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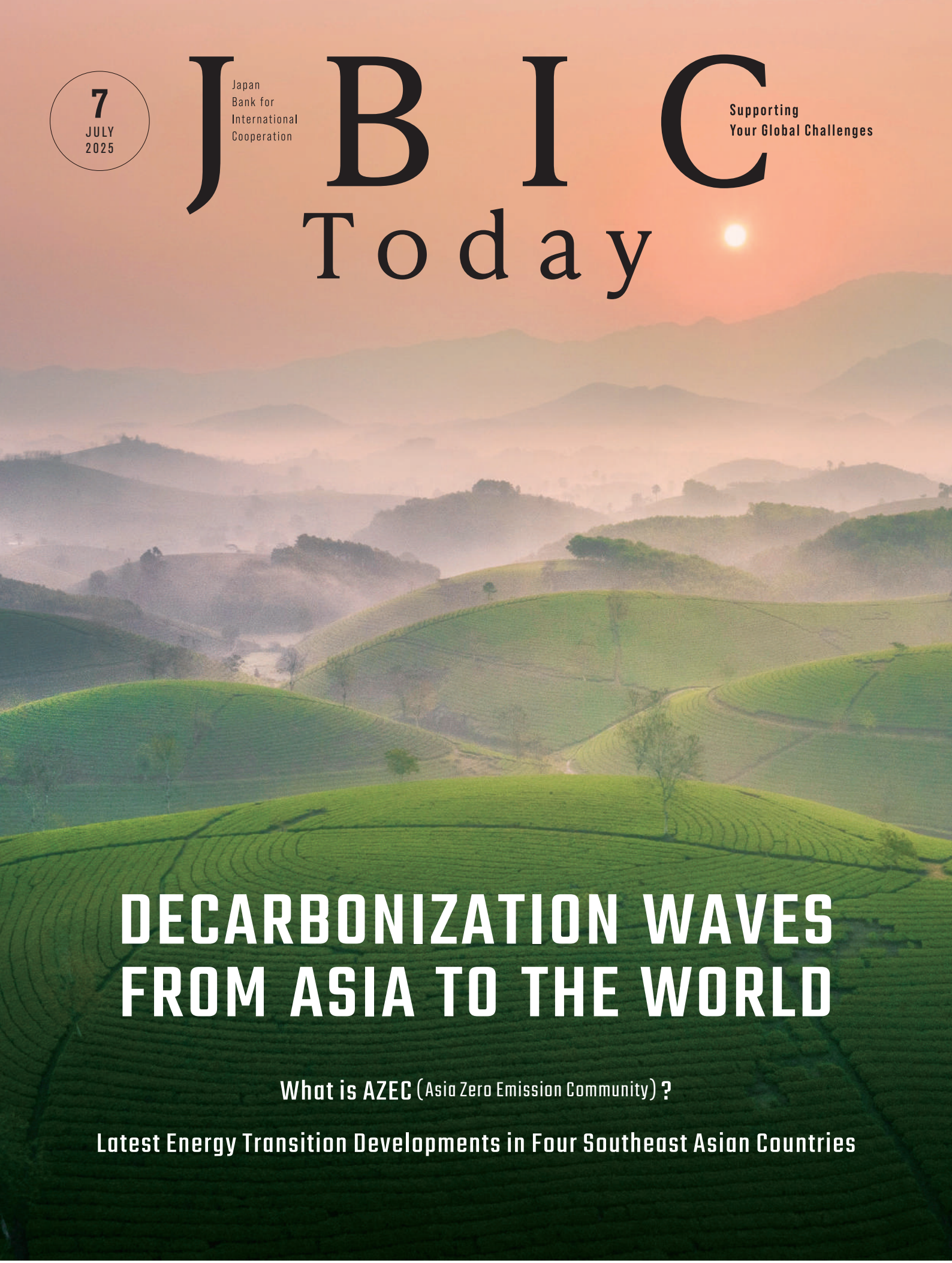


DECARBONIZATION WAVES FROM ASIA TO THE WORLD

What is AZEC (Asia Zero Emission Community)?

Latest Energy Transition Developments in Four Southeast Asian Countries

JAPAN BANK FOR
INTERNATIONAL COOPERATION

DECARBONIZATION WAVES FROM ASIA TO THE WORLD

Amid the growing urgency to address climate change, decarbonization initiatives are gaining momentum in Asia. One pillar of such efforts is the Asian Zero Emission Community (AZEC). This special feature issue examines the current state of decarbonization in Asia from multiple perspectives. Opening the issue is an interview with the head of the Asia Zero Emission Center (AZE Center), which provides assistance for the decarbonization policies of Asian countries, followed by an overview of AZEC by a senior executive managing officer of the Japan Bank for International Cooperation (JBIC), firsthand accounts by the chief representatives of JBIC's representative offices overseas, and an analysis of a survey on Japanese companies' overseas expansion.

Development of Metro Manila's Makati City financial and commercial hub prioritizes integration of green spaces, sustainability, and connectivity.

| INTRODUCTION |

Decarbonizing Asia: the challenging but unavoidable road ahead

Translating climate targets into action, the need for greater regional cooperation to deliver a just, inclusive energy transition, Japan's leadership potential in Asian decarbonization—energy expert Dr. Nuki Agya Utama, head of the Asia Zero Emission Center (AZE Center), sets out a roadmap for tackling one of humanity's biggest challenges.

"While ambitious targets announced at international conferences serve to keep global attention on decarbonization, it is crucial that these are effectively translated into regional and national action."

Energy expert and head of the Asia Zero Emission Center
Dr. Nuki Agya Utama

With expertise encompassing renewable energy, energy efficiency, and green design, his career has spanned the private, public, and NGO sectors. He is currently director for Energy Policy and head of the AZE Center at ERIA (Economic Research Institute for ASEAN and East Asia). His academic career has taken him from Indonesia to Holland, through post-graduate studies in London and Thailand, and on to post-doctoral work in Kyoto.

Q Could you briefly explain the role and key initiatives of the AZE Center?

A Launched at the 2nd Asia Zero Emission Community (AZEC) Ministerial Meeting on August 21, 2024 in Jakarta, the center serves as a platform to share information, conduct studies on policies and projects, and help AZEC partner countries develop visions, roadmaps, and policies for decarbonization. It collaborates with relevant initiatives and private, public, and academic entities.

The center is structured around four decarbonization pillars. The Decarbonization Roadmap establishes targets and timelines, and identifies key drivers for achieving carbon neutrality, tailored to each country's circumstances. Sector Specific Actions provide detailed insights and technologies essential for decarbonization in the core sectors of power, mobility, and industry, while overseeing cross-sector initiatives such as hydrogen, ammonia, biofuels, transition fuels, carbon dioxide capture, utilization and storage (CCUS), and critical minerals. Market Enablers coordinate market structures to evaluate and attract investments in decarbonization technologies while supporting economic growth. Finally, Stakeholder Engagement fosters regional cooperation and policy dialogue among AZEC countries by sharing insights and promoting collaboration.

Q What common and country-specific challenges do AZEC partners face in decarbonization?

A AZEC aims to balance energy security, affordability, and sustainability, which requires overcoming significant hurdles. Many partner countries lack modernized grids, energy storage, and cross-border interconnectivity to support clean energy development. Major capital investment is needed for renewables, hydrogen, carbon capture, and regional energy trade, as well as integrating new technologies into aging fossil fuel-based infrastructure.

Other issues include ensuring clean energy affordability and existing fossil fuel subsidies. Meanwhile, many AZEC partner countries depend on fossil fuel imports, impacting energy security. The intermittency of renewables requires investment in energy storage and backup power sources, and necessitates regional energy cooperation, which faces regulatory and infrastructure-related barriers. Fragmented regulations and standards for carbon pricing and emerging technologies slow regional collaboration.

One of the biggest hurdles is finance. For example, the ASEAN Power Grid (APG) alone requires an estimated USD16 billion in capital expenditure. Mobilizing resources and enhancing regional cooperation are essential to achieving AZEC's decarbonization goals.

Embracing the concept of "one goal, various pathways," AZEC acknowledges that there are various pathways towards carbon neutrality, taking into account each country's geographic, economic, technological, institutional, social, and equity factors.

While financing is one of the key issues, there are many more, including technological barriers such as access to advanced green/transition technologies and technology transfer.

In terms of specific examples, grid infrastructure is an issue. For a country like Singapore, which has high electricity demand, there are challenges in transmission from Malaysia and Thailand. Vietnam, which has 16 to 19 GW of renewable power capacity, still faces blackouts in parts of the country during peak hours due to infrastructure and connectivity problems. Another issue is how to stabilize electricity supply through storage, for which we don't yet have any solid answers in terms of batteries or other solutions.

Biofuels are plentiful in the region, notably in Malaysia, Thailand, and the Philippines, and this could contribute to reducing reliance on fossil fuel imports. However, the current share of biofuels in the transport sector is very small. At present, Indonesia is implementing measures to substantially increase the use of biodiesel and bioethanol.

Q How do you assess the current state of decarbonization efforts in Asia and globally?

A I think the understanding is clear that internationally we aim to reduce emissions and keep the global temperature rise below 1.5 degrees Celsius. While global renewable energy capacity continues to grow, with record investments in solar, wind, and green hydrogen, challenges remain. In Asia, rapid growth in renewables is often constrained by infrastructure bottlenecks, regulatory misalignment, and the continued reliance on coal and natural gas, particularly in countries such as China, India, and Indonesia.

A key regional trend is the increasing focus on energy transition pathways that balance sustainability with affordability and security. Japan and South Korea are leading advancements in hydrogen and ammonia co-firing, while ASEAN countries are working on integrating renewables into their power grids and developing carbon markets. The ASEAN Plan of Action for Energy Cooperation (APAEC) plays a critical role in fostering regional collaboration.

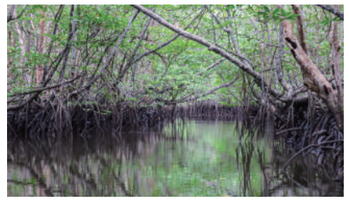
Regional cooperation through APAEC, AZEC, and carbon market harmonization will be essential for ensuring that Asia's transition as a whole is cohesive, pragmatic, and aligned with economic realities.

Q How do you perceive Japan's role in Asia's decarbonization efforts, and what role does JBIC play in this context?

A Japan's approach is pragmatic, balancing energy security, affordability, and sustainability, particularly for coal-dependent economies. Rather than advocating for abrupt fossil fuel phase-outs, Japan promotes gradual and realistic decarbonization pathways through initiatives such as AZEC and the Asia CCUS Network.

Within this context, JBIC plays a crucial role in financing Asia's energy transition by providing low-interest loans, risk guarantees, and transition finance for clean energy projects. Its commitment to transition finance ensures that Asian countries can secure the resources needed for decarbonization while maintaining energy security and industrial competitiveness.

I remain optimistic that the world is making gradual yet meaningful progress in decarbonization. Renewable energy is expanding rapidly, energy storage technology is improving, and countries are exploring diverse pathways such as hydrogen, ammonia, CCUS, and biofuels to support their transition. However, while ambitious targets announced at international conferences serve to keep global attention on decarbonization, it is crucial that these are effectively translated into regional and national action.



Mangroves support biodiversity, provide biomass, and help fight climate change.

POINT AZEC (Asia Zero Emission Community)

AZEC is a platform for cooperation towards carbon neutrality/net-zero emissions in the Asian region, involving 11 partner nations. It was established in 2023 to drive regional decarbonization while ensuring energy security and economic growth.

- AUSTRALIA
- BRUNEI DARUSSALAM
- CAMBODIA
- INDONESIA
- JAPAN
- LAO PDR
- MALAYSIA
- THE PHILIPPINES
- SINGAPORE
- THAILAND
- VIETNAM

| ANALYSIS |

JBIC's on-the-ground support for Asia's path to decarbonization

- Through partnership with ASEAN member countries, Australia, and others, the Asia Zero Emission Community (AZEC) promotes energy transitions tailored to local circumstances.
- AZEC aims to effectively utilize unevenly distributed energy resources and create sustainable markets through power grid development, partnerships, and other initiatives.
- JBIC provides comprehensive support, from technology and know-how to project design and incentive structures.

Climate change is being felt in daily life, making local action essential

"Local action tailored to each country or region's characteristics is indispensable in achieving decarbonization and carbon neutrality. In that sense, the emergence of the AZEC framework is a natural development in line with today's needs," says SEKINE Hiroki, Global Head of JBIC's Infrastructure and Environment Finance Group, who leads AZEC-related initiatives within the bank.

In island nations like Indonesia and the Philippines, for example, the threat from rising sea levels is already a reality, while in continental countries such as Thailand and Vietnam, extreme weather events including heavy rains and droughts are intensifying. "For people impacted daily by climate change, decarbonization measures are a theme of everyday life," says SEKINE. "It is not just a policy matter; it is a 'bottom-up' issue on which people are seeking a meaningful response. However, measures will only work if they are in balance with the reality of people's lives, and top-down 'global standards' can often feel imposed."

This is why flexible approaches that are aligned with each country's situation are needed, rather than the imposition of uniform numerical targets. "The premise of the AZEC concept is that each country's circumstances are unique, and that cooperation between partner countries is based on mutual respect."

AZEC, which includes nine fast-growing ASEAN member states (excluding Myanmar), is naturally focused on "local action." Decarbonization approaches and stages of progress vary by country.

A major Asia-Pacific framework, AZEC also covers Japan, Asia's only G7 nation, and Australia.

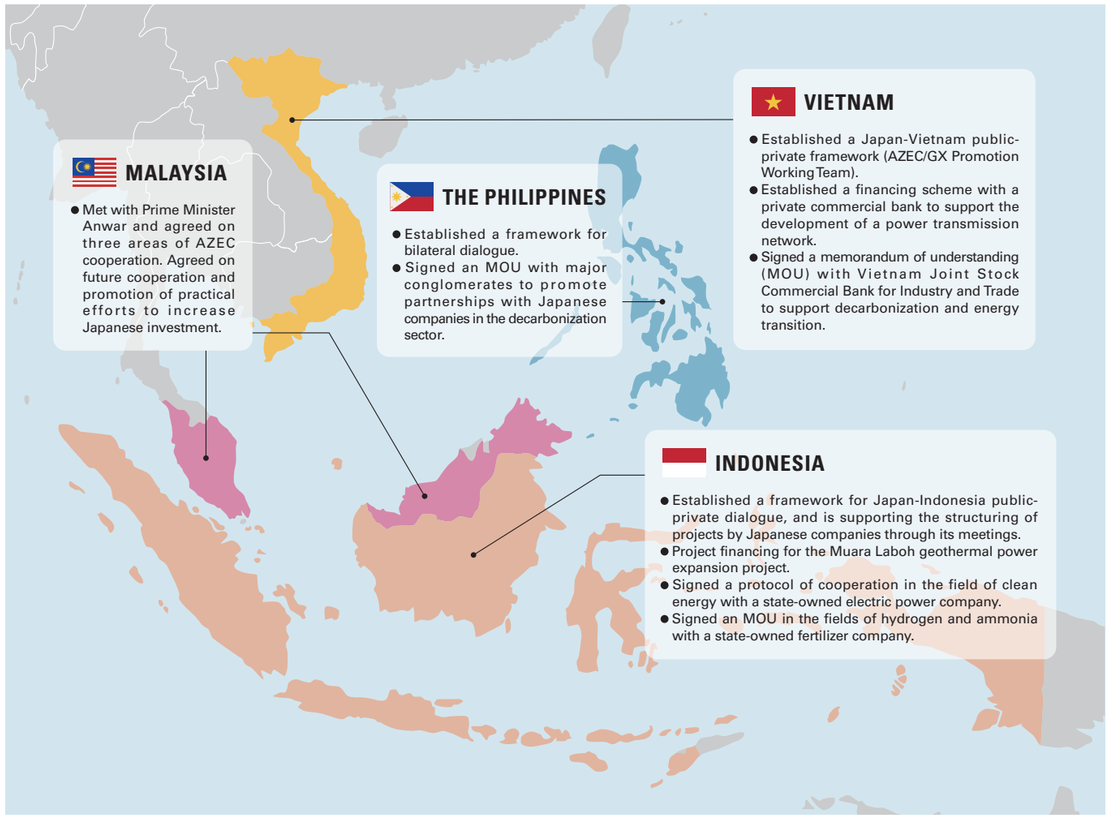
Malaysia, which is the chair of ASEAN 2025, and also co-chairs AZEC with Japan, has made strengthening networks within the region its top priority.

Australia, with an abundance of renewable energy sources such as wind and solar power, is geographically close to Indonesia, making electricity transmission viable. Through its hydrogen and ammonia exports, Australia is an important regional partner that plays a role in addressing the uneven distribution of energy resources.

Since AZEC consists of diverse countries, Japan alone cannot set the agenda. Japan's stance is to promote a "triple breakthrough" of decarbonization, economic growth, and energy security, while acknowledging the divergent pathways countries will follow.

Even decarbonization alone will not be easy to achieve, so something needs to be done to keep the momentum going. It was from this perspective that the triple breakthrough concept was conceived. "Since all three are integrated, no country will be opposed to this concept."

Specific initiatives between four major AZEC countries and JBIC, which are deepening their partnership



JBIC is strengthening cooperation with Vietnam, Indonesia, Malaysia, and the Philippines. It provides multifaceted support for institution building and project formation, including promotion of public-private dialogue and development of financial schemes. More concrete projects are in the pipeline.

Strengthening the power grid is the first step toward achieving an energy transition that leverages local characteristics.

Strengthening connectivity and shaping the direction of innovation

In order to unify local efforts for decarbonization and link them to concrete outcomes, "Strengthening connectivity will be key," emphasizes SEKINE. A specific example is building power grids.

Renewable energy resources are also not evenly distributed and vary by region. Some land is suitable for solar power, other areas are rich in geothermal resources, while some landscapes are ideal for wind power. Efficient utilization of renewables is difficult if power grids are fragmented across countries.

"We need mechanisms that enable partners to fully leverage their renewable resources and share electricity with each other. Particularly in Southeast Asia, where there are many islands, and power grid coverage is limited even in mainland areas, interconnectivity is a challenge. Efficiently generating, transmitting, and using electricity requires a focus on building power grids and connectivity."

SEKINE cites "directing innovation" as another key to promoting decarbonization through local action. Since approaches to decarbonization and carbon neutrality vary, AZEC serves as a framework for forming communities to promote transition that matches local circumstances. At that point, it is important to clarify issues of focus and create markets through government-led policy direction.

"Rather than one nation's individual efforts, it is more important to set common challenges and nurture markets through policy steering. If countries coordinate around a common goal and each makes steady efforts in its own way, market expansion will naturally follow. In order to promote innovation, partner countries need to work together and align their directions while respecting each other's sovereignty."

Entering the financial support stage involving the private sector in individual projects

After setting the direction for innovation and stronger connectivity, the next step is financial support, where Japan also has a major role to play.

"Japan is in a position to display leadership in AZEC. In addition to its role as a facilitator connecting partner countries, Japan is expected to provide technological solutions, bolster connectivity, and accelerate innovation."

In terms of power grid development, Japan possesses high-voltage direct current (HVDC) technology. Attracting attention as a promising new solution, HVDC enables efficient long-distance, high-capacity power transmission, and integration of renewable energy and interconnectivity of power grids.

In the financing stage, executing individual projects involving the private sector is crucial; this is where JBIC comes into its own. JBIC not only provides financial support, but works closely with partners to realize projects while considering their environmental and social impacts. Its approach looks beyond just economic returns, focusing on the overall benefits of a project, with a track record of designing appropriate support structures.

"Decarbonization is gaining attention in international frameworks such as AZEC, but JBIC's fundamental operating policy remains unchanged. Supporting initiatives that are aligned with local action is deeply rooted in our organization."

Harnessing JBIC's comprehensive support tools to realize action plans

JBIC has a history of implementing initiatives tailored to local circumstances, and SEKINE is confident about their results.

"Last year, AZEC released its 10-year action plan, focused on promoting rule formation and structuring individual projects. Naturally, this requires investment. JBIC's mission is to continuously create and support projects over the next decade."

While AZEC is focused on decarbonization, JBIC's stance is to provide comprehensive solutions. These firstly require an accurate grasp of local characteristics and historical background. Then, after carefully evaluating environmental and social impacts, JBIC presents solutions through detailed communication.

Solutions encompass comprehensive support tools, ranging from technology and expertise to project design and incentive structures. In some cases, blended finance tools are employed: a combination of public funds, such as subsidies, and private capital. JBIC fully leverages this toolkit to execute multiple projects.

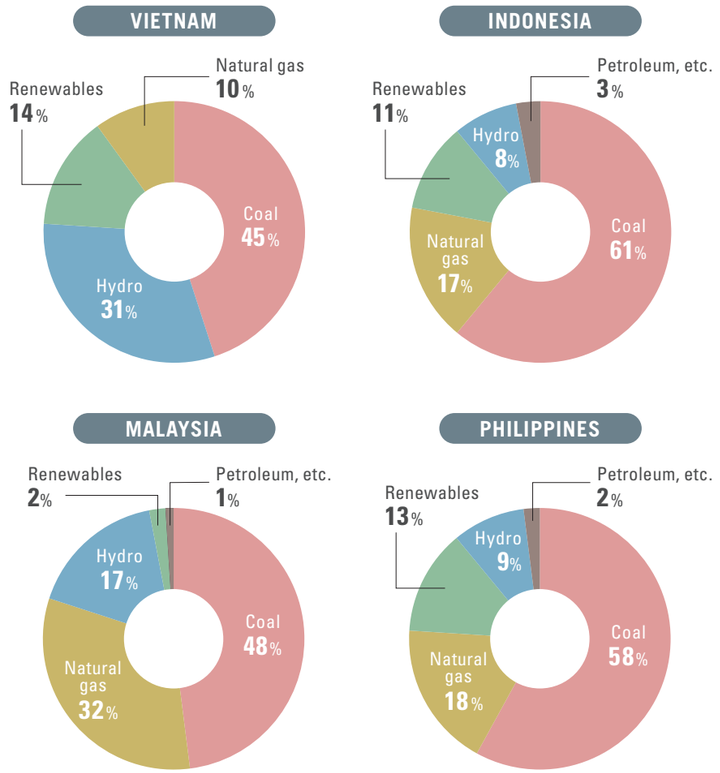
For projects demonstrating high feasibility, JBIC has a fast-tracking system for prioritized implementation. In ASEAN countries in particular, schemes to promote the realization of projects are being launched one after another.

"These are specifically for Vietnam, Indonesia, Malaysia, and the Philippines. Along with further accelerating existing activities, we are encouraging these countries to advance their projects to the implementation phase."

SEKINE notes that JBIC is exploring a new approach to problem solving. "Social issues and the necessary solutions are varied, and Japan's technologies alone may not be enough. JBIC can introduce technologies and business models from other countries to address issues while encouraging investment from Japan. This will be invaluable because if Japan successfully leads a global initiative, it will become a trusted partner."

As illustrated by AZEC, decarbonization is more than just an environmental policy. Its importance is growing as a strategy to comprehensively drive economic development, energy security, and regional cooperation. JBIC will no doubt play an increasingly diverse and broader role in its realization.

Power source composition of four major AZEC countries



Source: Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), Japan (May 2024)

Coal remains the main source of energy in Southeast Asian countries, and differences exist among the countries in their transition to natural gas and introduction of renewable energy. Realistic approaches tailored to each country's situation are needed.

JBIC Senior Executive
Managing Officer
Global Head of Infrastructure
and Environment Finance Group
SEKINE Hiroki

Joined the Export-Import Bank of Japan (now JBIC) in 1995 after graduating from the University of Tokyo, Faculty of Economics. Received his master's in finance from the London Business School in 2005. Following appointments including the Infrastructure Finance Group, he was a visiting researcher at Chatham House in the UK from 2020 to 2021. Conducts a monthly meeting on AZEC within JBIC, attended by representatives assigned to their respective countries.

| CASE STUDIES |

The current state of decarbonization efforts in key AZEC countries

Vietnam, Indonesia, Malaysia, and the Philippines are major Asia Zero Emission Community (AZEC) partner countries. The chief representatives of JBIC offices in each country report from the frontlines on the respective, unique paths to decarbonizing their economies.

VIETNAM

Driving projects through a Japan-Vietnam public-private team to balance economic growth and decarbonization

Nguyen Hoang Long, Deputy Minister of Industry and Trade (front row, fourth from the left) and members of Vietnam-Japan public-private AZEC/GX Promotion Working Team at talks to select pilot projects. (March 2025)

Structuring projects through a public-private dialogue framework First established with an AZEC partner country

In March 2025, a team comprising the Embassy of Japan, JBIC, and Japanese companies reached agreement with the Vietnamese Ministry of Industry and Trade on 15 projects totaling approximately USD20 billion. This first round of Vietnam-Japan cooperative projects under AZEC was part of the new "Project Accelerating Platform (PAP)" supporting the realization of energy operations involving Japanese companies, and was on the agenda at the Vietnam-Japan summit meeting in April.

In a first among AZEC partner countries, a Vietnam-Japan public-private dialogue framework was established in Vietnam in July 2023. JBIC serves as a team leader together with the Embassy of Japan and Vietnam's Ministry of Industry and Trade, and is working with 45 Japanese companies to develop the business environment and support projects in areas like renewable energy and the power grid. "Forming the team was like drawing a picture on a blank canvas. From conceptualization to coordination with the Vietnamese side, I was able to draw on the policy dialogue experience that I have built since I was assigned to Vietnam in 2019," said AGUIN Toru, Chief Representative of the JBIC Representative Office in Hanoi.

Paving the way to a high-income, carbon-neutral economy through Japanese technology and finance

Vietnam enjoys one of the fastest-growing economies in ASEAN, aiming to be a high-income economy by 2045. It has also ambitiously targeted carbon neutrality by 2050 without sacrificing economic growth. To achieve that, Vietnam must boost electric power generation at a rate exceeding the government's economic growth targets—8 percent in 2025 and 10 percent or more from 2026 to 2030—while increasing the share of clean energy.

The Eighth National Power Development Plan aims to more than double power generation capacity between 2021 and 2030 (to 183 GW), including significantly increasing solar and wind, as well as transition fuels such as gas. Total investment from 2026 through 2030 is estimated at USD136.3 billion.

The AZEC/GX Promotion Working Team has proposed projects using Japan's decarbonization technologies while considering Vietnam's needs. JBIC has provided loans for projects including roof-top solar power generation in a Japanese-affiliated industrial park, gas field development for a power plant, biomass fuel production, and power grid upgrades. Meanwhile, discussions between Vietnam and Japan continue on issues such as regulatory improvements.

Vietnam is one of the most promising destinations for business expansion in ASEAN for Japanese companies, with approximately 2,400 companies operating there. AZEC's activities expand electricity business opportunities for Japanese companies, while contributing to Vietnam's growth, decarbonization, and energy supply for Japanese businesses operating in the country. "We are working to ensure diverse win-win situations for both Vietnam and Japan," states AGUIN emphatically. "Going forward, with a focus on individual projects under PAP, Vietnam and Japan will discuss issues and solutions for their realization. We intend to get these new initiatives on track rapidly and further examine support measures that only JBIC can deliver."

Chief Representative
JBIC Representative Office
in Hanoi
AGUIN Toru

INDONESIA

Leveraging the resources of a volcanic nation to achieve carbon neutrality

Muara Laboh geothermal power plant. Adding to the existing project, the expansion project plans to build a new plant with a generating capacity of about 83 MW.

The populous country of nearly 300 million faces challenges in building a power grid connecting its islands

In Indonesia, a country with a population approaching 300 million, various initiatives to become carbon neutral by 2060 are in motion under the new Prabowo administration, which took office in October 2024. Although it is ASEAN's largest CO_2 emitter, Indonesia is focusing on developing renewable energy sources such as hydropower and geothermal power, leveraging the fact that it is one of the world's most volcanically active countries. JBIC has been providing extensive support for their development.

"President Prabowo showed a positive stance toward utilizing Indonesia's abundant renewable energy resources, mentioning the country's rich supply of biofuel, geothermal energy, and hydropower in his inauguration speech," says OHKAWA Yoshio, JBIC's Chief Representative in Jakarta. At the same time, the rise of the digital economy is driving a yearly increase in power consumption. Achieving both economic growth and decarbonization is a shared challenge among AZEC countries.

In addition to developing power sources, an important challenge facing Indonesia is developing a power grid for stable supply of electricity to the many islands that make up the country. "JBIC has experience providing project financing for NeuConnect interconnector, a privately-led initiative to develop a power transmission system linking the UK and Germany. In June 2024, we held a seminar in Indonesia to showcase this project as a successful example of installing a transmission system. Through such steady, gradual efforts, we hope to build momentum for new project financing," says OHKAWA.

Infrastructure projects progress in stages, in collaboration with the relevant ministries and agencies, while harnessing private sector dynamism. JBIC plays a key role in supporting this process.

Focusing on the potential of geothermal power generation and expanding the Muara Laboh project

Against this background, Indonesia's geothermal power is gaining attention and raising expectations across AZEC countries. The Muara Laboh geothermal power project, a joint venture between Japanese and Indonesian, utilizes JBIC financing. An ongoing expansion of the Muara Laboh plant has become an AZEC flagship project, testament to the high expectations around its success.

"Though the potential of Indonesia's geothermal power generation is high, it is not easy to utilize steam underground," notes OHKAWA. "Despite the challenges, the plant is producing high-quality steam, leading to the decision to expand its capacity. It stands as a benchmark geothermal power project in Indonesia."

Effectively utilizing the renewable energy resources beneath the earth's surface is a major challenge. JBIC is expected to play its part by supporting efforts to harness the potential of this volcanic powerhouse nation.

Chief Representative
JBIC Representative Office
in Jakarta
OHKAWA Yoshio

MALAYSIA

Carbon capture and floating solar farms under the prime minister's strong leadership

In a meeting with Prime Minister Anwar (left) in October 2024, JBIC Chairman MAEDA Tadashi (right) announced cooperation on boosting Japanese investment in data centers, power grids, and CCUS.

Malaysia promotes renewables despite abundant resources and rising demand

Malaysia has an abundant supply of natural resources, with coal and gas-fired power generation accounting for 80 percent of its electricity. It is also known for its sizeable liquefied natural gas (LNG) industry, with Japan as its largest export destination. "You could say that bilateral relations were built on natural resources, especially LNG," says ABE Ryoichi, former JBIC Chief Representative in Singapore, whose office also oversees Malaysia. Things started to change around 2020.

In September 2021, the Malaysian government declared that it would achieve net-zero emissions by 2050. In 2023, it drew up a specific roadmap to meet this goal, which ABE says truly breathed life into its decarbonization efforts. Under the strong leadership of Prime Minister Anwar, "The ministries and state-owned companies have started taking action."

The recent surge in the construction of data centers is expected to significantly increase electricity demand, and the central policy is to respond by increasing the use of renewable energy. "Investment in floating photovoltaic systems is gaining momentum. Malaysia has an abundance of dam reservoirs for hydropower generation, and solar panels are being placed on their surface." Another promising technology is CCUS (carbon dioxide capture, utilization, and storage). It involves storing CO_2 underground in cavities created by the extraction of natural gas and other resources. If commercialized, the technology could also store CO_2 transported from Japan and Singapore, presenting a significant business opportunity.

JBIC is boosting AZEC-related activities in Malaysia in three key areas: data center and digital industry support, power grid development, and CCUS. While leveraging its natural resources, Malaysia will continue rising to meet its challenges.

Chief Representative
(at that time)
JBIC Representative Office
Registered in Singapore
(Regional Headquarters
for Asia and Pacific)
ABE Ryoichi

THE PHILIPPINES

Stronger relations with major conglomerates are key in breaking coal dependence

In March 2024, JBIC signed an MOU with San Miguel Corporation on collaboration in the decarbonization sector (Company President Ramon Ang [left] and Regional Head for Asia & Pacific of JBIC [at that time] NEGISHI Yasuaki [right])

Focusing on both gas-fired power generation and renewables as expectations rise for pumped-storage hydroelectricity

"We would like to further strengthen support through public-private partnerships," says SAGAWA Hiroshi, JBIC's Chief Representative in Manila. JBIC has held renewable energy seminars at the Philippine Department of Energy's request, and helped structure and finance projects by connecting local and Japanese companies.

Around 60 percent of power in the Philippines currently comes from coal, 70 percent of which is imported–mainly from Indonesia. Concerns around depletion of domestic gas reserves are prompting the expansion of gas-fired power generation using imported LNG along with the transition to renewable energy sources. The government is targeting 35 percent of energy from renewables by 2030 and 50 percent by 2040. To that end, the Department of Energy is pushing initiatives such as the Green Energy Auction Program (GEAP) and the development of offshore wind-dedicated ports. Meanwhile, local power companies are beginning to commit to retiring coal-fired power plants early.

Expectations are also growing for pumped-storage hydroelectricity as a flexible power source that can help stabilize the grid. Additionally, power grids connecting renewable energy and urban areas are urgently needed. However, power is a highly privatized sector led by conglomerates, with restrictions on foreign investment. "Although the power sector has potential, forming projects involving Japanese firms requires strengthening relations with the conglomerates," explains SAGAWA. "JBIC is helping to facilitate these partnerships by serving as an intermediary from the early stages."

The Philippines is taking steps toward a sustainable future, leveraging its partnership with Japan.

Chief Representative
JBIC Representative Office
in Manila
SAGAWA Hiroshi

| SURVEY |

It's in the data: AZEC countries are promising investment destinations

AZEC (Asia Zero Emission Community) partner countries are attracting attention from Japanese companies looking to expand overseas. In JBIC's latest "Survey Report on Overseas Business Operations by Japanese Manufacturing Companies," based on responses to an annual questionnaire, five AZEC countries ranked in the top 10 most promising investment destinations. ASAI Mizuki of the Strategic Research Department, Corporate Planning Group, explains what lies behind their popularity and the issues facing decarbonization efforts.

Vietnam is growing increasingly important in the supply chains of Japanese companies. (Photo: A garment factory in an industrial park in Ho Chi Minh City)

ASEAN nations rise as China alternatives as Japanese firms look overseas

The fiscal 2024 survey report revealed that Japanese companies are continuing to expand globally, while a historically weak yen is driving overseas sales ratios to record highs. However, for the first time since 2020, the percentage of companies expecting to boost their overseas operations in the medium term declined year-on-year, reflecting external factors such as weakening global demand and China's economic slowdown. Nevertheless, more than 60 percent of companies expressed intentions to bolster overseas operations, indicating that Japanese corporate interest in overseas markets and expectations for growth remain high.

In terms of specific countries and regions considered promising for business development over the medium term, India was at number one for the third year in a row. Recognized for its massive population of more than 1.4 billion and its growth potential, it easily retained top spot with 60 percent of the votes.

Votes for China declined sharply this year, falling in the rankings from third place to an all-time low of sixth. China held the top position from 1992, when the survey first introduced the question about the most promising country, until 2012, and remained a popular destination afterward. Factors behind the decline include its domestic economic slowdown, intensifying competition with local companies and diversification away from China due to ongoing tensions with the U.S. However, this does not mean that China is no longer considered an option. Expansion of operations into its huge market is still viewed as attractive.

Meanwhile, production and export bases are shifting away from China, with ASEAN member countries that participate in AZEC increasing their presence. Vietnam held on to second place from the previous year, Indonesia came in fourth, Thailand fifth, Malaysia eighth, and the Philippines ninth. In their favor are proximity to Japan, growth potential, and low labor costs.

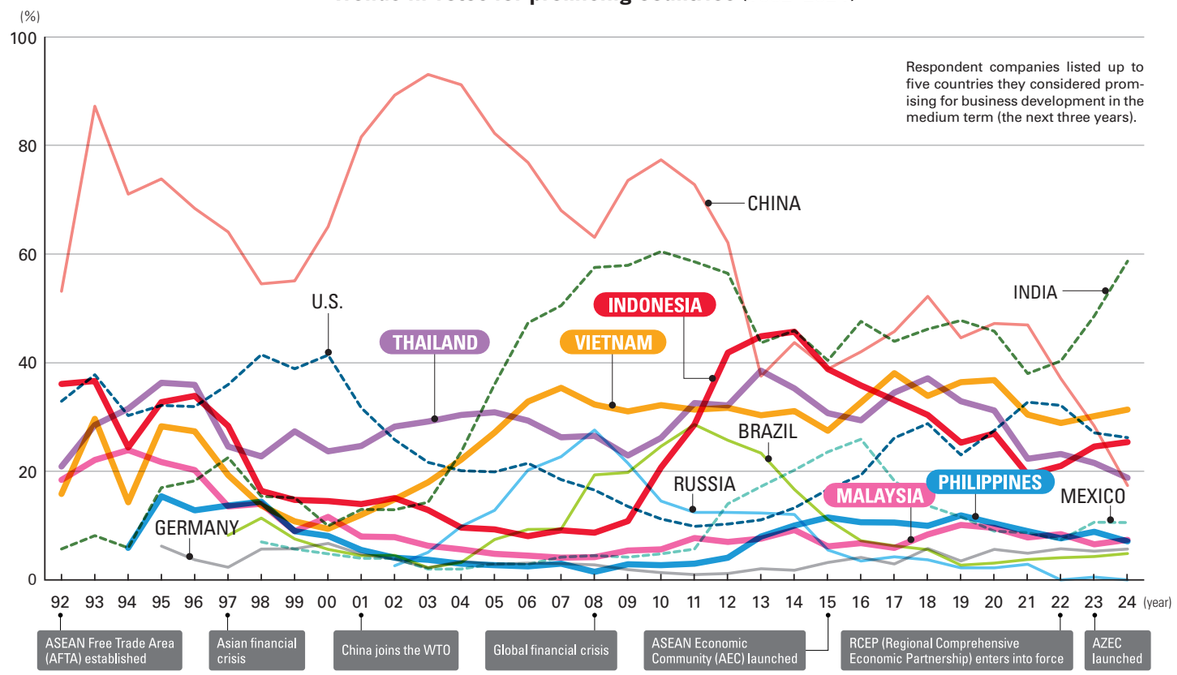
Vietnam is gaining attention as a risk-diversification destination. Its strengths as a manufacturing and export base have long been recognized, and it is increasingly seen as an alternative to China. In the supply chain restructuring analysis, Vietnam was the most frequently cited destination for relocating manufacturing and sales bases from China.

Indonesia, home to ASEAN's largest population of about 280 million, is garnering rising expectations as a market; compared to Vietnam, more companies are targeting its domestic demand. But in the automobile sector—Japan's largest area of investment—issues include the rise of Chinese EV manufacturers and sluggish sales growth due to an underdeveloped middle class.

Thailand, like Vietnam, is a popular choice for diversification of manufacturing and sales bases from China. Malaysia is strong in the electrical and electronic device industries, with semiconductor and data center-related investment on the rise. Meanwhile, the Philippines dropped one spot in the rankings due to rising labor costs.

Survey overview: a questionnaire survey of companies regarding foreign direct investment, conducted and collected by JBIC from July through September 2024. The number of surveyed companies was 936, with valid responses received from 495, for a valid response rate of 52.9 percent. The full report is available online.

Trends in votes for promising countries (1992-2024)



India also places top for non-manufacturing industries, with seven AZEC countries make the top ten

For the first time, the survey included non-manufacturing industries such as wholesale, construction, transportation, and finance/insurance. India also topped the non-manufacturing sector's ranking of promising countries for investment, followed by Indonesia in second, Vietnam third, and the U.S. in fourth place. The Philippines, which ranked ninth for the manufacturing sector, took fifth place here due to its market growth potential and skilled English-speaking workforce.

In addition, Australia and Malaysia shared sixth place, followed by Thailand in eighth, and Singapore ninth, for a total of seven AZEC partner countries also making the top ten for non-manufacturing industries.

High interest in decarbonization but efforts in overseas markets are just beginning

The survey also addressed sustainability initiatives. Of the manufacturing companies that responded, about 65 percent are working to make their existing products and services more energy efficient and to reduce carbon emissions. Some 90 percent of these companies are undertaking such initiatives in Japan. Next was China at about 20 percent, followed by Thailand, the U.S., Indonesia, Vietnam, and Malaysia. Though measures overseas still lag behind those in Japan, the high rankings of AZEC partner countries point to significant potential for future initiatives.

Meanwhile, increased costs, underdeveloped systems, and a lack of financial support were cited as challenges. For example, there are generous tax breaks for EVs in Indonesia, but only limited incentives for hybrids, impacting Japanese automakers aiming to roll out various types of vehicles.

While the U.S. ranked high in this year's survey, the impact of the second Trump administration's tariff hikes and other trade policies is creating uncertainty for the global economy. JBIC will continue to monitor trends and analyze each country's issues to support Japanese companies in taking their next move in overseas business development.

"Expectations are growing for ASEAN member countries participating in AZEC, as destinations for relocating production and export bases from China for risk diversification."

Research Analyst, Deputy Director
Division 1 & Division 2 Strategic Research Department
Corporate Planning Group, JBIC
ASAI Mizuki

Joined JBIC in 2017. After working in the Legal Affairs and Compliance Office (legal affairs), New Energy and Power Finance Department II (Southeast Asia, etc.), and Credit Department (resource projects, etc.), assumed her current position in November 2024. In charge of the survey on overseas business operations. Graduated from Hitotsubashi University, Faculty of Law.

INDONESIA

A deal leveraging advanced Japanese geothermal power technologies finally signed late at midnight, just before a summit meeting

In Indonesia, financing is underway for a geothermal expansion project that harnesses Japanese technology and experience. SHIRAHAMA Manabu and YAMANISHI Minami of JBIC, who worked on the loan negotiations, share the backstory.

A key project in the AZEC initiative highlighted at the Japan-Indonesia summit meeting

The advancement of renewable energy projects is a pressing issue for Indonesia, which aims to achieve carbon neutrality by 2060. To that end, the country is focusing on utilizing its abundant geothermal energy resources. One of its flagship facilities is the Muara Laboh Geothermal Power Plant, which went into commercial operation in December 2019. In a testament to its importance, the loan for the project to expand the plant was on the agenda at the Japan-Indonesia summit meeting held in January 2025.

SHIRAHAMA Manabu, Deputy Director of Division 3, New Energy and Power Finance Department I, Infrastructure and Environment Finance Group, who led the negotiations for this project financing agreement, reveals how nail-biting the situation was, saying, "The signing of this loan agreement was actually completed in the late hours at midnight before the summit meeting." This is one of the most important projects under the AZEC (Asia Zero Emission Community) initiative, which was proposed by the Japanese government to promote decarbonization across Asia. Several Japanese companies with expertise in geothermal power generation have invested in the project, and the financial institutions involved range from commercial banks to international institutions. Moreover, since loan repayments rely solely on cash flows generated by the project, a detailed review of profitability was required for financing. Despite a tight schedule and a process involving multiple stakeholders, including discussions with the Japanese sponsor companies, JBIC was able to put the loan agreement together.

"Our work was not just providing a loan. From the initial formation stages of the project, we shared issues with the Indonesian government, working to solve them through discussions. We also served as a bridge between the Indonesian government and the Japanese companies," he recalls, noting how JBIC is uniquely positioned as a policy-based financial institution to take an in-depth approach in advancing projects.

Unpredictable geothermal power business and a complicated loan agreement

Working with SHIRAHAMA to advance loan negotiations for the Muara Laboh Geothermal Power Expansion Project, YAMANISHI Minami, then an associate in Division 3 & 4, New Energy and Power Finance Department I, was in her fourth year at JBIC. From her first year, she was in charge of loan agreement management and project monitoring for the Muara Laboh Geothermal Power Plant Unit 1 before its expansion. As the only member of the loan negotiation team with knowledge of both the contract for Unit 1 currently in operation and the contract for the expansion project, she says, "The biggest concern was whether the expansion project would affect the currently operating Unit 1." As the expansion project requires additional high-pressure steam, a new well must be drilled on the same landsite as the existing unit. Geothermal power projects typically require drilling wells more than 3,000 meters deep, making it difficult to control the deeper, unseen layers.

When YAMANISHI was stationed at the Jakarta office as an overseas trainee, she visited the site of the geothermal power plant, which was located in a steep mountainous region eight hours away by car from the nearest airport. She says that she will never forget the words of a local engineer—"The underground world is a living thing." Even with current technology, final results are unpredictable. Because of this, detailed discussions were held involving geothermal technology experts on how to prepare for and minimize impacts on Unit 1, incorporating such concept in the contract. Some of the final agreement documents went beyond 400 pages.

"With the agreement due to be signed by the time of the Japan-Indonesia summit meeting scheduled for the beginning of the new year, it was the busiest time in my whole life, dealing with the lawyers to finalize the contract details."

Indonesia is a geothermal powerhouse, ranking second in the world in terms of resource potential. It plans to have renewable energy account for at least 50 percent of newly developed power capacity by 2030, with geothermal accounting for 8 percent of the total. The Indonesian government has high hopes for geothermal power generation, as it can provide stable power unaffected by weather.

Utilizing Japanese power generation tech in geothermal powerhouse Indonesia

As Japan has limited locations suitable for geothermal power development, Indonesia presents a huge opportunity for Japanese companies possessing relevant technology. According to SHIRAHAMA, "JBIC also plays a key role in dispelling doubts and concerns, as well as providing behind-the-scenes support so companies can establish operations." He hopes that such projects will act as a stepping stone for Japanese companies to further overseas expansion.

The project required working closely with the Indonesian government, and negotiations were sometimes slowed while undergoing a change in the administration. Nevertheless, JBIC was able to keep the dialogue going through its connections with the Indonesian authorities. According to YAMANISHI, "Although there is much uncertainty surrounding projects in developing countries, I want to harness JBIC's strengths in engaging with overseas governments to propose optimal solutions for our clients."

SHIRAHAMA and YAMANISHI are looking to use what they learned from this project in the future to ensure that JBIC continues to be a go-to organization that can meet the changing needs of the times.

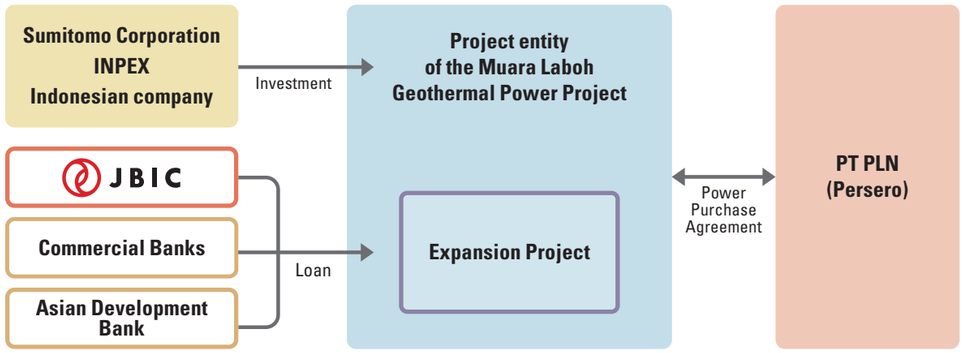
Muara Laboh Geothermal Power Plant
Photo courtesy of PT Supreme Energy Muara Laboh

Project Summary

In January 2025, a loan agreement was signed with PT Supreme Energy Muara Laboh, an Indonesian company invested in by companies including Sumitomo Corporation and INPEX Corporation, for project financing amounting to up to approximately USD138 million (JBIC portion). The loan is co-financed with commercial banks (Mizuho Bank, Ltd., MUFG Bank, Ltd., Sumitomo Mitsui Banking Corporation, and The Hyakugo Bank, Ltd.), and the Asian Development Bank, bringing the total amount to approximately USD370 million.

Press release on this project ▸▸▸

● **Project financing for the Indonesia Muara Laboh Geothermal Power Expansion Project**



Deputy Director
Division 3
New Energy and Power Finance Department I
Infrastructure and Environment Finance Group

SHIRAHAMA Manabu

Entered a government ministry in 2011, and joined JBIC as a mid-career hire in 2021. Following assignment to the Energy Solutions Finance Department, he became engaged in structuring project financing for the power sector in the Asia-Pacific region. Graduated from the University of Tokyo, Faculty of Law. Completed his graduate studies at the National University of Singapore.

Associate
Division 3 & 4 (at that time)
New Energy and Power Finance Department I
Infrastructure and Environment Finance Group

YAMANISHI Minami

Joined JBIC in 2022. Engaged mainly in the management of existing projects and new approvals in the power business in Indonesia at the New Energy and Power Finance Department I. Graduated from the University of Tokyo, College of Arts and Sciences.

President
KOSHII & Co., Ltd.
KOSHII Jun

Completed graduate studies at Waseda University. Has served as chair of the Osaka Lumber Young Managers Association and the Japan Youth Lumbermen's Association. Currently president of the Japan Wood Preservers Industry Association, vice president of the Osaka Federation of Wood-industry Associations, vice president of the Japan Wood Protection Association, and president of KOSHII & Co., Ltd. and KOSHII PRESERVING Co., Ltd.

KOSHII & Co., Ltd.

A wood processing specialist continues to take on challenges and expand in the global market with proven technology

With a history dating back to the Meiji Era (1868 -1912), KOSHII & Co., Ltd.'s beginnings were in the processing of wooden utility poles and railway ties. Its core strength lies in technology to enhance the durability of wood. Leveraging its intense focus on R&D and talent development, the company has expanded overseas to the United States, Malaysia, and China, continuing to steadily grow.

135 years of traditional craftsmanship augmented by firsthand verification of its advanced technologies

"Please come back for another interview in five years. Things are going to be getting even more interesting," says KOSHII Jun, the fifth-generation president of KOSHII & Co., full of enthusiasm for the company's future.

Founded in 1890, KOSHII & Co. grew its business with preservative-treated lumber as its signature product. KOSHII Junzo, the founder and an industrialist who also managed a bank and railroad line, brought back copper-based preservative technology from Scandinavia and launched the business of treating lumber for utility poles and railroad ties.

Entering the 1950s, the company faced a temporary crisis when concrete began to be used for utility poles and railroad ties. But by pivoting to lumber for houses, it was able to pursue growth with major homebuilders as its customers. The company then went into the business of "ply metal," a composite of wood materials and metals for use in the interior panels of trains including the Shinkansen bullet train, and floorboards for trucks.

The company has continued refining its technologies for wood preservation, termite-resistance, and fireproofing. From its earliest days, the company has been ahead of the curve in adopting advanced overseas technologies, but only after thorough verification by in-house and university researchers.

"Don't trust anything that you haven't solidly verified yourself. That line of thinking has been consistently passed down over generations in this company. It can take several years to verify a technology, but we place the highest priority on responsible manufacturing," says KOSHII. Since he took the helm in 2005, aged just 40, he has been guiding this company steeped in history and tradition through times of dynamic change.

Osaka Headquarters' No. 2 factory. Women also thrive in the workplace, where employees collaborate efficiently through constant communication.

Deep trust in Japanese companies in the U.S.
Afforestation project in Malaysia

KOSHII currently has high hopes for the company's U.S. operations. A key strength of KOSHII & Co. has been its global connections. It established a U.S. subsidiary in New York State in 1989 after a leading Japanese heavy machinery manufacturer client won an order for local railcar production.

Transition to a centralized system for production management is underway at the U.S. factory. This is also serving to optimize delivery management and production plans.

Its U.S. factory currently employs about 40 people—including U.S. hires and those dispatched from Japan—manufacturing railcar panels and floorboards. The products are used on trains operating in cities including New York, Chicago, and Boston. Although the company faced challenges from low-cost Chinese competitors entering the market, it has been back on track in recent years, including participation in a large New York City subway project. It plans further expansion supported by JBIC financing.

Reflecting on the company's success overseas, KOSHII explains: "Japanese companies are highly trusted in the U.S. for not only delivering quality, but also meeting deadlines and upholding promises. Trust in this tradition, which was built by the Japanese manufacturing sector as a whole, is a powerful force. On top of this, the U.S. is meritocratic. I feel that there is a climate where companies are selected based on quality and integrity rather than nationality."

KOSHII & Co. is also operating in Southeast Asia, establishing a business in Borneo, Malaysia in 1988. To meet surging demand for residential plywood for homes, it formed a joint venture for a complete local procurement to manufacturing operation, with the finished products exported to Japan.

Since 2005, the company has also engaged in a large-scale afforestation project in Borneo, planting around 700 hectares of fast-growing acacia trees. These days, it is reforesting in parallel with harvesting mature trees. KOSHII & Co. has also established an office in Shanghai, China to explore new business opportunities.

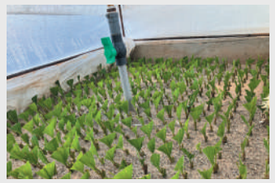
Overseas operations develop human resources opening up the future growth of employees

"Our overseas locations are positioned as places for talent development, where our young Japanese employees can take on challenges. We make it a point to provide motivated staff with opportunities to push boundaries."

With a wealth of life experience, including working in the U.S. in his late 20s, KOSHII repeatedly mentions "valuing people" and "teamwork." As the fifth-generation head of the company, he values above all else this people-centered corporate culture, which encompasses employees, business partners, and the local community and runs deep in the KOSHII & Co. DNA. In addition to reforming the personnel system, he is committed to advancing the UN's Sustainable Development Goals (SDGs) for the good of people and the planet.

"Technology is important, but I believe that nothing is more important than having each individual on the team find meaning in their work. I am always thinking about ways to inspire them and what is needed for them to speak proudly about their work to their families and friends."

KOSHII feels that his efforts are being rewarded, not only through the boost in overseas business and progress made in developing new technologies, but also in the growth of his employees who hold the future in their hands. "The involvement of various people is what makes work meaningful." While valuing people, the company will continue to take on challenges on the global stage.



The acacia afforestation project in Malaysia starts with the raising of saplings. The company is engaging in sustainable management of forests that extends to the use of timber.

KOSHII & Co., Ltd.	
1890	Founded
1948	KOSHII UTILITY POLE TIMBER Co., Ltd. established
1965	Company name changed to KOSHII & Co., Ltd.
1973	Preservatives division separated and KOSHII PRESERVING Co., Ltd. established
1989	KOSHII AMERICA INC. established
1996	KOSHII MAXELUM AMERICA, INC. established
2005	Full-fledged corporate afforestation in Malaysia

Loan Summary

In December 2021 and March 2023, loan agreements were signed with KOSHII & Co., Ltd.'s U.S. subsidiary, KOSHII MAXELUM AMERICA, INC., for loans totaling up to USD3.85 million (JBIC portion). Co-financed with Resona Bank and Kansai Mirai Bank, respectively. Through the provision of funds needed for the manufacture and sales of interior panels for subway cars, these loans contribute toward maintaining and improving the international competitiveness of Japanese industry.

ON THE "GROUND" FROM AROUND THE WORLD vol.1

After attending an international conference held in the ancient city of Luang Prabang, Laos, SHIMATANI deepened his connections with other delegates while touring temples and other historic sites.

▲ Instagram

I'm charmed by Bangkok's open and cosmopolitan atmosphere!

Representative
JBIC Representative Office in Bangkok
SHIMATANI Takuro

Joined JBIC in 2021 after working as a forex trader and being posted to India. After handling corporate and project financing in the Mining and Metals Finance Department, he assumed his current post in September 2023.

Promoting renewables and energy saving in key ASEAN member countries while putting down roots in "The Land of Smiles"

››› Representative Office in Bangkok

Q How would you describe Thailand?

A Though the economy is a little sluggish, GDP growth rate is projected to stay positive despite the impact of U.S. tariff policies. Thailand is a magnet for Japanese companies, particularly automakers, and many have set up operations here. Japanese products, including food and cosmetics, are very popular. You can easily adjust to life here because it is a Buddhist country that values harmony, and is also friendly toward Japan. Our office is located in the Ploenchit district of Bangkok, an area like Tokyo's Ginza. Communication with JBIC's head office in Japan is smooth thanks to the mere two-hour time difference.

Q What are your main duties?

A Our office is responsible for four countries: Thailand, Myanmar, Cambodia, and Laos. Through interaction with local governments, companies, and financial institutions, we gather information on the economy, finance, and policy. By analyzing this information and reporting it to headquarters, we provide insights that support Japanese companies in expanding their business overseas and building networks. I have a wide range of duties, including assignments that I never encountered in Japan, such as being on the editorial board of the magazine of the Japanese Chamber of Commerce, Bangkok. This is good experience because in the future I would like to be involved in JBIC's organizational and administrative management.

Q Do you often have opportunities to travel abroad for business?

A I visit Laos most often. Laos has a population of just 7.5 million but is known as the "Battery of Southeast Asia" because its hydroelectric power industry is thriving due to its abundant water resources. Global interest in renewable energy is high, so I make a fact-finding trip there every six months.

Q Have you had any memorable jobs?

A Yes, I'd say my work with AZEC (Asia Zero Emission Community), which promotes Asia's decarbonization. Here in Thailand, we are collaborating to realize these initiatives with the Embassy of Japan in Thailand, AOTS (The Association for Overseas Technical Cooperation and Sustainable Partnerships), JETRO (Japan External Trade Organization), and NEDO (New Energy and Industrial Technology Development Organization). This spring, our office and these organizations jointly launched a platform to promote energy saving-related investments. Amid the global trend toward reduction of GHG emissions throughout the supply chain, the promotion of energy saving will lead to greater competitiveness for Japanese and Thai companies. We hope that providing seamless official support from Japan will make this a very meaningful initiative.

Q What do you do on your days off?

A I enjoy international exchanges through futsal and Muay Thai lessons, and I often go sightseeing with my family.

Top: A beach in Krabi, a tourist destination in southern Thailand that is popular among expats. Bottom: Working out at a Muay Thai gym on weekends.

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