

Gastech

Exhibition & Conference

4-7 APRIL 2017

Makuhari Messe Chiba,
Tokyo, Japan

the japan times

Gastech Japan 2017

TUESDAY, APRIL 4, 2017

LNG and the future
of Japanese energy

International conference and exhibition brings together global energy leaders for discussions and solutions to world's energy concerns

MINORU MATSUTANI
STAFF WRITER

Japan Gastech Consortium Chairman Nobuo Tanaka expects Gastech Japan 2017 to be a milestone for power suppliers and users to come to a consensus on the role of gas in the energy mix of the future.

Gastech Japan 2017, the world's largest event for the gas industry, will be held at Makuhari Messe, in Chiba Prefecture, from Tuesday to Friday. It is expected that 25,000 visitors from all over the world will attend the exhibition that features 600 exhibitors and more than 200 speakers.

"Gas is a clean energy source. Its availability will improve and investment will also be increasing," Tanaka, the chairman of The Sasaki Peace Foundation and the former executive director of the International Energy Agency, said in an interview in Tokyo.

"Through Gastech, I want people to see that the future market will be stable, encouraging them to make large investments and create a predictable market."

Gastech also offers the opportunity for global companies to showcase their technologies and businesses to people in the energy business.

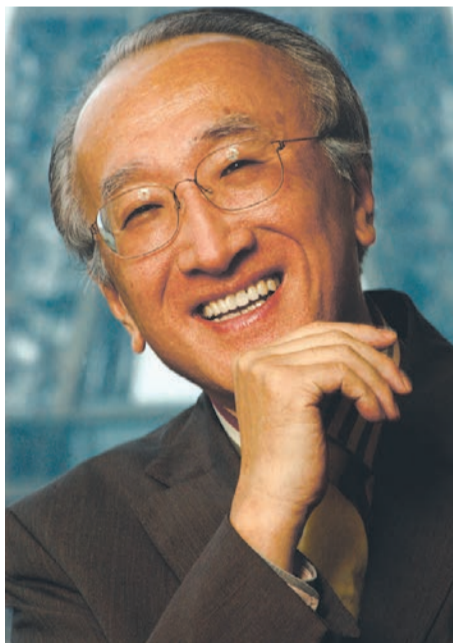
It is significant that Gastech will take place in Japan because the island nation is the world's largest importer of liquefied natural gas (LNG), accounting for 36 percent of worldwide imports.

Additionally, Japan has led and continues to lead the industry, as it was the first country to import LNG as an energy source. Japan first imported LNG from Alaska in 1969.

"Since then, Japan has accumulated the technology to liquefy natural gas, keep it cold and liquid during transport and later gasify it. And, as Japan is the largest consumer of LNG, the country is at the center of the world's attention," he said.

Tanaka also said the industry is currently going through a second-stage revolution. The first-stage was the shale gas revolution in the U.S. earlier this century, dramatically reducing the prices of natural gas and transforming the U.S. from an LNG importer to exporter, leading to expanded natural gas use in the world.

The second-stage revolution is the formation of a solid market after other countries began expanding LNG production, he said. The ratio of liquid to gas has been increasing and liquid is expected to surpass gas as the transportation method of natural gas by 2040.



Japan has accumulated the technology to liquefy natural gas, keep it cold and liquid during transport and later gasify it.

NOBUO TANAKA

Transporting natural gas requires construction of physical pipelines, while transporting LNG requires building ships to keep it liquid and factories to transform it from gas to liquid. It is generally accepted in the industry that 3,000 km is the threshold beyond which LNG is a cheaper option than gas, but it depends very much on price negotiations with many interested parties.

However, gas trade via pipeline has a drawback, as it does not allow buyers and sellers to change their counterparts without constructing another expensive, time-consuming pipeline. Thus, LNG offers better potential to apply market-pricing mechanisms, which will stabilize prices and help expand trade.

Japan does not currently have any pipelines for natural gas supply. While the country does not have to focus on pipeline transportation, it should build one for transportation from Russia as a risk hedge, Tanaka said.

Amid the second-stage revolution, Asia, where natural gas demand is high, would like to become a hub for the LNG market,

Tanaka said, adding that every country in Asia aims to be the hub and Japan should therefore establish strong presence as the industry leader.

Tanaka sees the bright future of natural gas as an energy alternative to oil and coal. Short-term demand for natural gas in Japan is expected to drop, as power companies restart nuclear plants that have long been suspended after the Fukushima nuclear disaster in March 2011.

However, the demand is likely to pick up in the long run amid the global sentiment of reducing reliance on nuclear power in the long run. While many countries are investing to strengthen renewable energy by building solar panels and windmills, it will take some time for renewables to reach sufficient production levels to satisfy energy demand. This makes natural gas a good alternative, as it is cleaner than both oil and coal and more efficient than renewable energy.

Another merit of natural gas is that producers are scattered — in Asia, the Americas, Africa, Europe and Oceania — around the world, making for low geopolitical risk, Tanaka said.

Japan should also focus on natural gas because it is the mission of a developed country, he said.

"China and India may want to use coal because it is cheaper. So Japan, as a leader of environmentally conscious countries, should polish the technology to enhance efficiency and lower the costs of using natural gas for developing countries," he said. "Then Japan has the option of selling such technology."

To increase the use of natural gas as an energy source, the world should "put appropriate prices on carbon emissions," Tanaka said.

That will make countries serious about meeting global goals of carbon emissions, which will reduce the use of oil and coal and increase the use of natural gas, Tanaka said.

Tanaka is hoping visitors, speakers and exhibitors at Gastech Japan 2017 will exchange their opinions and share information to make a better future for the natural gas industry and the world.

"Many people — government officials, researchers, businesspeople and others — will get together. I hope people will make good use of Gastech Japan 2017 to share information. I would like them to actively participate in discussions and the various events, while thinking of the future and carrying messages to the world," he said.



Top: A floating storage and regasification vessel. Above: Scenes from Gastech Singapore 2015 SHUTTERSTOCK, DMG EVENTS



Gastech offers various programs for energy experts

Gastech Japan 2017, which is being held at Makuhari Messe, Chiba, from Tuesday to Friday, is the 29th edition of the world's largest conference and exhibition on natural gas and liquefied natural gas (LNG) since the first Gastech was held in London in 1972.

Ten Japanese companies formed a consortium to host Gastech Japan 2017 in the first such attempt in Gastech history. The consortium members are the energy companies and trading houses Jera Co., Mitsubishi Corp., Mitsui & Co., Tokyo Gas Co., Inpex Corp., Itochu Corp., Japan Petroleum Exploration Co., JX Group, Marubeni Corp. and Sumitomo Corp. Jera is equally owned by Tokyo Electric Power Co.'s Fuel & Power, Inc. and Chubu Electric Power Co.

Gastech Japan 2017, organized by dmg events Japan, is expecting 25,000 visitors from all over the world, 2,500 commercial and technical delegates, more than 600 exhibitors, more than 350 company CEOs and ministerial-level politicians in energy and related ministries from various countries, as well as more than 200 energy experts as speakers.

In a regional breakdown of the delegates, Asia & Oceania account for 33 percent, followed by Europe at 30 percent, the Americas at 21 percent, Africa at 9 percent, with the Middle East representing 7 percent.

Gastech Japan 2017 has meetings, exhibitions and various other offerings such as VIP programs, the LNG Procurement Forum, Women in Energy and Young Gastech.

The main discussions will take place on Tuesday morning and include "Japanese Host Welcome & Preview of Gastech 2017," chaired by Nobuo Tanaka, the chairman

of the Gastech Japan 2017 Consortium and the former executive director of the International Energy Agency. Tanaka will be joined by Jera Co. President Yuji Kakimi, Tokyo Gas Co. Senior Executive Officer Takashi Anamizu, Hajime Hirano, executive vice president, group CEO of Energy Business Group, Mitsubishi Corp. and Hirotsu Fujiwara, executive managing officer and chief operating officer of Energy Business Unit II, Mitsui & Co.

There will also be a "Global LNG Leader's Address" by Shell Integrated Gas & New Energies Director Maarten Wetselaar and an "International Energy Leadership Panel Debate: How are Gas Suppliers Adapting to the Changing Global Market?" that will be attended by executives from Chevron, ExxonMobil Gas & Power Marketing Company, Qatargas Operating Company Limited, Total, ConocoPhillips and Woodside Energy Ltd.

Other sessions include those on business, as well as technology such as "How Energy Firms can Successfully Develop People & Projects for their Customers," "United States LNG Exports — The Future?," "Africa: the New LNG Importing Region?," "Risk Assessment of Liquefied Hydrogen Gas Carriers," "Introduction to a Liquefied Hydrogen Carrier for a Pilot Hydrogen Energy Supply Chain (HESC) Project in Japan" and "Choosing the Right Nitrogen Rejection Scheme."

The exhibition hall is open throughout the event, offering space for companies and government bodies to showcase their technologies, as well as spaces and opportunities for business meetings. There are eight country pavilions from Canada, China, France, Germany, Italy, Japan, Singa-

pore and South Korea.

VIP Programs are closed-door sessions, including a panel discussion titled "Long-Term Financing and Investing in Natural Gas & LNG Projects: Where Next, and Why?"

The LNG Procurement Forum is an invitation-only forum inviting 200 of the industry's most prominent and influential executives involved in the procurement, portfolio trade, and end-use of LNG. Companies represented will include LNG buyers, producers, integrated energy companies, utilities, commodity traders, brokers, investors, banks, exchanges and hedge funds.

The Women in Energy is a program showcasing women and men who are leaders from all disciplines across the global energy sector that aims to provide a platform to engage in discussions on challenges and opportunities for female practitioners in the energy sector. It offers various discussions, including one titled "Personal Stories from Successful Women in the Gas Industry About Their Career Paths and Obstacles Overcome."

Young Gastech provides an exciting opportunity for students wanting to pursue a career in the gas sector and for young professionals wanting to get closer to the natural gas and LNG industry. There are sessions such as "The World of Career Opportunities in Energy: How do You Find, Engage With and Apply to the Right Companies for You?" for young people attending the conference.

Additionally, Gastech Japan 2017 participants can enjoy networking at the Meeting Place, Delegate Lunch Area and Delegate Lounge in the exhibition area.

Gastech Japan 2017

LNG to light way for brighter future

MICHIRU MEKATA
SPECIAL TO THE JAPAN TIMES

The air has definitely become cleaner and the skies bluer in Japan as various industries have strived since the late 1960s to become energy efficient and eco-friendly. Today, cars are also becoming exhaust-free by adopting hybrid and fuel cell technology. "Compared to the 20th century known as the era of oil, the 21st century is expected to become the era of gas. Liquefied natural gas (LNG) is one of the major players in promoting the clean energy movement of various industries, and Japan leads the way in the development and application of LNG technology in countless fields," explained a professional with 40 years in the field.

Once considered a wasteful byproduct that was burned when drilling for oil, natural gas is still a very new player on the energy supply stage. "But its reserves are huge and it is unlikely to be depleted for several centuries. That is why Japan positions it as a vital energy source for its industries," noted a fuel buyer with over 20 years of experience.

However, due to its abundance, "natural gas has almost been free in such gas-rich countries as Russia, the U.S., Qatar and Indonesia. But it has to be liquefied for transport, refinement and use in a country like Japan that is completely dependent on imports from other countries for its supply. Compared to oil that already is a well-established industry, liquefaction is an entirely different process, and the facilities required to utilize natural gas as an energy source are starkly

different from those for oil. Altogether, natural gas exploitation becomes very costly," continued the fuel buyer.

"The aging society of Japan and the resulting decrease in oil consumption, coupled with plummeting oil prices in recent years, make private companies think twice before entering the natural gas and LNG business. That is because in the short run, they couldn't possibly look forward to enough return on investment," added the industry professional.

In terms of its development, transportation, storage and use, the natural gas and LNG industry has consequently been a very closed arena with a limited number of entrants in Japan until now.

Indeed, all the issues cited by these industry professionals seem to indicate that this is a delicate, complex industry requiring a broad perspective, perhaps exceeding private-level actions and decisions, making the interviewees reluctant to identify themselves or their organizations for this article.

Turning our eyes to the global arena, Europe, Russia, China, West Asia and the U.S. have recently chosen natural gas and LNG as the main pillar of their respective energy policies. "For several centuries to come, they don't have to worry about any shortage in supply because of the abundance of natural gas. Being on the same continent, they also don't have to worry about the ballooning costs of transport. Because if the need arises, all they have to do is build a pipeline," noted the fuel buyer.

From a geopolitical perspective, Japan is in a much more disadvantageous position

compared to the countries and regions mentioned, since it has no natural resources and is an island country. "There's no denying that LNG cars have a smaller total load over the ecosystem as compared to current electric vehicle models that require heavy, bulky fuel cells," continued the fuel buyer. "But since LNG will also be exhausted eventually, and as Japan has to depend on imports for its natural resources, it cannot possibly discard the option of nuclear power, which is much cleaner than oil and makes the country energy self-sufficient," the fuel buyer said. As protectionism mounts throughout the world, both the industry expert and the fuel buyer further worry that perhaps gas producers will eventually refuse to export natural gas to Japan. They question, "If that happens, how is Japan going to supply energy to its industries?" Though the anxiety of the two interviewees can be justified to some extent, their theory pales before the ¥20 trillion that is required for cleaning up the aftermath of the Fukushima No. 1 nuclear power plant disaster. Even when that overwhelming payment is completed, it is appalling to know the ill effects of the emitted byproducts from the accident will remain on the planet for 30,000 to 40,000 years.

Such conditions make us re-acknowledge the true value and meaning in promoting the development and use of a safe and clean energy resource like natural gas. As we have so far seen, Japan cannot evade its destiny of making full use of natural gas by further improving and refining its LNG technology. The question is can Japan do it?

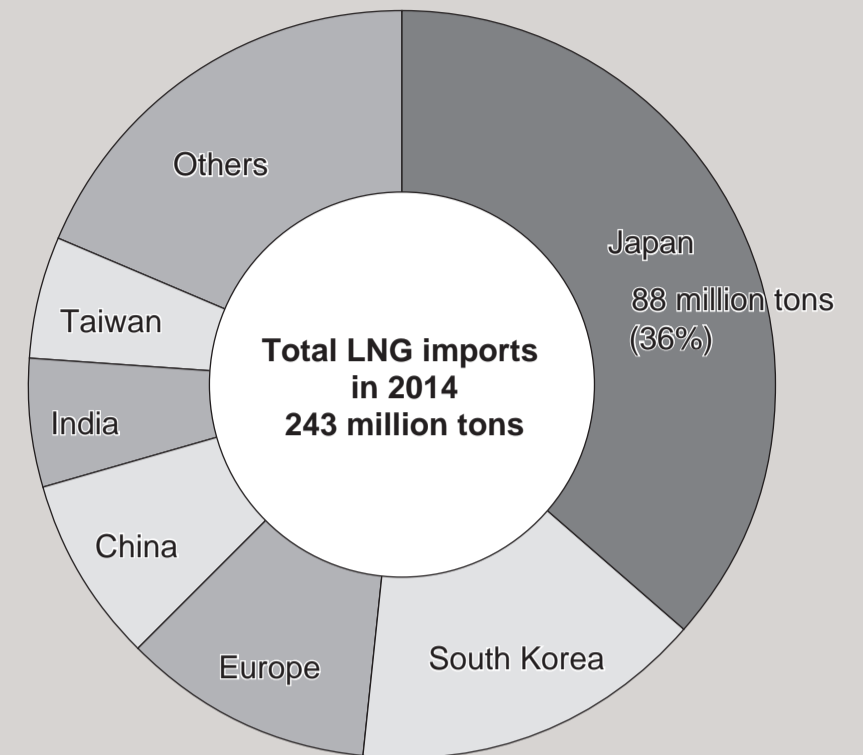
The positive answer seems to lie surprisingly close at hand. Cleaner air and bluer skies in recent decades have been especially notable in cities like Kawasaki and Kitakyushu that have served as homes to the most industrialized coastal factory areas of the country. During the high economic growth era, their skies were gray and foul smelling and their dead rivers foamed from detergent. The pollution level was so bad that many children suffered from an acute lymph node illness known as Kawasaki Disease.

Instead of a cover-up, however, the administration, the citizens and the industries stood up to do something about the situation. In the case of Kawasaki, they laid down the most stringent pollution control act in the world during the 1970s. The industries cooperated by trying to make their factories more energy-efficient and clean. The citizens monitored the movements of both the industries and the administration, requesting amendments and improvements to be made whenever they felt necessary.

The result after 30 years was pure air to the extent of offering magnificent view of Mount Fuji very frequently and pristine rippling waters with wildlife returning and *ayu* (sweetfish) swimming upstream.

"Utilization of clean energy, including LNG, is the lifeline strategy for us. Going a step further, we are currently examining ways to utilize hydrogen efficiently," said Tomohiro Takahashi, manager of the Coastal Area Project Promotion Department of the Coastal Area International Strategy Head-

LNG imports share



International Group of Liquefied Natural Gas Importers, Trade Statistics of Japan, Agency for Natural Resources and Energy

quarters of Kawasaki.

Exporting their patented pollution control technologies to countries such as China, Kawasaki today has become a wealthy, clean city clearing its negative image and becoming a popular residential area with the wealthy younger generation.

As we observe the global trend toward natural gas use, Japan's lead in natural gas liquefying technology, coupled by the success stories of cities like Kawasaki, there is

no denying that the country is in a good position to lead the way in LNG utilization.

If this is the case, we can look forward to Japan leading the way in bringing a bright future for everybody, through the creation of a win-win-win situation for the citizens, the industries and the countries and regions on the planet. After all, should we not bear responsibility of retaining a better environment on Earth for our children, grandchildren and future generations to come?

Gas to play significant role moving forward

SHIGERU MURAKI
ADVISOR, TOKYO GAS

Question: Why is Gastech so important to Japan?

Answer: The global gas market has seen a big change in recent years since the shale gas revolution occurred in the U.S. Following the Paris Agreement in 2016, climate change issues are now coming to the forefront and the energy market is entering a grand transition period. As represented by the commencement of gas market liberalization in Japan, 2017 is already signaling the beginning of a change in the Asian energy market, so I believe it is an important period to fully explore the impact these changes will have toward the Asian and global energy market.

Under such circumstances, Gastech is a very important event that provides many key players from various sectors with opportunities to discuss the key trends and policies that will affect the gas market and industry.

Q: What does the future for gas and liquefied natural gas (LNG) look like in Japan?

A: Current long-term forecasts by the government show demand for natural gas will decline by 2050 due to a shift in the balance of energy consumption such as the gradual restart of nuclear power plants.

However, the nation's current nuclear situation won't be easily resolved, as we

have seen nuclear power coming back very slowly. Amid such circumstances and also by the global movement toward a green future supported by the Paris Agreement, I strongly believe LNG will continue to play a significant role in Japan's future.

Q: What impact could the development of battery and fuel cell technology have on the energy landscape? How can natural gas play a role?

A: Battery technology has witnessed developments primarily due to the introduction of renewables and electric vehicles (EVs). As increasing numbers of EVs are introduced to the market, it has become clear that they cannot be the only solution for automobiles. Developments in technology have led to electrification and this shift means that it's now more important than ever for fuel cells to be able to retain their energy reserves.

Renewables and natural gas need not compete for the affections of the consumer, the technologies can complement each other, meaning that natural gas can contribute to the overall success of renewables, battery and fuel cell technologies.

Q: Do gas and LNG have a major long-term role to play in a low-carbon global economy, or will renewable energy eventually supply all of our energy needs?

A: The generation of renewable energy has accelerated, but it leads to questions such as how the existing grid system will accom-

modate the influx and the reliability of the energy generation. While demand management and digitalization will support the grid system, natural gas will still have to be one of major sources of energy to accommodate the fluctuation of renewables. Even in the International Energy Agency's 450 parts per million scenario, natural gas remains a key source.

My belief is that oil will peak by 2050, and demand for natural gas will increase in the next two decades because of new markets and new sources of energy. Governments will shift away from the installation of new coal-fired power stations, as they will be very difficult to maintain both financially and politically.

Q: Could you give us an update into your key international gas and LNG projects?

A: The new American business model which separates supply, transport and liquefaction, is a significant shift away from the traditional integrated LNG projects. There seems to be multiple new LNG projects planned in the U.S., followed by some potential LNG projects in East Africa, Russia, Canada and Alaska.

In the past we participated in a number of upstream projects in Australia. Upstream investment provided us with a profit, but our minor share meant that we didn't have full control. U.S. LNG projects look different as we can liquefy our gas and transport it by ourselves. I believe our investments in the U.S. will give us a



lot of new opportunities in the upstream business.

Q: What are you hoping to achieve at Gastech 2017?

A: The Gastech conference and exhibition is the perfect communication platform for energy professionals and there are many opportunities to meet with the most important players in the energy market. Ultimately, we would like to achieve securing meetings with various key stakeholders in the market.

Q: Who are you most interested in meeting at Gastech?

A: As the conference will be attended by many players from various sectors, we are looking forward to meeting with as many people as possible from major companies and Asian utilities.

Market deregulation offers opportunities for LNG growth

YUJI KAKIMI
PRESIDENT, JERA CO., INC.

Question: Why is Gastech so important to Japan?

Answer: Japan started to import liquefied natural gas (LNG) in 1969. Since then, Japan has been the world's largest importer of LNG and is still playing a key role in the development of the LNG industry. Also, Japan is currently undertaking a far-reaching deregulation of both its gas and electricity markets. This could bring great challenges and possibilities for the future growth not only to Japanese companies, but also to all the participants in LNG industries. Therefore, I believe that it is an ideal opportunity for Japan to experience this prestigious international event to bring together the knowledge of various stakeholders in the industry to discuss the future of gas and LNG at this time.

Q: What does the future for gas and LNG look like in Japan?

A: Japan currently accounts for a third of the total LNG trading volume across the world. Deregulation of the gas and electricity markets, the restarting of nuclear power stations and the development of new coal-fired power stations, as well as the development of renewable energy sources, may have a massive effect on LNG demand in Japan.

To respond to these uncertainties, I think that increasing liquidity and securing transparency of prices will be more important than ever before.

Q: What impact could the development of battery and fuel cell technology have on the energy landscape? How can natural gas play a role?

A: Development of battery and fuel cell technology will give a great impact especially on energy demand for automobiles. Also, natural gas will play an important role as adjustment of frequent demand fluctuations of renewables. So I expect natural gas will play an important role in expanding batteries and fuel cells.

Q: Do gas and LNG have a major long-term role to play in a low-carbon global economy, or will renewable energies eventually supply all of our energy needs?

A: Yes, I think that gas and LNG will play a major long-term role in a low-carbon global economy. But to do so, the gas and LNG industry as a whole should overcome the weak point of LNG such as high prices and low liquidity compared to coal. Also, I think that renewables cannot supply all of our energy demands, so gas-fired thermal power generation will play a major role in adjusting the frequent supply fluctuation of renewables.



Q: Could you give us an update into your key international gas and LNG projects?

A: I think it is important to develop LNG projects at an appropriate time to meet the increased LNG demand in the future while overcoming the weakness of LNG especially the high prices and low liquidity.

JERA, as the world's biggest buyer of LNG, would like to support innovative LNG projects that are taking aggressive measures such as pass-breaking technologies in the field of production and transportation; and commercialization of the LNG market.

Q: What are you hoping to achieve at Gastech 2017?

A: Gastech offers a valuable opportunity for stakeholders of the gas and LNG industry from all over the world to convene in one place. As for JERA, we would like to hold many meetings to exchange information at all levels from management to staff engaged in the LNG business to update the situation surrounding the LNG business.

Q: Who are you most interested in meeting at Gastech?

A: Many stakeholders within the industry are gathering at Gastech, therefore, we think that Gastech is the perfect communication platform. We are interested in meeting with various industry players who have strong aspirations to make LNG rich in liquidity and strong in price competitiveness for the future growth of the industry.

This is the first time for JERA to set up our own booth at an international event since our establishment in April 2015. So, we will heartily welcome your visit to our booth.

Global Leading Engineering Partner

The TOYO Group companies work 24/7 to engineer the right solutions and ensure the success of client projects by utilizing their vast regional know-how and cutting-edge technologies.

TOYO ENGINEERING

Visit us at TOYO stand No. 15-130 GASTECH 2017

Gastech

Conference & Exhibition
Singapore | Singapore EXPO | 27 - 30 October 2015
28TH EDITION

Hosted by: BG GROUP

Industry professionals discuss the latest issues on natural gas at Gastech Singapore 2015. DMG EVENTS

Gastech Japan 2017

Chiba Prefecture boasts green parks, long history

MICHIRU MEKATA
SPECIAL TO THE JAPAN TIMES

Inhabited by people since the pre-historic era, Makuhashi is today a conference city that — thanks to its proximity to Tokyo — is highly regarded as a convenient site for holding various events and conferences. Makuhashi lies in Chiba Prefecture, which has a land area of 5,156 sq. kilometers and a population of just over 6 million.

Home to Narita International Airport, Japan's main aerial gateway to the world, Chiba is blessed by rich greenery and abundant marine resources. As such, the prefecture is keen to promote the image of a peninsula filled with greenery, and is working to develop ecotourism and agritourism by collaborating with the prefecture's farmers and fishermen. This new trend in tourism is designed to offer an unforgettable, impactful experience to visitors, and the prefecture very much looks forward to attracting well-traveled tourists who are searching for something different.

Apart from such a trend, there are many things to see and do in and around the Makuhashi area. Among them, probably the most popular has been — and still remains to be — Tokyo Disneyland and the adjacent Tokyo DisneySea. The former opened in April 1983, while the latter water-themed park opened in September 2001. Both men and women, young and old from around the globe, have loved the Tokyo Disney Resort as a whole over the years.

For those looking for bargains on brand-name goods, Mitsui Outlet Park Makuhashi is not to be missed. This large outlet mall houses many famous makers and brands that sell their products at attractive outlet prices. Currently boasting 135 stores, some of the popular brands at the outlet park include Coach, John Smedley, agnes b., kate spade, Tommy Hilfiger, Bally, Lanvin, Samsonite, Nike, Tumi, Cole Haan, Puma, Diane von Furstenberg, Fred Perry and Gap.

H.C. Andersen Park
Funabashi H.C. Andersen Park, meanwhile, is a facility ranked extremely highly by Trip Advisor. Filled with flowers and seasonal greenery, this park — named for Danish author Hans Christian

Andersen — allows both children and grown-ups alike to get out into the fresh air. They can experience pony rides, cuddle cute animals at a petting zoo, and try their hands at weaving, pottery and other creative activities. Eating there is also a delight, as there are stalls selling delicious gelato, Danish pastries and hamburgers, as well as a barbecue space for visitors to grill a meal to enjoy with the family. There is also a full-service restaurant available for a hearty sit-down meal.

Naritasan Shinshoji Temple
Of final mention are Naritasan Shinshoji Temple and the surrounding areas. Looking back on the history of Japan over 1,000 years ago, the 10th century was a time when Taira no Masakado rebelled against the Imperial family. He started a civil war in 939, announcing that he himself was the *shinno* (new emperor). Emperor Suzaku in Kyoto ordered the highest-ranking priest, Kancho, to do something about the situation. Kancho set sail from Osaka together with a holy statue of Acala the wisdom king, until finally arriving at the Boso Peninsula in what is today Chiba Prefecture.

Lighting a holy fire and praying for a cease-fire, Kancho was believed to defeat Masakado on his 21st, and final, day of prayer. Upon restoring peace in the Kanto area and Chiba, Kancho prepared to go back to Kyoto together with his Acala statue. Before he could do so, Kancho heard Acala's oracle and found the figure immovable, and established the Naritasan Shinshoji Temple in its current location. All of these events took place toward the end of the first millennium.

Since then, the temple has been worshipped by many leaders and notable figures of the times, including Minamoto no Yoritomo and kabuki actor Ichikawa Danjuro. Fast-forward to 2017, the 12th Ichikawa Danjuro maintains belief in Naritasan Shinshoji Temple, and bears the name of Narita-ya for his kabuki performances.

Among the majestic buildings of the temple, several have been designated important cultural assets. This includes the 25-meter high Sanju no To (three-story pagoda) that was built in 1712. Decorated with 16 arhat saint carvings, this tower is unique for incorporating

rafters carved out of a single timber. Another important cultural asset is Shakado. Built in 1858 from zelkova trees, Shakado was originally the main building of this temple. It enshrines the statue of Buddha and the four Bodhisattvas, and retains the architectural form of the late Edo era.

The much older Komyodo, also an important cultural asset, was built in 1701. With a cave hidden behind it that is seldom open to the public, this is a rare and valuable building from the mid-Edo era. Gakudo, constructed in 1861 and restored in 1986, is another important cultural asset, still retains the eye-catching *ema* votive picture tablets incorporating intricate etching motifs that were offered by Buddhists well over a century ago.

Naritasan Koen is the well-kept park area of the temple. Measuring a vast land area of 165,000 sq. meters, the landscape is dotted by stone monuments engraved with the poetry of such haiku masters as Matsuo Basho and Takahama Kyoshi. Together with a waterfall and three ponds, this park is filled with seasonal flowers, including plums, cherry blossoms, wisteria and chrysanthemums, as well as the red and gold changing leaves in autumn. During the festival season, tea ceremonies are held under the blooming flowers or the changing colors of the tree leaves, and tea is offered free of charge to visitors.

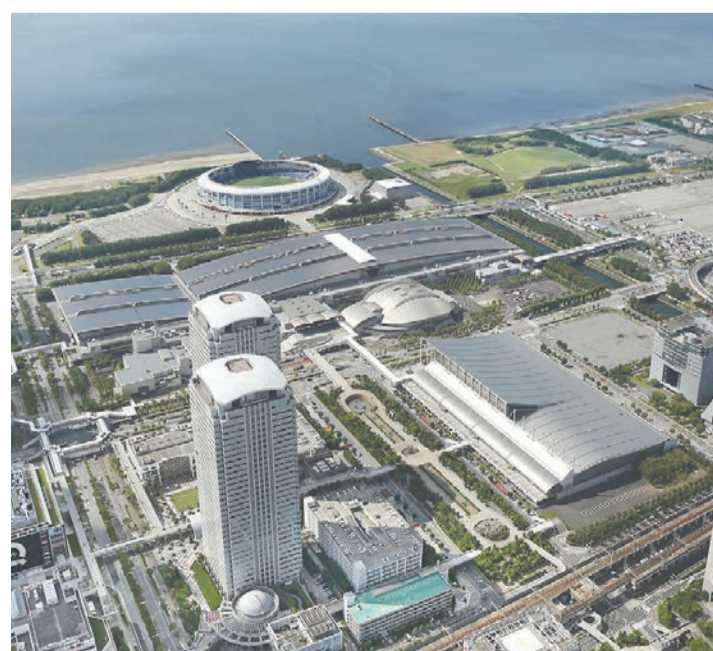
Another delight of visiting the vicinity is the Naritasan Omotesando main road of worship that leads right up to the temple. Stalls of all kinds line both sides of the road, selling lucky charms and small items that make ideal souvenirs.

Additionally, the delicious smell of char-grilled sweet soy sauce wafts from the 20 or so *unagi* (eel) restaurants, the temple's specialty. According to the locals, the key to choosing the right dining spot is to go for a long-established eatery where the eel is grilled in front of customers.

For those with a sweet tooth, picking up a block of *yokan* red bean jelly is the way to go. According to those in the know, the most famous yokan confectioners in the neighborhood are Yoneya and Yanagiya. Both go back more than a century, and the yokan blocks make perfect gifts that go well with green tea.



Top: Naritasan Shinshoji Temple has been worshipped by many leaders throughout Japanese history. Above left: The Sanju no To pagoda at the temple has been designated an important cultural asset. Above right: The Narita Taiko festival attracts many visitors. CHIBA PREFECTURAL TOURISM & LOCAL PRODUCTS ASSOCIATION



Clockwise from top left: Tulips in full spring bloom in Funabashi H.C. Andersen Park; The park offers greenery, animals, athletic facilities and creative activities; Makuhashi Messe is the venue for Gastech Japan 2017; Narita International Airport is Japan's main aerial gateway to the world. CHIBA PREFECTURAL TOURISM & LOCAL PRODUCTS ASSOCIATION / MAKUHARI MESSE, INC. / NARITA INTERNATIONAL AIRPORT CORPORATION

The Japan Times has been the go-to source for news about Japan since 1897.



Now we come to you, wherever you are.

Visit us at www.japantimes.co.jp on your computer, tablet or smartphone

- Free registration for up to 10 stories per month and daily news updates
- \$9 (¥900) for 80 stories per month • \$30 (¥3,000) per month for unlimited access

120
the japan times
SINCE 1897

For further information see jtimes.jp/dsub

Inquiries: +81-3-3453-4350 Email: jtsales@japantimes.co.jp
The Japan Times Customer Service Desk

Gastech Japan 2017

Unlocking LNG's potential

A global network of professional firms offering audit, tax and advisory services, KPMG member companies have successfully supported clients in handling business issues and major risks in the oil and gas sectors. The following is an excerpt of discussions on liquefied natural gas (LNG) and its future prospects by energy experts at KPMG Japan moderated by The Japan Times, prior to Gastech Japan 2017. Mina Sekiguchi, head of energy and infrastructure Japan, Tsuneo Miyamoto, head of oil and gas, and Shuji Miyasaka, head of power and utilities, participated.

Question: Tell us briefly the current situation regarding the overall energy demand in the world.

Miyamoto: Demand for energy has been steadily growing, especially in developing nations, including China, India and those in Southeast Asia.

Q: Electricity is created by thermal, hydro, nuclear power or renewable energy. Do you see any effects on power production sources due to the Paris Agreement on climate change?

Sekiguchi: Signatories are required not to emit carbon dioxide in the future, prompting them to use fuels free of CO2 emissions. The amount of CO2 released when generating power by burning natural gas is less than that produced by burning oil. This is expected to increase the commitment to natural gas.

Miyamoto: We have seen diversification in providers of natural gas. Providers used to be disproportionately located in the Middle East and Russia; but now Australia, North America and others have joined them.

Q: Oil prices have fallen since November 2014; has this influenced the supply and demand of natural gas?

Sekiguchi: The price of gas is linked to that of oil. Thus, a drop in the latter leads to a drop in the former, resulting in wider use of natural gas.

Q: So natural gas has become increas-

ingly available. Global LNG demand is expected to rise to 500 million tons per year (Mtpa) in 2025, up from the previously forecast 238 Mtpa in 2014, according to the BG Group. What are some of the issues surrounding further usage?

Miyamoto: To further increase the demand for natural gas, the construction of gas receiving terminals and regasification infrastructure is essential. However, construction has not yet been facilitated in many ASEAN countries, which are expected to log increasing demand. Such LNG infrastructure is necessary to store and regasify it for distribution to inland users via pipelines.

Sekiguchi: There is "pipeline gas" and LNG. The gas itself is the same, but there is a completely different supply chain. Because countries like Japan and South Korea have to import gas via vessels, the gas needs to be liquefied, the process and facilities of which contribute to the overall higher cost compared with pipeline gas. Major oil players have started focusing more on their gas business since oil prices dropped. Today one of their strategic focuses is to create new demand, which may require investment in infrastructure in ASEAN countries. One of the noteworthy topics at Gastech is how to create the supply chain to deliver LNG to countries like Indonesia, which faces growing demand.

Miyamoto: Due to the higher cost, construction of LNG infrastructure is essentially not viable without securing long-term commitment from buyers, generally for a period of 20 years. However, due to the increase in supply, today we are increasingly seeing projects with uncontracted sales volumes.

Sekiguchi: It generally takes a long time to complete LNG terminals and it can sometimes be close to 10 years before the first shipment. This time lag can work favorably or unfavorably for producers and buyers in different ways. During this period, changes happen both in demand and supply, as well as in pricing. Some mega-sized projects in Western Australia have been completed in 2016 or are expected to be completed within a couple of years. Due to the change in the surround-

ing environment such as availability of labor, equipment and materials, many suffered from cost overruns or delays. Now because of lower oil prices, the spot price of gas stays low, too. The situation doesn't encourage further investment into LNG infrastructure. Looking at the long-term future of gas, this is not a good sign. Without further investment into more LNG projects, we expect that within 20 years, we will have shortage of gas. For gas to play an important role as a greener, affordable and stable fuel, all the major players, regardless of whether they are sellers, buyers or traders, need to collaborate to develop a truly global LNG market.

Q: What role can Japan play in the face of an increasingly changing LNG market?

Miyamoto: In short, Japan is the biggest buyer in the world of LNG. The country imports around 80 to 90 million tons annually, about one-third of all LNG produced in the world. Thus, Japan has very strong bargaining power in the global LNG sector. Among others, Jera Co., a joint venture between Tokyo Electric Power Co.'s Fuel & Power, Inc. and Chubu Electric Power Co., purchase about 40 million tons per year. In other words, this joint venture alone purchases about 16 percent of total gas traded globally. I believe Japan, leveraging its strong bargaining power, is in the position to play a leading role to advance the LNG market. For instance, using its historical expertise in shipbuilding, Japan could contribute to design and construct vessels that will be fueled by gas instead of conventional oil. Using gas instead of oil on vessels could contribute to huge reductions in CO2 emissions.

Q: What is the current situation surrounding the Japanese energy market?

Miyasaka: Following the 2011 Great East Japan Earthquake, the country's electricity market was liberalized in April 2016, as was the gas utilities market this April, enabling customers to choose their power and gas providers. A truly competitive market is evolving after a long history of regulated tar-



Shuji Miyasaka



Mina Sekiguchi



Tsuneo Miyamoto

iffs that allowed utilities to recover their costs in full. To date, the top priority for Japanese utilities has been stable and reliable supply without power interruption regardless of cost. With the market liberalization, for the first time in history, Japanese utilities are forced to also become conscious of cost optimization. Before market liberalization, utilities' customers had no options with respect to their power or gas providers. Now they can buy from providers of their choice, meaning utilities need to provide more value and ensure customer satisfaction. Among other conditions, price is one of the most important factors. Accordingly, utilities need more flexibility around the conditions of fuel purchase. They used to buy gas on long-term contracts with prices linked to an oil index and with destination clauses that prohibited buyers from reselling to third parties. Recently their purchases include a portion of shorter-term contracts, as well as buying from the spot market. In short, from utilities' standpoints, both the market they purchase gas from and the market they sell power to have become volatile. In this new environment, what is required for utilities now and for the future is understanding how to optimize the commercial assets they own.

Q: What is expected to happen to Japan's future energy supply?

Miyasaka: The Ministry of Economy, Trade and Industry in 2015 announced the energy supply plan for the 2030 fiscal year. According to the plan, coal, LNG, nuclear power and

renewable energy will each occupy roughly a quarter of the power source mix. However, whether or not the nuclear reactors restart or when, remains uncertain. If the restarts are delayed, it is possible that closer to 50 percent of total power will need to be produced by way of gas-fired power plants.

Sekiguchi: As of today, it is predicted that Japan will have more LNG than demand through 2040 even without restarting nuclear reactors. Once the nuclear reactors restart, the situation of oversupply would be accelerated. Japanese utilities need to secure agility in LNG trading to manage this uncertainty. This can only be done through constructing their ideal (gas) asset portfolio with a variety of terms, including long, short and spot, as well as through timely managing of the portfolio.

Q: So, flexibility in procuring LNG would further increase?

Miyasaka: Yes. One thing that allows utilities to secure agility is having various lengths of contracts with different pricing mechanisms. Then utilities can choose the optimal approach to realizing revenue from their assets, for example, either use the gas as a fuel to produce power to be sold, sell the gas to a third party, or even sell it in the highly fluid market. It is worth noting that there is no LNG commodity market in Asia as of today. However, there is increasing demand and discussion within the industry for the necessity of such a commodity market for several reasons.

Q: Are Japanese players engaging in establishing or improving trading practices for the future?

Miyamoto: Jera acquired the coal business of EDF Trading from EDF in France. Additionally, Mitsubishi Corp. took a majority stake in an Irish energy trading company. Japanese players lag behind foreign companies in the field of trading, so they need to make forays into this area.

Miyasaka: For Japanese utilities, trading is quite a new area, but it is becoming increasingly important, as it is the core skill. It is no wonder that we see those M&A activities by Japanese companies.

Q: What do you expect from Gastech?

Miyamoto: It is so fortunate that we can be a part of this history-making discussion among major LNG players in the world at Gastech Japan.

Sekiguchi: We are standing on the threshold of ensuring the basis is properly formed for the long-term future of LNG. All the major players in the LNG global industry have to collaborate to resolve some short-term challenges to make LNG a green, sustainable and affordable fuel for the future. Among them, Japan has a significant role to play. I truly hope that Japanese players act not only based on what they want as private companies, but also on what is needed now to shape the ideal global LNG industry for tomorrow.

KPMG is a platinum sponsor for Gastech Japan 2017.

Trust builds the future.

Have a partner at your side to overcome challenges?

This is an era when a bold change in mindset is required. Looking one step ahead, KPMG will offer relevant viewpoints and deep knowledge in the fields of audit, tax and advisory. We continue supporting companies who challenge to transform. Foreseeing the future, we tackle everything we can do now.

Anticipate tomorrow. Deliver today.



KPMG Japan

KPMG AZSA LLC KPMG Tax Corporation KPMG Consulting KPMG FAS
KPMG AZSA Sustainability KPMG Healthcare Japan
kpmg.com/jp