developing Full Potential of Geothermal Energy



MOU for joint study and/or project development of Carbon Neutral Fuel Supply between PT Pertamina (Persero) and PT Toyota Tsusho Indonesia

- **Cooperation outline** : Both build a framework for joint study and project development for green transformation (“GX”), via Carbon Neutral Fuels (“CN Fuels”: biofuels (biomethane/biodiesel), electrification and green hydrogen/ammonia etc.) supply, for ①Industrial area, ②Logistics activities and ③Patimban port (incl. vessel) (“Eastern GX Corridor (EGXC)” initiative in the east of Jakarta).
- **Objectives of MOU** : Both aims at contribution to establishment of sustainable society and economic growth in Indonesia through achievement of CN target and enhancement of national energy security & competitive advantage in the global green industry, by realizing GX in the Patimban port project, as one of the National Strategic Project, which is developed & operated cooperatively by governments & private companies of Indonesia and Japan, and its related industrial value chain (EGXC).
- **Other points** : In this MOU, both parties jointly explore fuel production projects and establish supply infrastructure for CN Fuels for EGXC, while stimulating and creating potential demand. Both will implement Feasibility Study (incl. evaluation potential economic and technical aspects) for energy transition master plan and form some working groups to make concrete action plan for commercialization.



Timeline:

FY2024: Master Plan FS

FY2026: Start Demonstration

FY2028~: Commercialization



Memorandum of understanding on collaboration between Zeroboard / PT. Megalopolis Manunggal Industrial Development / PT KDDI INDONESIA / KAMAR DAGANG DAN INDUSTRI INDONESIA

Cooperation outline : In industrial parks operated by MMID (60% owned by Marubeni), Zeroboard will promote GHG emission visualization for tenants using its cloud service. PT KDDI Indonesia will handle tenant inquiries about the system, and KADIN (Indonesian Chamber Of Commerce and Industry) Net Zero Hub will hold decarbonization workshops for awareness.

Purpose or objectives of MOU : Through this project, which has been awarded a JETRO ADX subsidy, we will verify methods of data sharing and necessary functions specific to Indonesia, thereby creating a model case for efficient visualization of GHG emissions at the industrial park level.



Cooperation outline : Memorandum of Understanding between Dasar Consulting, a local Malaysian company, and ASUENE to promote ESG and GHG accounting by local companies in Sarawak, Malaysia.

Purpose or objectives of MOU :

- 1) To raise ESG awareness of local companies in Sarawak, Malaysia.
- 2) Deployment and promotion of ASUENE’s ESG Rating solution in the region.
- 3) Deployment and promotion of ASUENE's GHG accounting solution in the region.

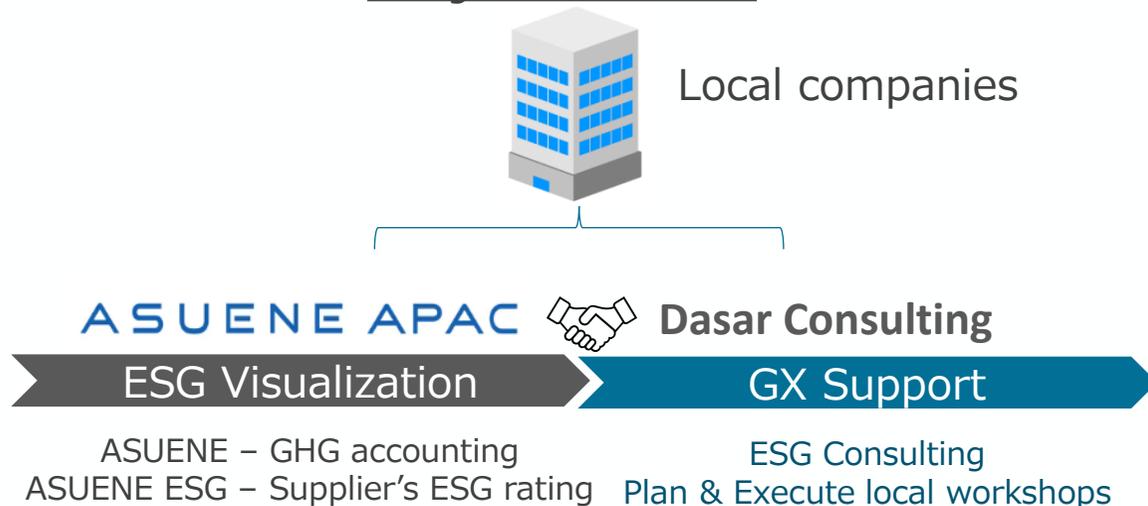
Project site

<Sarawak, Malaysia>



<Sarawak>
A state with 13 industrial estates - high decarbonization potential and many projects are underway.

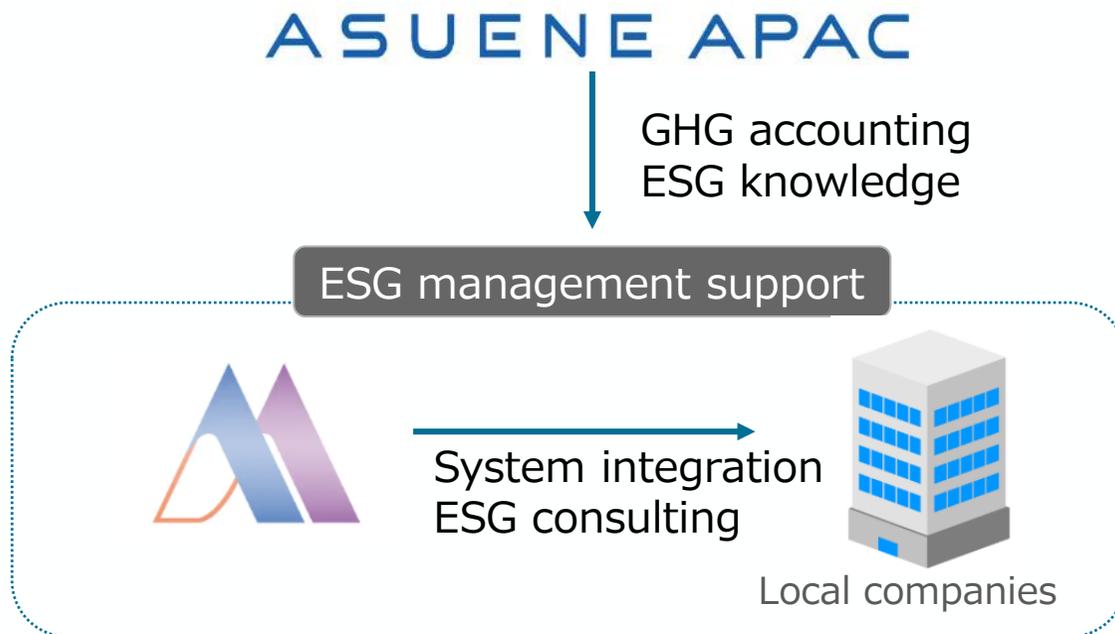
Project scheme



Cooperation outline : Signed a collaboration agreement with Mitsusho, a local Malaysian company, for GHG calculation of ASUENE.

Purpose or objectives of MOU : Jointly provide corporate training on ESG, carbon credits, GHG accounting, and other topics to local Malaysian companies and promote the use of GHG accounting solutions.

URL : <https://prt-times.jp/main/html/rd/p/000000345.000058538.html>



Signing ceremony

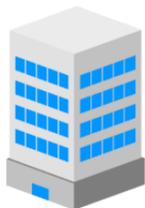


Cooperation outline : Signed a collaboration agreement with Maqo Solar, a local Malaysian company, for GHG calculation of ASUENE.

Purpose or objectives of MOU : Joint proposal and sales of solar panel installation and visualization of its GHG emission reduction effect to promote decarbonization in Malaysia.

URL : <https://prtmes.jp/main/html/rd/p/000000347.000058538.html>

Local companies



ASUENE APAC



MAQO
ENERGIZING A CLEANER FUTURE

GHG visualization

Solution to reduce GHG

“ASUENE”

- GHG accounting system

Solar Power solutions

Energy management system

Signing ceremony



Cooperation outline : Idemitsu International (Asia) and PETCO Trading Labuan Company will collaborate to evaluate and explore climate abatement projects, focusing on carbon credits and sustainable products, to address sectorial emissions within and outside Malaysia.

Purpose or objectives of MOU : The collaboration aims to address sectorial emissions including power generation, transportation, agriculture, waste, and others. By combining the strength and expertise of both companies, the collaboration also aims to assess the viability of the projects through issuance of environmental certificates including carbon credits.

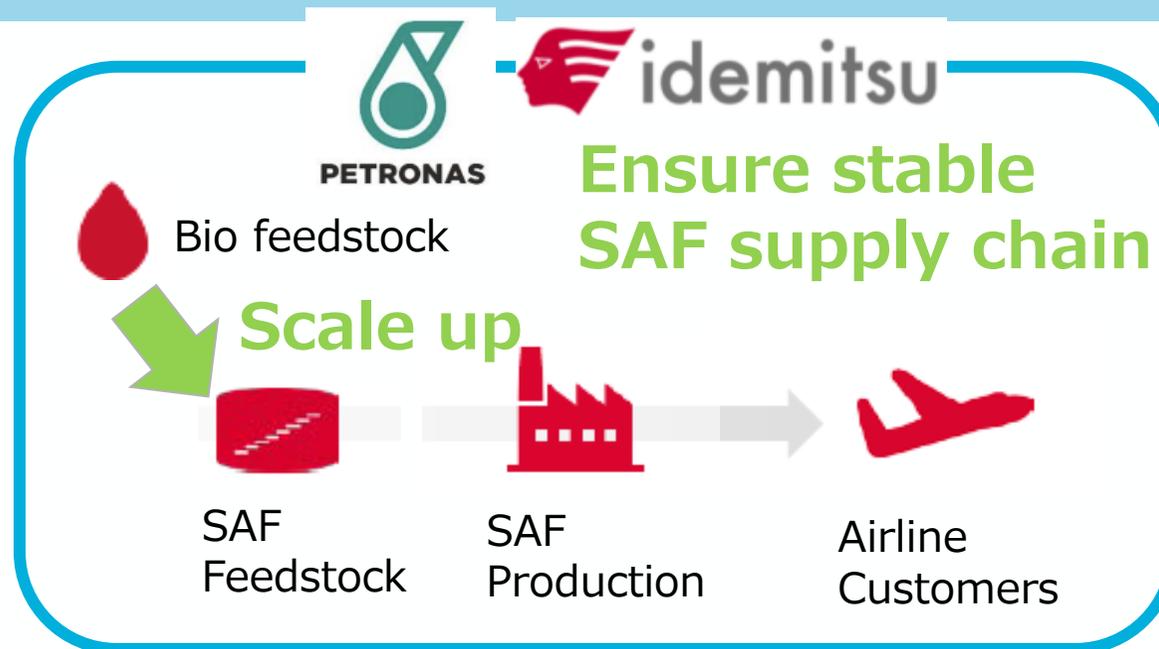


MOU Signing Ceremony

Cooperation outline : to enhance capabilities across the supply chain and optimise the route to market for Sustainable Aviation Fuel (SAF) to producing lower carbon energy solutions for customers worldwide.

Purpose and objectives of MOU : to conduct a feasibility study to scale-up bio feedstock possibilities including non-edible plants, production cost analysis and security in ensuring a steady and efficient supply chain for the sustainable development of SAF

URL : <https://www.petronas.com/media/media-releases/petronas-and-idemitsu-collaborate-accelerate-development-sustainable-aviation> / <https://www.idemitsu.com/en/content/100043647.pdf>



MOU signing ceremony.

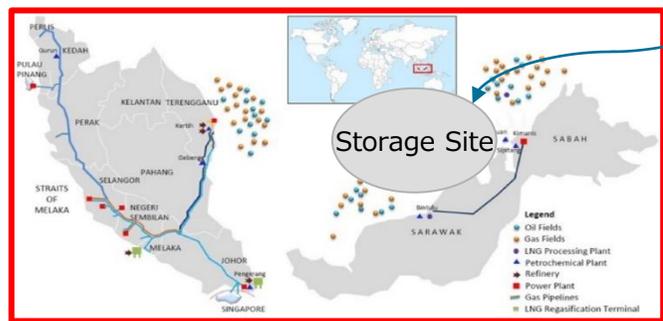
JAPEX, JGC, and "K" LINE Sign a Storage Site Agreement(SSA) with PETRONAS and PETROS for the CCS Project in Malaysia

MOU/Corporate outline: The Japanese consortium comprising JAPEX, JGC Holdings, and Kawasaki Kisen Kaisha (K-Line) is exploring a project in the offshore region of Sarawak, Malaysia, in collaboration with PETRONAS CCS Ventures (PCCSV). SSA was signed with PETROS, the CCUS Resource Manager for Sarawak, to evaluate the depleted M3 gas field as a potential storage site.

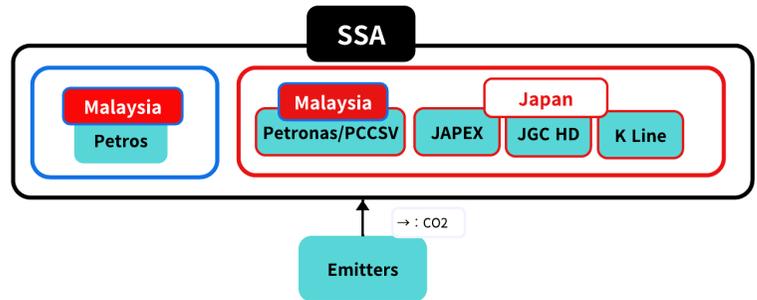
Purpose or objectives of MOU: The establishment of a cooperative relationship based on the SSA aims to contribute to the reduction of greenhouse gas emissions and the mitigation of climate change in the Asia-Pacific region. By advancing this project, we aspire to become a pioneer in the CCS industry within the Asia-Pacific region.

URL : https://www.japex.co.jp/en/news/detail/20240229_01/

<Map and project site> Japan and others



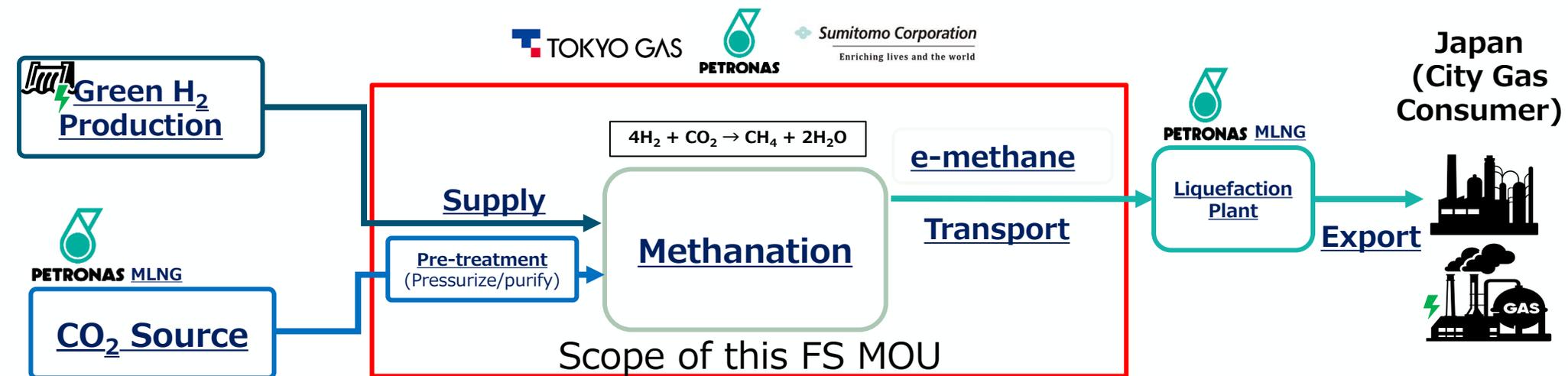
<Project Scheme>



Source : The Malaysian Advantage from Petronas home page and add storage site area on the map

Memorandum of Understanding (MOU) for Feasibility Study on e-methane production in Sarawak, Malaysia

- **Overview** : PETRONAS Global Technical Solutions Sdn. Bhd., Tokyo Gas and Sumitomo Corporation signed MOU to jointly conduct the Feasibility Study on the e-methane production (methanation) in Sarawak, Malaysia.
- **Purpose** : This study is to export e-methane to Japan with utilization of CO2 emitted from PETRONAS LNG facility in Malaysia.
- **Remarks** : MOU is executed in September 2023. As the Feasibility Study is substantially complete, it is extended to proceed to the next phase.

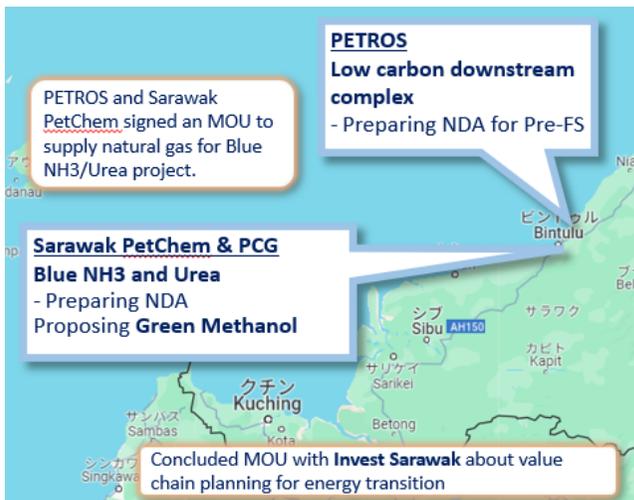


MOU for Energy Transition in State of Sarawak between Sarawak Invest and Toyo Engineering Corporation

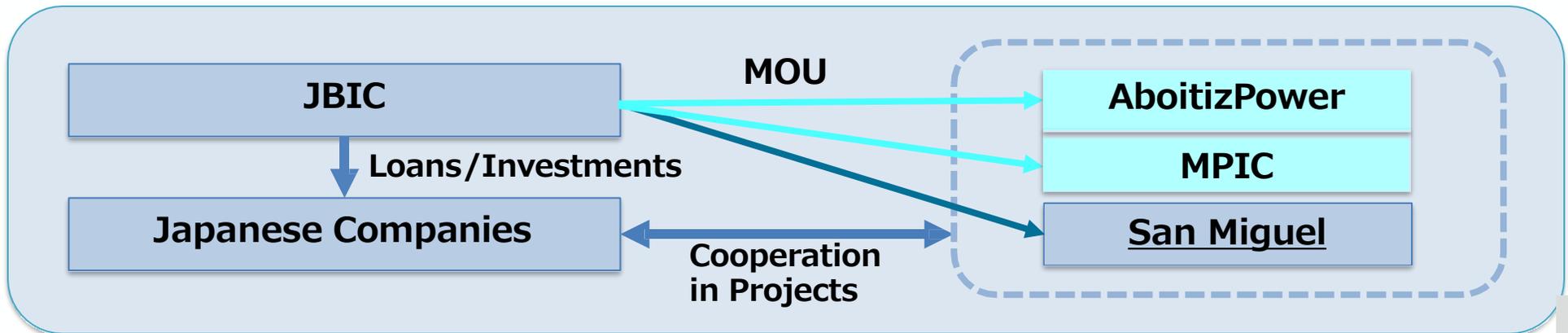
Cooperation outline : In order to achieve carbon neutrality in the state of Sarawak, Malaysia, Invest Sarawak and Toyo Engineering Corporation discuss collaboration way for energy transition in the state.

Purpose or objectives of MOU : The state of Sarawak has rich natural resources and renewable energy potential. Both parties will promote to establish a value chain and realization of a green energy society in the state.

Other points : The MOU was signed on April 22, 2024. Both parties has been exchanging information on the development of various projects (blue ammonia, urea, green methanol, SAF, etc.).



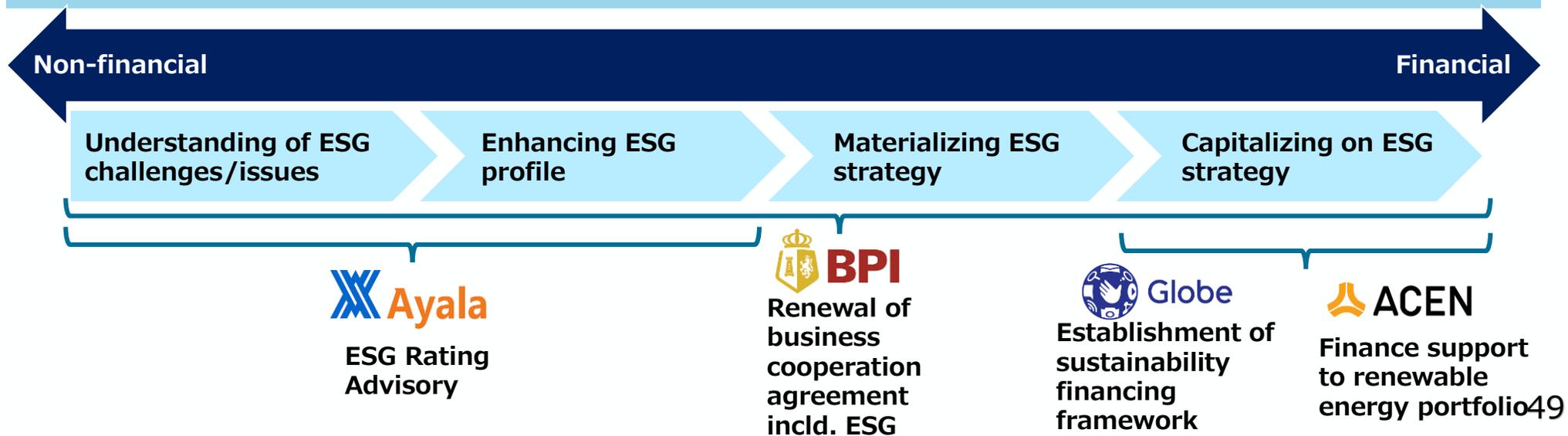
- **Outline:** JBIC signed MOU with San Miguel, to find cooperative projects that involves Japanese business in the certain fields stipulated below. JBIC has already signed MOU with AboitizPower and MPIC for the same purpose.
- **Purpose and objective:** Due to the highly privatized infrastructure sector's nature, the local conglomerates have strong presence in the field and strengthening the connection with them is a key factor for the success. Through these MOU, we aim to promote implementation of concrete projects, which contribute to improve energy efficiency and/or GHG emission reduction together with Japanese corporates.
- **URL:** [JBIC Signs MOU with San Miguel Corporation of Philippines | JBIC Japan Bank for International Cooperation](#)



Mizuho Bank and Ayala Group: Financial / Non-financial Assistance to De-carbonization

Cooperation outline : Mizuho is providing financial and non-financial services to Ayala Group, one of Philippines' leading conglomerates, to assist Ayala in advancing its group-wide net zero greenhouse gas initiatives; Mizuho is involved in assisting: i) Ayala Corporations in improving its ESG rating scores through enhanced disclosure of its strengthening ESG strategies, ii) Bank of the Philippine Islands in strengthening its ESG initiatives by further collaboration, iii) Globe Telecom in establishing its sustainability financing framework, and iv) ACEN with expanding its renewable energy portfolio through financing activities.

The significance : The multifaceted approach aims to combine the financial and non-financial services of the bank to deliver a comprehensive contribution to de-carbonization initiatives of Ayala Group and the Philippines.



Cooperation outline : Signing agreements to co-operate with Singapore Manufacturing Federation for GHG accounting support.

Purpose or objectives of MOU : Promotion of the ESG assessment program (CSOaaS program) for small and medium-sized manufacturing companies promoted by SMF and ASUENE's GHG calculation solution.

URL : <https://prtmes.jp/main/html/rd/p/000000365.000058538.html>

ASUENE APAC

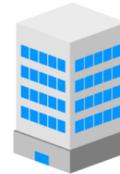
GHG accounting system
Consulting knowledge

ESG Assessment Program



SINGAPORE
MANUFACTURING
FEDERATION
新加坡制造商总会
SINCE 1932

ESG consulting



Small-Mid Manufacturer

Signing Ceremony

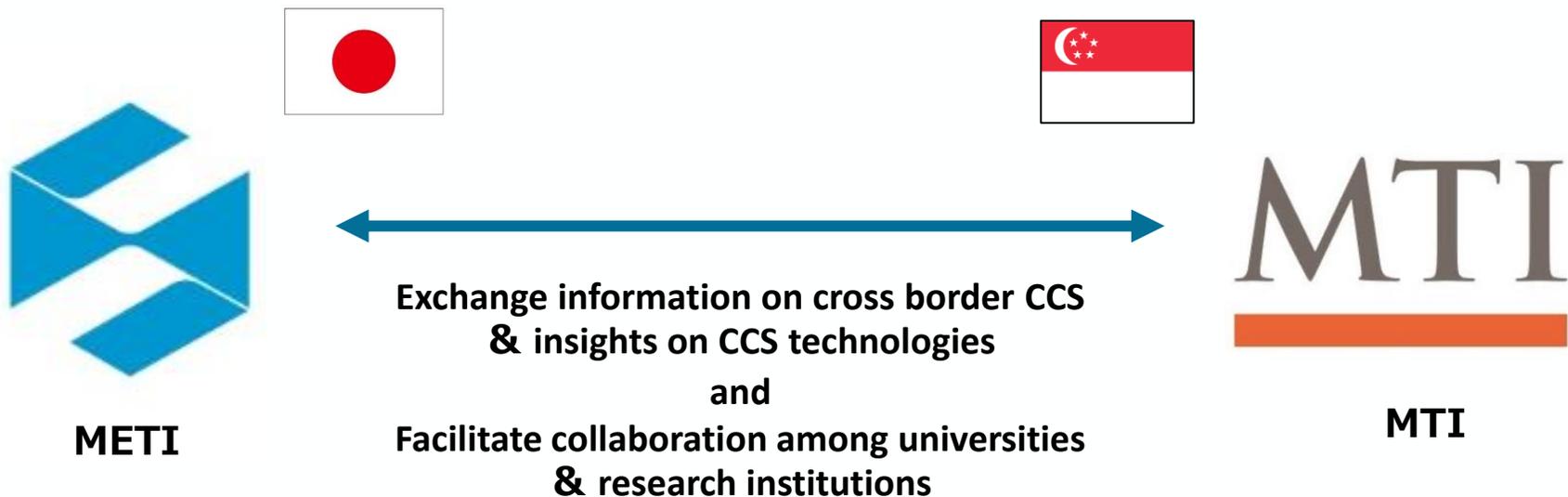


MOC on Carbon Capture Storage(CCS) between METI and MTI



Cooperation outline : To promote bilateral cooperation on CCS through exchanging information on best practices and existing rules for cross border CCS, exchanging insights on CCS technologies as well as facilitating partnerships amongst universities and research institutions across both countries.

Purpose or objectives of MOU : Exchanging knowledge and ideas to better deploy two countries' respective CCS projects



Cooperation outline : MPA and NYK signed MOU to deepen partnership to materialize sustainable maritime industry .

Purpose or objectives of MOU : MOU defines three areas of potential collaboration which is decarbonization, digitalization and manpower development. Especially in decarbonization area, MPA/NYK aim to have concrete milestones and deliverables for ammonia fueled vessel (including ammonia bunkering vessels) related initiatives.

Other points : MPA and NYK had signing ceremony on 2nd July and have set working groups for each scope to deepen collaboration.

URL : [MPA and NYK Forge Partnership to Advance Maritime Sustainability, Digitalisation and Manpower Development | NYK Line](#)

{Examples for MOU scope}

①Decarbonization

- ◆ Promoting safe use of fuel ammonia through initiatives on ammonia fueled vessels (including bunkering vessels)
- ◆ Training for seafarers on ammonia fueled vessels
- ◆ Use of other alternative fuels such as methanol and bio-fuels
- ◆ Methodology to accelerate decarbonization investments

②Digitalization

- ◆ Digitalization to improve efficiency of shipping operations

③Manpower Development

- ◆ Discuss on initiatives such as leadership programs for maritime talents

{MOU signing ceremony}



From left: NYK President Takaya Soga
MPA Chief Executive Teo Eng Dih

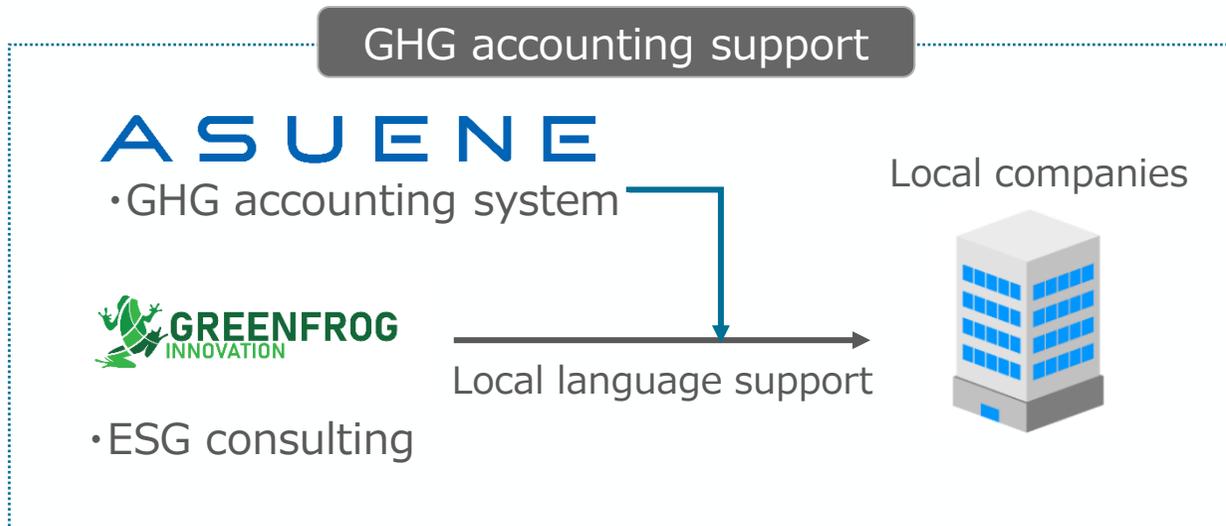


Agreement to collaborate on promoting GHG accounting for local companies

Cooperation outline : Signed a collaboration agreement with Green Frog Innovation, a local company in Thailand, for GHG calculation of ASUENE.

Purpose or objectives of MOU : Formed an alliance with Green Frog Innovation, which has experience in ESG consulting in Thailand, to implement a local Thai language calculation support for local Thai companies.

Others: In collaboration with local government agencies, major financial institutions, and local decarbonization solution partners, the company aims to build a more comprehensive support system to accelerate corporate decarbonization efforts in Thailand.



Signing Ceremony





MOU between EGAT and IHI on collaboration for biomass fuel production and utilization

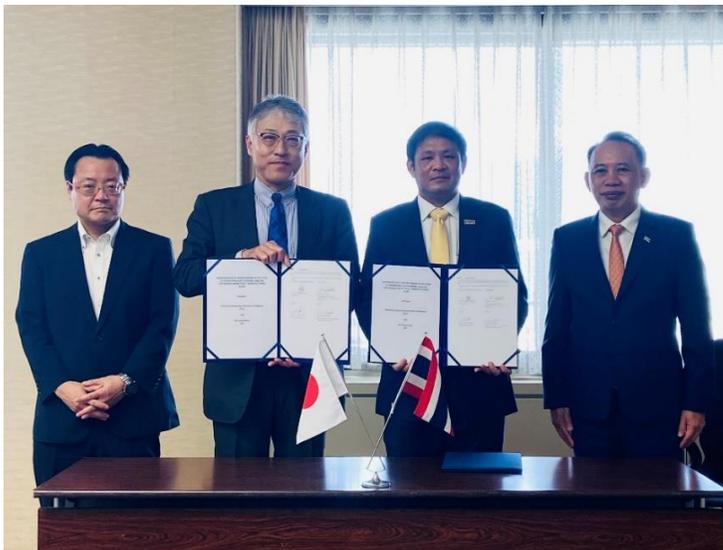
Cooperation outline : Joint study for biomass fuel production and combustion demonstration at the biggest thermal power station in Thailand named Mae Moh Power Plant, which is owned by EGAT.

Purpose and Objective of MOU : To contribute to achievement of carbon neutrality by 2050 in Thailand by studying both biomass fuel production and utilization.

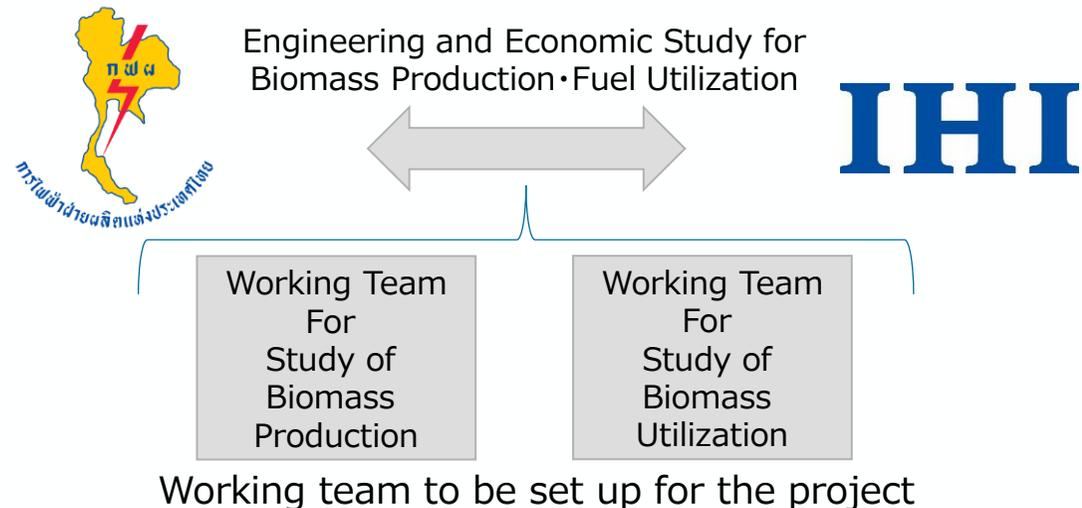
Other points : The Project will be completed by the end of 2025.

URL: https://www.ihico.jp/en/all_news/2024/resources_energy_environment/1200865_13691.html

<Picture of signing MOU>



<Project Scheme>



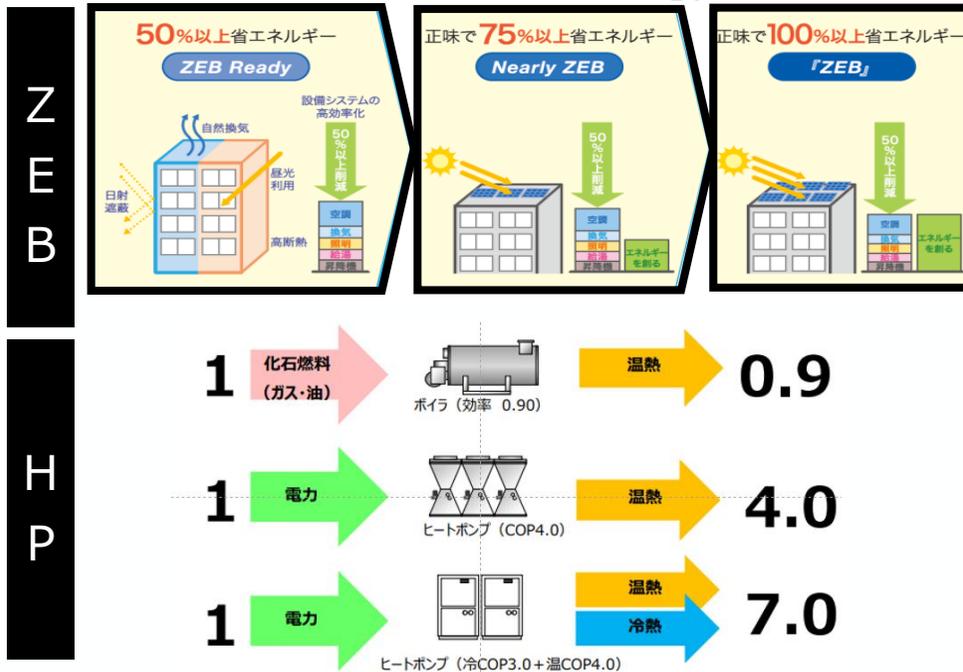
RD for THE PROJECT FOR PROMOTION OF ENERGY EFFICIENCY BY INTRODUCING ZERO ENERGY BUILDING (ZEB)/ZERO ENERGY HOUSE (ZEH) AND HEAT PUMPS IN THAILAND between JICA and DEDE

Cooperation outline : Aims to strengthen the C/P's capacity to promote energy conservation and improve energy efficiency in the industrial, commercial and residential sectors by deepening knowledge and understanding of ZEB (Zero Energy Building)/ZEH (Zero Energy House) and heat pumps

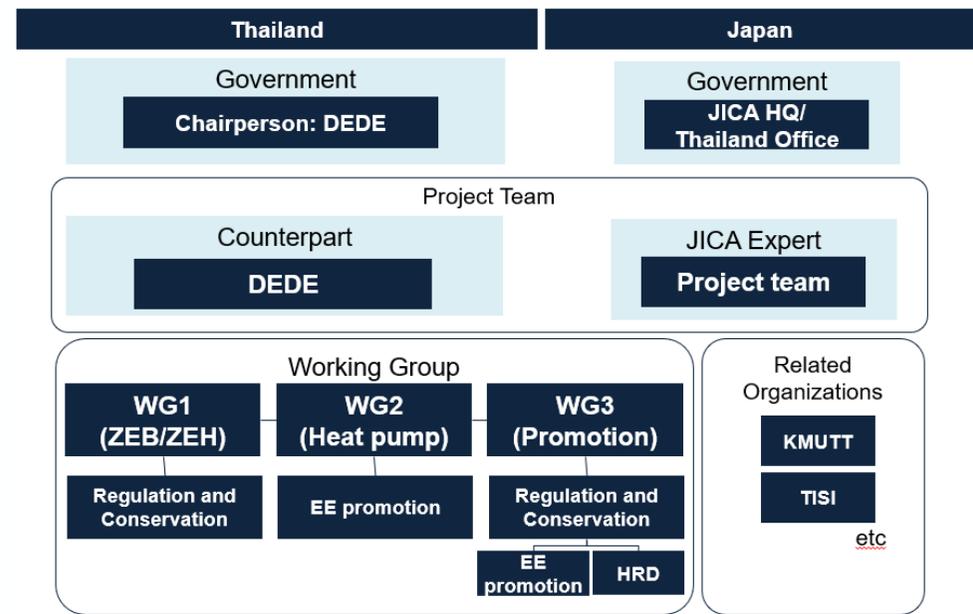
Purpose : To contribute to the formulation of energy conservation policies and technology evaluation standards on the demand side

Other Points : In line with the past JICA's cooperation on energy efficiency capacity building and Heat pump survey.

<Outline of Technology>



<Organization Structure>

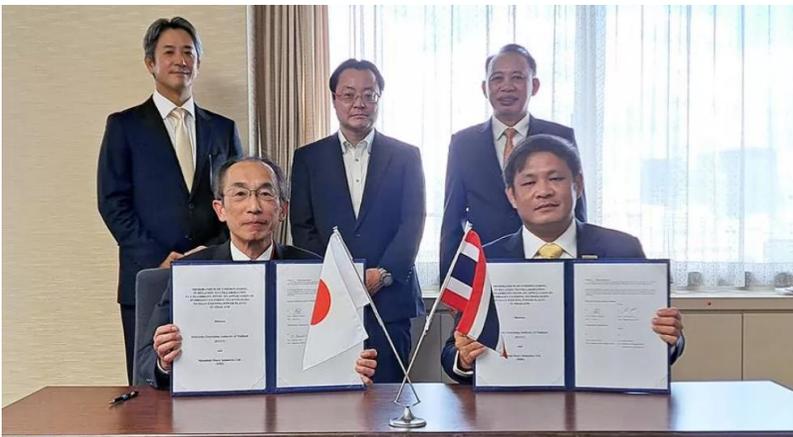


- DEDE : Department of Alternative Energy Development and Efficiency
- KMUTT : King Mongkut's University of Technology Thonburi
- TISI : Thai Industrial Standards Institute

MOU on Gas Turbine Hydrogen Co-firing Technology between EGAT and Mitsubishi Heavy Industries, Ltd.

- **Overview of MOU** : To accelerating decarbonization of energy in Thailand, EGAT, state-owned electricity company in Thailand, and Mitsubishi Heavy Industries, Ltd. commence discussions on study for introducing hydrogen co-firing technologies at power plants owned and operated by EGAT.
- **Aim of the cooperation** : By promoting clean fuel power generation in the existing power plant of EGAT which is Thailand's power producer, EGAT and MHI aim to support achieving Thailand's goal "Carbon neutrality by 2050 and net zero emission by 2065".
- **Others** : This MOU extends the ongoing partnership between MHI and EGAT to focus on hydrogen co-firing, building on an MoU signed in 2022 to research and exchange information on clean fuel power generation, clean hydrogen, and CCUS (CO2 Capture, Utilization, and Storage) technologies.

<MOU Signing Ceremony>





LOI agreement regarding cooperation in Home IoT demonstration research with DEDE, Ministry of Energy of Thailand

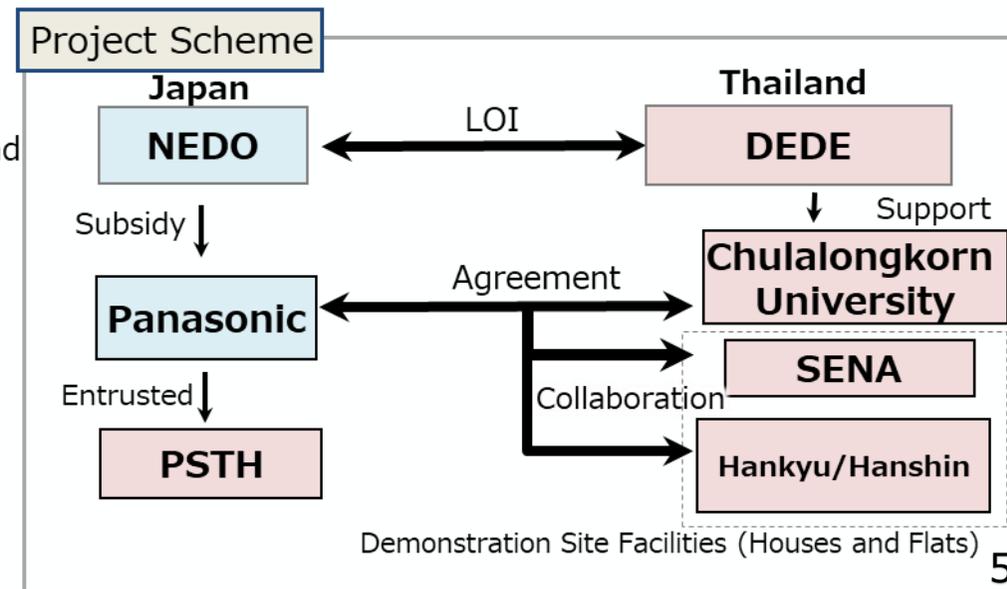
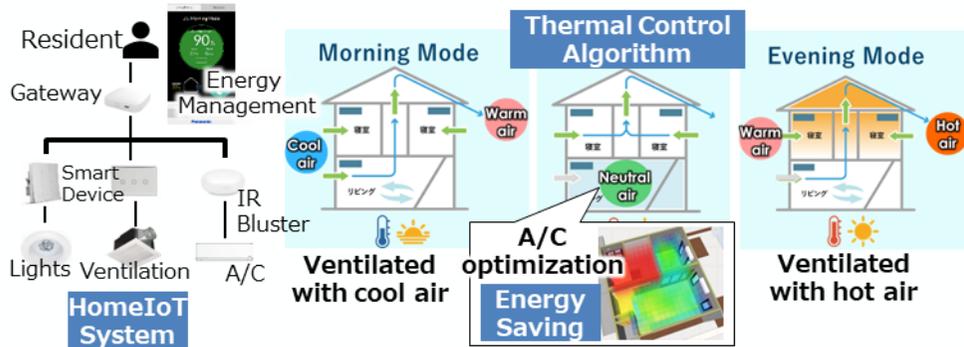


LOI overview : An LOI agreement between NEDO and DEDE (Department of Alternative Energy Development and Efficiency), Ministry of Energy of the Kingdom of Thailand regarding cooperation on "demonstration for the development of thermal control HomeIoT system and living space design technology for Thai homes".

Significance : A comprehensive LOI agreement was reached between NEDO and the Ministry of Energy, which is the ministry headquarters over DEDE, and was announced at the 6th Japan-Thailand Energy Policy Dialogue. It led to an LOI agreement with DEDE, which is the government agency involved in this project.

URL : https://www.nedo.go.jp/ugoki/ZZ_101308.html

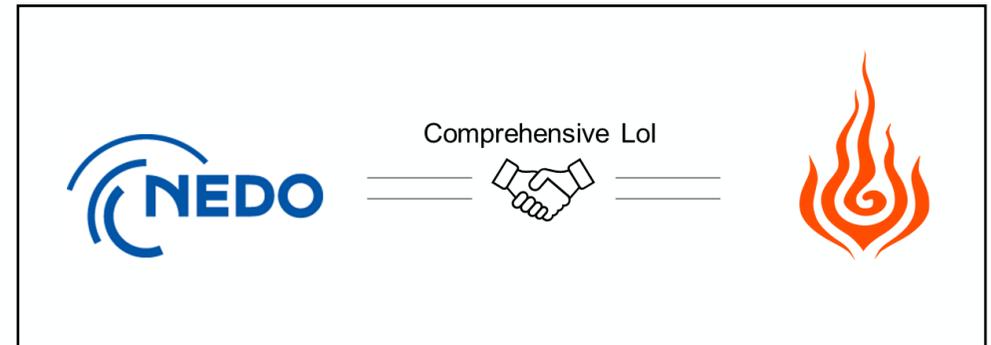
An IoT system that predicts the thermal environment based on outside temperature and room temperature information, balances heat through coordinated control of air conditioners and ventilation and reduces cooling load while maintaining comfort.



LOI overview : NEDO agreed comprehensive LOI agreement with the Ministry of Energy of the Kingdom of Thailand regarding cooperation in the fields of energy conservation, alternative energy, and decarbonized environment-related technology.

Objectives : The two countries will promote bilateral cooperation towards decarbonizing the country and accelerating the energy transition, contribute to collaborative cooperation under AZEC, and further support on NEDO international demonstration projects.

URL : https://www.nedo.go.jp/ugoki/ZZ_101297.html



Cooperation outline : Zeroboard, provider of a cloud service for calculating and visualizing GHG emissions, has formed a business alliance with Banpu NEXT, a smart energy solutions provider under Banpu group.

Purpose or objectives of MOU : The collaboration will involve Banpu NEXT's clients in calculating and visualizing their GHG emissions using Zeroboard, and then taking action to further reduce their emissions. The two companies will co-create innovations including GHG emission reduction solutions such as solar projects, and EV charging, EV fleet management with both companies to expand their decarbonization management services.



GHG Calc. & Visualization

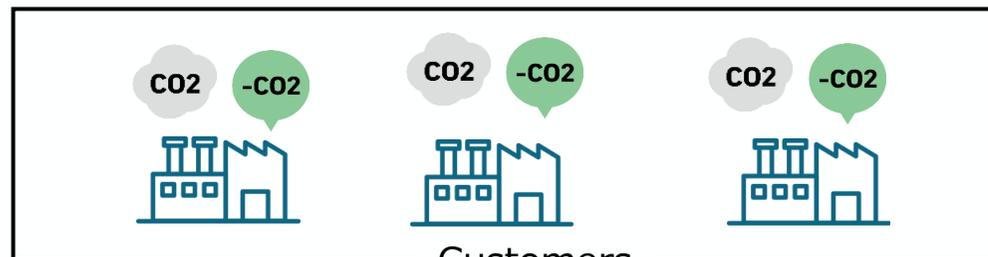
 Zeroboard

Partnership





GHG Reduction Solutions



Customers

Cooperation outline : Zeroboard, provider of a cloud service for calculating and visualizing GHG emissions, has formed a business alliance with FDI group, which provides ESG consulting service to companies.

Purpose or objectives of MOU : Zeroboard will support the calculation, disclosure and reduction of GHG emissions with the cloud service, while FDI will provide decarbonisation consulting services to meet the diverse needs of customers in Thailand.



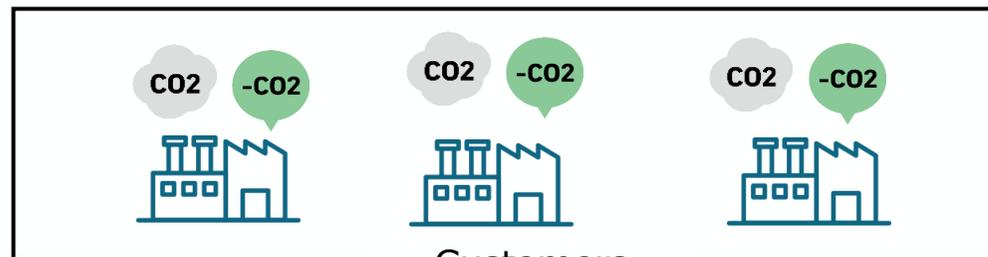
GHG Calc. & Visualization

 Zeroboard

Partnership

 FDI Group

Consulting Service



Customers

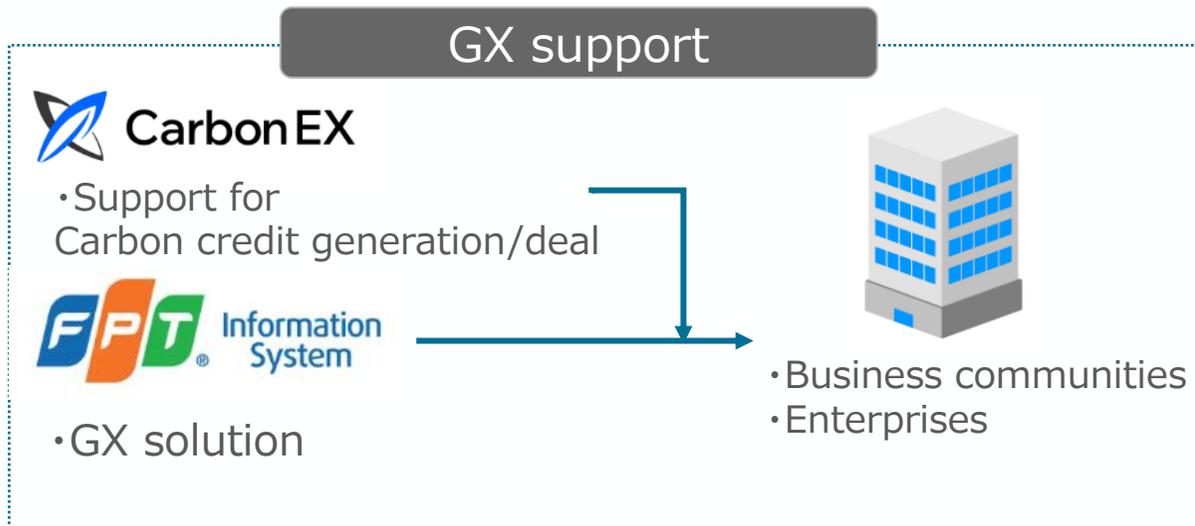


MOU on Partnership for Carbon Credit Business Development in Vietnam

Cooperation outline : Memorandum of Understanding between FPT Vietnam and Carbon EX for partnership in the supply and sale of carbon credits.

Purpose or objectives of MOU : Contribution to the development of carbon credit business in Vietnam with collaboration between Carbon EX's carbon credit trading platform/carbon credit creation consultation, and FPT's deep experience and expertise in IT solutions.

URL : <https://prtimes.jp/main/html/rd/p/000000320.000058538.html>



Signing ceremony





Marubeni-Vin Fast MOU to Repurpose Used EV Batteries in Circular Economy



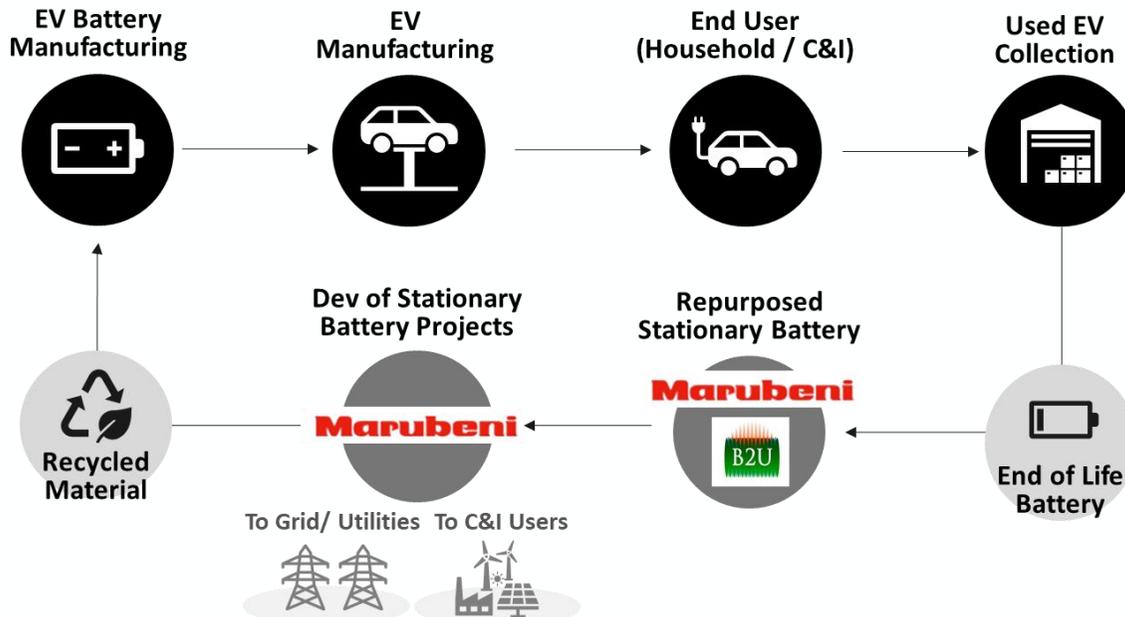
Marubeni

Cooperation outline : To conduct a demonstration of battery energy storage systems with used VinFast's EV batteries and a collaboration in the creation of businesses with used EV batteries in circular economy.

Purpose of MOU : Aiming to strengthen its strategic partnership with Vingroup for the Vietnamese government's goal of achieving virtually zero greenhouse gas emissions by 2050 and the global decarbonized society.

Other Points : Collaboration with B2U Storage Solutions, Inc., a U.S. start-up company (Invested by Marubeni) having proprietary technology

Supply Chain Diagram



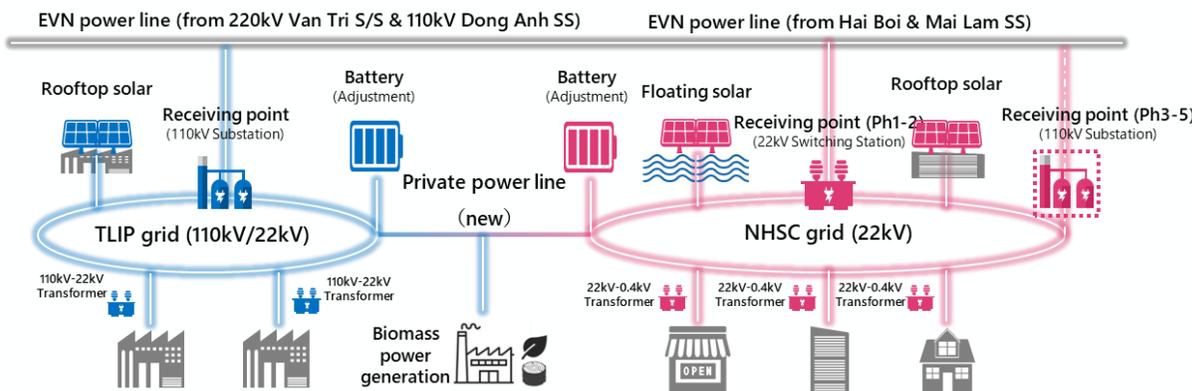
MOU Signing Ceremony



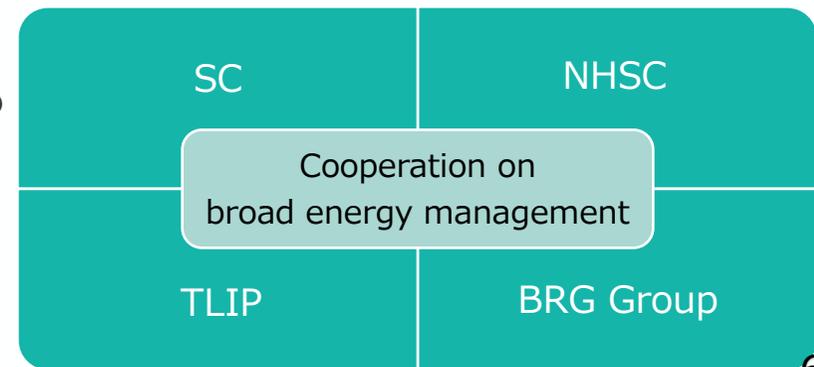
MOU for decarbonization/energy management cooperation among Sumitomo Corporation (SC), Thang Long Industrial Park (TLIP), North Hanoi Smart City (NHSC) and BRG Group

- Cooperation outline:** To promote decarbonization in industrial parks & townships through various measures: (a) by expanding renewable energy supply in TLIP, where Japanese manufacturers are concentrated and in NHSC, which is being developed as a Japan-Vietnam flagship project; (b) by implementing broad energy management between the two projects and (c) by introducing energy-saving solutions.
- Purpose/objectives of this MOU:** In addition to expanding on-site renewable energy sources such as rooftop solar power and biomass power, we are considering to build energy-saving houses by introducing technologies such as high-efficiency air conditioning/heat pump water heater, with the vision of creating a model case for future industrial parks & township projects in Vietnam.
- Others:** In addition to the current rooftop solar power (28MWp in TLIP and 68MWp in all TLIPs in operation as of June-24, expected to reach 38MWp in TLIP and 100MWp in all TLIPs by FY25), we intend to introduce biomass power, in which Japanese manufacturers have strengths. Furthermore, heat pump air conditioning/hot water equipment and central cooling technology are expected to be installed at NHSC to reduce electricity demand. Subsequently, TLIP & NHSC will be connected by private lines to create single grid to realize a broad energy management/microgrid that integrates civilian and industrial use.

<Broad energy management/microgrid overview>



<Scheme>



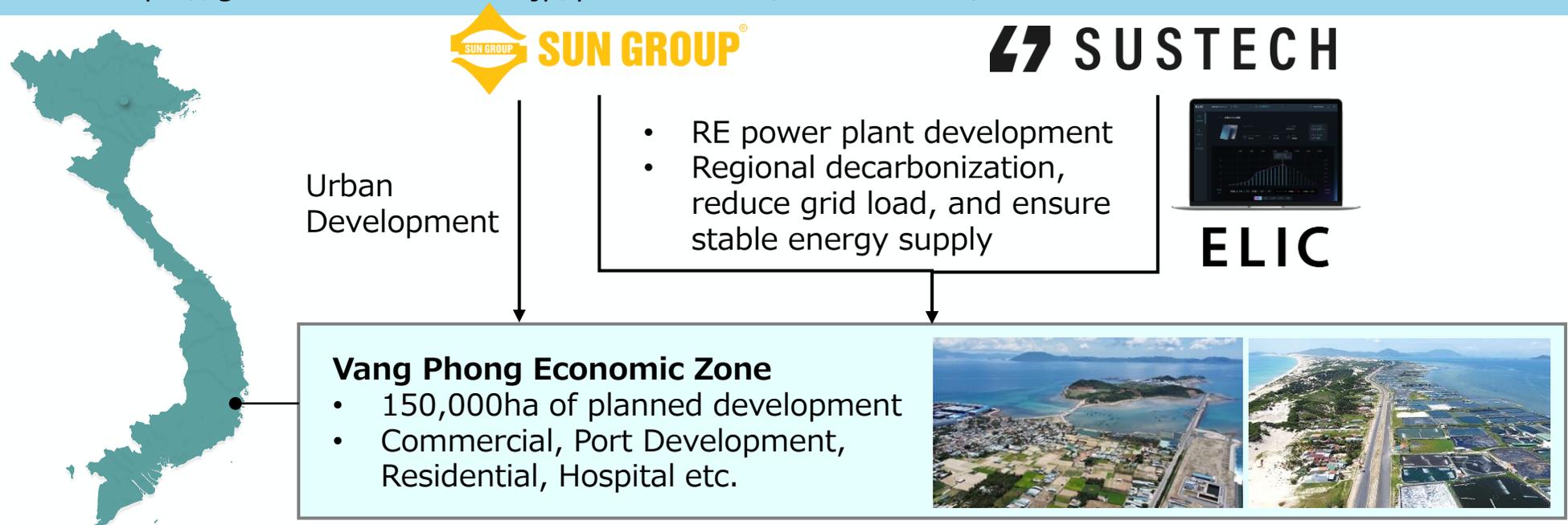


Strategic partnership for accelerate green energy development in Vietnam

Cooperation outline: Utilizing Sustech's decentralized energy management platform "ELIC", this initiative aims to achieve expansion of renewable energy, decarbonization of the entire region while ensuring stable energy supply in the development of Van Phong Economic Zone led by Sun Group.

Purpose and objectives: Develop a green energy model in Vietnam, where high proportion of renewable energy already in use, by reducing the load on the grid while accelerating power development for further economic growth.

URL : <https://global.sustech-inc.co.jp/press-release/2024041701/>



MOU for Development of Nearshore Wind Power Project in Tra Vinh Province by TTVN, TTP and Tokyo Gas

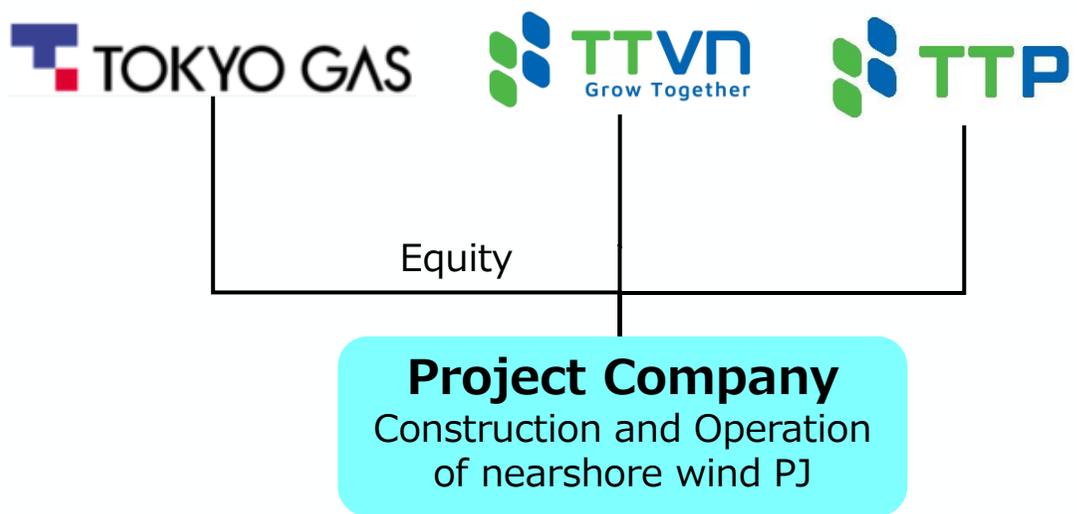
Cooperation outline : Truong Thanh Viet Nam Group(“TTVN”), Truong Thanh Energy(“TTP”), and Tokyo Gas agree to cooperate on the development of a nearshore wind power project (total capacity: 48MW) in Tra Vinh Province, Vietnam.

Purpose or objectives of MOU : Aim to meet electricity demand in Vietnam and reduce greenhouse gas emissions by co-development of nearshore wind, leveraging TTVN, TTP and Tokyo Gas’ abundant knowledge, experience of power project development.

Tra Vinh Province, Vietnam

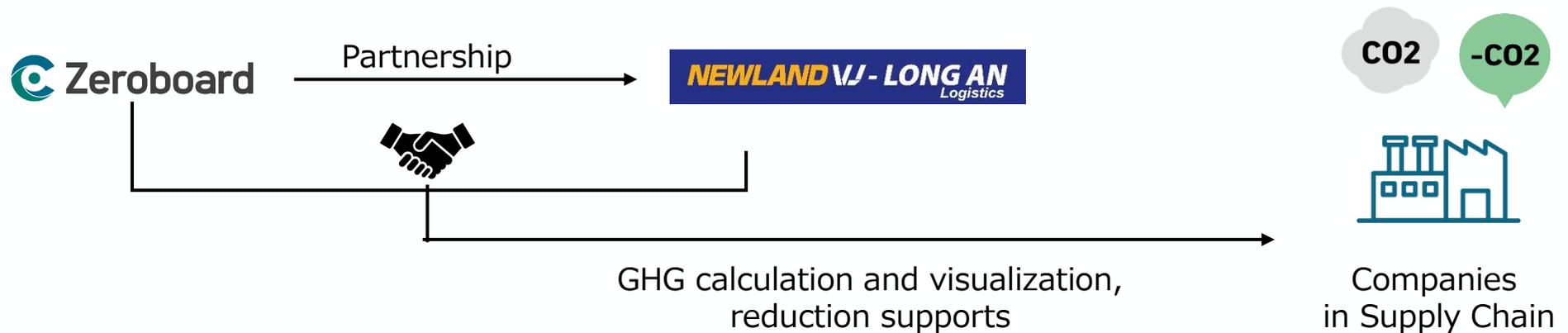


Scheme





- **Cooperation outline** : Zeroboard and NLVJLA (New Land Vietnam Japan Long An), a group company of Sojitz Corporation, have entered into a partnership to provide decarbonization management support to their suppliers in the company's supplier chain.
- **Purpose or objectives of MOU** : By combining NLVJLA and Sojitz's network in Vietnam with Zeroboard's expertise in GHG emissions calculation and reduction support, we aim to establish a model case for decarbonized management in the logistics industry by calculating and visualizing not only NLVJLA's own GHG emissions but also those of the entire supply chain.



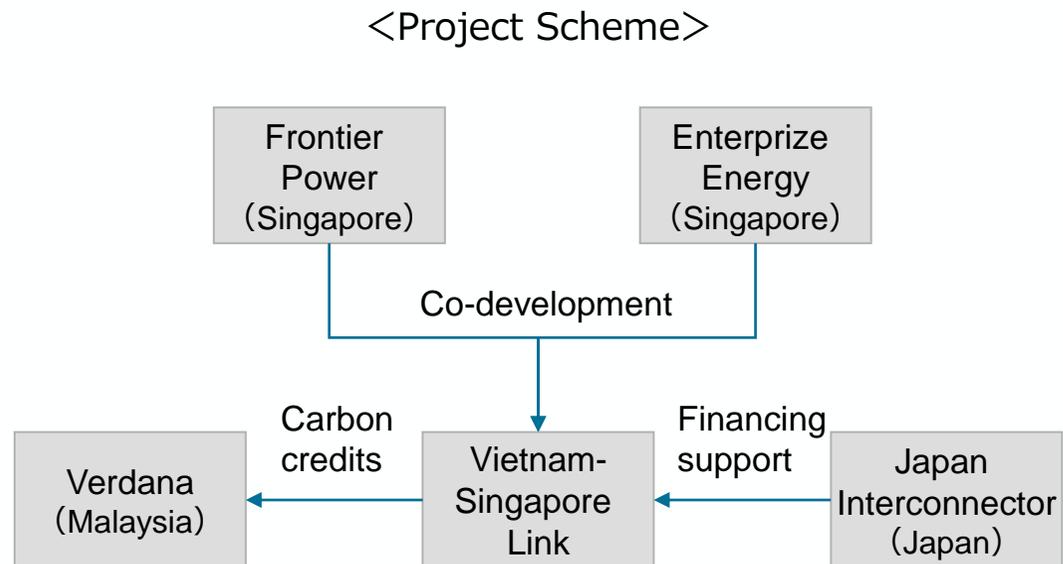
MOU for Vietnam-Singapore Link



Cooperation outline: Co-development of a 2 GW HVDC subsea power cable to export power from Thang Long offshore wind farm from Vietnam across 1,150km to Singapore. MOU is executed to advance the project towards construction by conducting technical, commercial and financial feasibility studies.

Purpose or objectives of MOU: This project is expected to contribute regional effort for carbon zero emission in ASEAN, through developing HVDC between Vietnam where large offshore wind development is expected and Singapore where has huge demand for renewable energy.

URL: <https://www.japaninterconnector.com/news>



MOC among METI, ADB, and ERIA on Technology and Transition Finance for Practical Energy Transition in Asia

Outline : The MOC is to confirm the future collaboration among METI, ADB, and ERIA on technology and transition finance for whole-of-economy transitions in Asia including the energy sector.

Prospects : With a focus on technology and transition finance as key enablers, the three parties will deepen mutual understanding, identify and promote tangible future cooperations to accelerate the whole-of-economy transitions. The three parties will hold the regular working groups and promote the cooperation.

