



G7 presidency offers Japan springboard to strengthen its role in global affairs

At the end of May, Japan hosted the annual G7 Summit in Ise-Shima against a highly fragile global backdrop, taking over the presidency of the group at a very uncertain moment for the world economy

As it works to strengthen its position in the international economy, Japan is prepared to take the lead on a number of the world's greatest challenges, from the economy to climate change and public health.

The country's own long-term economic problems led to the adoption of 'Abenomics', Prime Minister Shinzo Abe's three-pronged strategy based on monetary, fiscal and structural reforms, in December 2012. Concluding the two-day Summit, Mr. Abe called on G7 leaders to coordinate an Abenomics-style approach to address the global economic challenges, declaring that, "Abenomics must go worldwide."

"With the global economy still struggling to gain traction, investors are increasingly expecting a policy response that involves greater fiscal action, not just monetary easing. Japan looks poised to lead by example," writes Izumi Devalier, a Japan economist at HSBC Holdings in Hong Kong.

In a joint declaration, G7 leaders announced their commitment

to expanding free and fair trade, through the implementation of free trade agreements such as the Transatlantic Trade and Investment Partnership, the Trans-Pacific Partnership, and the Japan-EU Economic Partnership Agreement. Free and fair economic zones, Mr. Abe said, would enable "everyone, including women, to fulfill their potential".

Leaders also pledged to invest more in infrastructure, as a means "to support the growth of developing countries and to raise demand worldwide," said Mr. Abe, who added that, "Japan will be on the frontline to take actions in order to contribute to the global economy." At an event shortly after the G7 Summit, the Prime Minister announced that Japan would take the lead by investing \$200 billion in infrastructure around the world over the next five years.

Aside from the global economic challenges, the G7 delegates discussed issues such as the refugee crisis, terrorism, women's rights, corruption, global health and climate change.

In line with the Ise-Shima Vision for Global Health, the G7 will promote Universal Health Coverage (UHC) as well as take stronger leadership in reinforcing response to public health emergencies and antimicrobial resistance. Particular emphasis will be put on research and development (R&D) and innovation to advance global health, an area in which Japan is already pioneering, with Japanese biomedical companies conducting R&D in fields such as gene and cell therapy to fight disease.

The issue of global warming had particular pertinence at the Summit this year following the signing of the Paris Agreement on climate change at the COP21 Summit in December. G7 leaders reaffirmed their pledge to tackle climate change, by supporting innovation in green energy technologies and encouraging clean energy and energy efficiency.

From hybrid cars to solar energy, green technology is another area in which innovative Japanese companies have put themselves at the forefront. "I fully agree with the fact that the G7 has the environment as one of their main topics," says Yasumasa Emori, President of Nicca Chemical Co. "I think the strength of Japanese companies is what we have catered to, and we have moved with the demand of society. Japanese companies

have worked to find solutions whenever there are problems."

A major problem for Japanese firms themselves has been the dwindling domestic market. This is why an increasing number of them are looking to gain a stronger foothold on the global market. And by the time it hosts the G7 Summit again in 2024, Japan expects to have a much greater influence on the international economy, and its innovative companies to be on the frontline of global challenges such as climate change, public health and food security.

But before the G7 Summit in 2024, Japan will host the Rugby World Cup in 2019 and the Olympics in 2020. These major events should help to further boost its inbound tourism numbers, which reached a record 20 million last year.

"Tourism is very much a pillar of Abenomics," says Osamu Shinobe, President and CEO of All Nippon Airways.

"Three years ago, Japan was thinking about celebrating itself for achieving 10 million inbound tourists. Now we've reached 20 million. So to support Abenomics' tourism pillar we need to enrich our infrastructure to entertain tourists from abroad so we can increase inbound passengers by having major events as a trigger, such as the Olympics and Paralympic games in 2020, and Rugby World Cup in 2019."

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Asia's new business centre expands its wings to bridge East and West

As Japan bids to become the gateway to Asia and a new global business hub, it is expanding its aviation infrastructure to deal with rising demand

Go to an ATM in any city in Japan and there is a good chance your bank card will not be accepted. This is because the majority of Japan's 190,000 ATMs were not built to be compatible with foreign technologies. It is a prime example of 'Galapagos Syndrome', a term of Japanese origin which refers to an isolated development branch of a globally available product.

The term 'Galapagosization' has also been used to refer to Japanese companies and their relative isolation from the rest of the world, which has affected their ability to compete on world markets.

But after years of isolation, the island nation is breaking free from 'Galapagosization' and opening up to a more globalized world. An increasing number of Japanese companies have shifted attention from the domestic to the world market, and have adapted their mind set in order to do so. As a result, Japanese firms' foreign investments and profits from overseas operations have grown significantly. Japanese investment in the Southeast Asian region alone has almost tripled from five years ago to 20.1 trillion yen (\$192.5 billion) at the end of last year.

Meanwhile, banks aim to increase the number of cash points compatible with foreign bank cards from 48,000 in 2015 to 80,000 by 2020 – the year that Tokyo will host the Olympics – as the country tries to rid itself of Galapagos Syndrome.

New global business hub

At the same time that Japan Inc. expands investment abroad, Japan is opening up to more foreign investors.

By 2020, the Prime Minister Shinzo Abe aims to double Japan's inward foreign investment to 35 trillion yen (\$335 billion), and to do so, Japan is promoting itself as the gateway to Asia and a new global business hub. Six designated special economic zones have been created that will adopt looser regulation for foreign investors. Tokyo will be a zone for international business; Kansai an area for medical inno-

vation; Niigata in northern Japan and Yabu in central Japan were designated as agricultural zones; Fukuoka was made a special labor zone; while Okinawa will become a zone for international tourism.

Japan expects its bid to become a business hub to be boosted by free trade agreements like the Trans-Pacific Partnership (TPP), which was signed by 12 member nations, including the U.S. and Japan, back in February.

Once it is ratified, the TPP could help to attract more multinationals to Japan. The government aims to bring at least 470 foreign companies to the country by fiscal 2018, under a TPP-related policy plan created last November.

Opening the skies

If Japan is to become a global business hub and reach its goal of 40 million tourists by 2020, expanding its aviation infrastructure is a prerequisite to cope with the growing demand. And the process is already underway.

Osaka's two airports will soon be privatized and expanded to handle more international traffic. Haneda Airport in Tokyo wants to compete with other hub airports elsewhere in Asia by increasing its international flight capacity, following the opening of a new terminal in 2014. A third terminal at Tokyo's other main airport, Narita, is also in the pipeline.

Osamu Shinobe, President and CEO of All Nippon Airways (ANA), Japan's largest carrier and the only Japanese airline to have a five-star rating from Skytrax, says the company has already begun preparations to deal with the increase in international traffic at its operating base, Haneda. "We can increase the volume of our international business. This is in line with the opening of Haneda to international business," he says.

"Narita is also the important part of the metropolitan airport capacity program. Narita and Haneda both expect to increase their airport capacity by 2020. As we are working towards

a new mid-term business plan that will run until fiscal year 2020, we will also focus on international business for our growth. We plan to increase international revenue capacity by 40% over the next four years."

ANA is already expanding its services to North and Central America. In May, the airline was given two new U.S. slots at Haneda, as part of a U.S.-Japan aviation agreement signed in February that will see the number of flights connecting Haneda to the United States rise from eight to 12. ANA will launch direct flights from Haneda to New York and Chicago in October, which will join its existing routes from Tokyo to Los Angeles, Honolulu and Vancouver. A daily non-stop service from Narita to Mexico City is due to launch in February 2017.

ANA is also expanding its wings in the Southeast Asia region. It will launch a direct route to Cambodia and ANA's parent company, ANA Holdings Inc., recently bought an 8.8% share in Vietnamese flag carrier Vietnam Airlines, following the lead of other major Japanese firms buying up stakes in international businesses as they bid to go global.

The Mitsubishi Regional Jet (MRJ), which made its first successful test flight in November last year, is the first airliner designed and produced in Japan since the 1960s. Once deliveries of the MRJs start in 2018, ANA will be one of the first customers to receive its order, as the airline aims to strengthen its domestic services.

"We are trying to merge our international network with our domestic network so that passengers can go to all corners of Japan," adds Mr. Shinobe.

Hiromichi Morimoto, President of Mitsubishi Aircraft Corporation, says the MRJ has been a joint U.S.-Japan project.

"It is being made in Japan and is going to have a 'Made in Japan' label on it. But it is substantially a jointly developed project in the sense that we work with a number of U.S. companies for the core components.

"Of our 407 orders, 340 are from the U.S.; so 80% of our orders are essentially from the U.S. The bulk of the aircraft that we deliver will probably be flying over U.S. skies."



"We expanded our international network to have a thicker channel for non-Japanese passengers to fly into, or via, Japan, and that is also our growth strategy"

Osamu Shinobe,
President and CEO,
All Nippon Airways

"The Mitsubishi Regional Jet is being made in Japan and is going to have a 'Made in Japan' label on it. But it is substantially a jointly developed project in the sense that we work with a number of U.S. companies for the core components"

Hiromichi Morimoto, President,
Mitsubishi Aircraft Corporation



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Japanese companies offer innovative solutions to tomorrow's problems

While the government is busy trying to deal with the current economic problems, the private sector is already a step ahead, planning after 2030 and taking concrete actions to find sustainable solutions for the next generation

Japanese companies are taking a long view, looking two or even three decades ahead for products and strategies that will put them at the frontline in tackling global challenges.

As well as responding to the rapidly growing challenges of climate change, they are also drawing on Japan's own experience in dealing with an aging and shrinking population, problems that many other countries are going to face 20 or 30 years out.

In doing so, they are anticipating future needs, by pioneering new healthcare services to cope with changes in the social environment and breaking ground in, among other sectors, biotechnology, crop engineering, energy efficiency and construction.

Underpinning this drive by companies to innovate, to draw on domestic experience and

look to international markets, is Japan's difficult business climate – Prime Minister Shinzo Abe's government is struggling to revive an economy stagnant for decades and to re-energize its mostly inwards-looking society.

"The Japanese economy had difficulties with low growth for many years, but it doesn't mean Japanese companies lost their power. We will continue to create new value, meeting the needs of society with our cutting-edge technologies," says Fujifilm Chairman and CEO, Shigetaka Komori.

Other industry leaders agree, with some stressing the need to look abroad.

"We must consider international consumption as well as domestic. It makes sense, but is also a very big change. Probably it will take some time to shift and become global, but I think it is the right direction," says Hiroshi Sakata, President of Sakata Seed Corporation, whose company focuses on developing improved varieties of food plants.

An aging population

Japanese companies know about the problems, and opportunities, thrown up by a combination of its aging society and population decline, issues already well over the horizon in a number of other countries.

Japan is growing older faster than anywhere else, with one-third of its population now aged 60 or over. And plenty of others are shuffling along behind it, particularly but not only in Europe. Countries such as South Korea, China, Singapore and Taiwan are experiencing a rapid workforce growth and falling birth rates, similar demographics to those seen in Japan in the 1960s to 1980s.

A 2015 United Nations study "World Population Ag-

ing" predicted that between 2015 and 2030, the number of people worldwide aged 60 years or over will grow by 56 per cent, to 1.4 billion. And by 2050, this group will more than double its 2015 size, reaching nearly 2.1 billion.

Globally, there were seven people aged 20-64 years for each person of 65 or older last year. By 2050, there will be only 3.5 working-aged people for each older person, the U.N. report said.

Japan's population is likely to collapse unless offset by large-scale immigration, a highly emotive issue there and in many countries. One century ago Japan had about 40 million people. It took 100 years to



"We want kindness to be our strength. Business cannot be executed without toughness because mental toughness is required in developing business overseas. At the same time, we believe that we have no right to provide human care service without kindness"

Akihiko Terada

Chairman, President and CEO,
Nichii Gakkan



"I think the global leaders should all recognize the crucial role that the seed industry is playing, and should discuss its growth in a strategic context of global economy and human welfare"

Hiroshi Sakata,
President, Sakata Seed
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rise to 120 million and within 100 years it could be back to 40 million.

"Labour shortages...are going to be our biggest problem in the next ten years," says Yasunobu Ueno, President of Asunaro Aoki Construction Co.

Japan's building sector is heavily reliant on older workers who will be retiring over the next decade, cutting the workforce by one third, he says. With insufficient young people to fill the gap, sophisticated technology, like the use of ICT and robotics in building, an area his company specializes in, will be needed.

The company is also developing ways to reinforce buildings to better withstand earthquakes, technology that could be exported to help other countries that also face the regular threat of earthquakes.

Another Japanese company adapting to aging is health-care and education services provider Nichii Gakkan, which runs networks of residential

facilities for the elderly, and provides training and ancillary services.

"What I want to emphasize is the need for workers in the labor force, especially in the sector of long-term elderly care. In 2017 we will still be lacking 120,000 people working in this sector, while in 2025 we are going to need 380,000 people," says Nichii Gakkan Chairman, President and CEO Akihiko Terada.

Opportunities in many parts of the world in the future to companies providing these sorts of services are enormous, given demographic trends, he argues, and part of the solution lies in the hands of older people, and in training.

"Seventy per cent of those over 65 (in Japan) are considered healthy. We need to think about how to provide work for these people. Our company provides age care facilities nationwide, and in the communities around these facilities there are healthy, elderly people who are

willing to work. We would like to employ them," says Mr. Terada.

Most Japanese companies operating abroad are manufacturers, he says, adding: "So far there has not been a company that has succeeded abroad in the human-service sector."

Nichii Gakkan had selected China for its first stage of international expansion that later will target the U.S. and South East Asia because "we wanted to try the most difficult region in order to be more flexible and capable in the future. Out of all the areas I could think of, China was the most difficult country."

"However, in order to expand business...we need to provide vocational education rooted in the community of each area," says Mr. Terada.

Biotechnology and chemical engineering

Japanese companies have long been among the front-runners in biotechnology, with Scientific American Worldview Report repeatedly giving them strong scores in patents held, as well as for overall innovation.

Japan's government is supportive, seeing biotechnology as a key driver of future economic growth. It provides some financial assistance for this, as well as supporting both domestic initiatives and global tie-ups.

"This is the first time, under the Abe administration, that they are actually incorporating words like regenerative medicine, gene therapy, and cell therapy into their policies," says Koichi Nakao, President of Takara Bio Inc., a company recently ranked by *Fortune* magazine as one of the world's top-five biotech stocks.

One of the hot issues at the G7 Summit in May was the spread globally of superbugs resistant to all known antibiotics, and worries that the world is entering a post-antibiotic age where even the most common infections are untreatable.

"If we do nothing about this there will be a cumulative hit to the world economy of \$100 trillion, and it is potentially the end of modern medicine as

"Gene therapy is a very important innovative technology because it affects human lifestyle and our biological life in many different ways. We definitely plan to continue to make a contribution to human health"

Koichi Nakao, President,
Takara Bio Inc.

we know it," U.K. Prime Minister David Cameron said at the Summit.

Mr. Nakao's company appreciates the urgency of developing new therapies and medicines, in his company's case, by manipulating cells.

It already exports reagents for use in scientific research from its facilities in China, and recently started manufacturing in India. In line with Takara Bio's look-ahead strategy, it has also acquired California-based Clontech, giving the company greater expertise in gene discovery.

"We are working to address medical needs that have not been fulfilled. We are coming with treatments that are going to affect human health and welfare," says Mr. Nakao.

"When we are working with gene therapy, we are not working for short-term profit. We do it to make treatments available to patients who cannot be cured by present treatments."

Future needs for sophisticated and innovative technologies is motivating a Japanese chemical company looking abroad for success.

"We would like to be the number one in textile chemicals in Asia, but not in terms of quantity," says Yasumasa Emori, President of Nicca Chemical Co., which operates in sectors ranging from fiber, metal and cleaning to cosmetics.

"If the customer has problems, I want them to think of Nicca as the first company to call for help... if they want to design something new or very innovative.



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"The Chinese government is already recognizing the bad impact of coal-fired boilers, and is now trying to switch to gas-fired boilers. This is a big opportunity for us and as soon as the shift occurs, we want to be there ready to provide for their needs"

Daisuke Miyauchi,
President and CEO, Miura Co.

"We want to tailor our products to our customers, and create a total solution for their needs. That is what we are aiming to do.

"Our products will go to countries around the world. Not only Japan or Asia, but also to Africa, Europe, and the U.S."

Climate Change

Japan has long been associated with international coordination to combat climate change, most notably as the host for the 1997 Kyoto Protocol.

It is also home of the Innovation for Cool Earth Forum (ICEF), whose third annual meeting will be held in October. It was launched by Mr. Abe in 2014 to provide a platform for discussion and cooperation between industry, academia and policymakers to see how innovations in energy and environmental technologies can produce climate change solutions.

The world's agricultural outlook is being transformed by shifting long-term weather patterns, as well as urbanization, presenting a raft of possibilities for far-seeing companies.

One consequence of the steady rise of Earth's temperature as greenhouse gases accumulate and trap more and more heat is desertification and reduced food output in some regions, and a need to plant more hardy crops.

Each of the first five months of 2016 were the warmest on record, according to data from the U.S. National Oceanic and Atmospheric Administration.

Adapting to changes in weather and temperature may involve frequent shifts in crop and seed selection, an area in which Japanese companies are trying to find solutions.

Well established in the search for new and more nutritious types of crops and seeds is Sakata Seed Corporation.

"We estimate the world-wide value of vegetable seeds' wholesale market at 5.0-5.5 billion dollars. Every year, this demand is expanding because of population increases, and a shift away from the use of open-pollinated varieties of seeds to higher-value hybrid varieties," says Mr. Sakata.

"We contribute to the betterment of life and culture of the people around the world with value created through our innovative vegetable and flower varieties," he adds.

Opportunities to be harvested are huge, he believes, citing Sakata Seed America division's efforts to develop products in so-called wet, or fruit crop seed, like tomato, cucumber, watermelon, melon and squash.

Seed companies keep trying to breed highly-adaptable varieties that can withstand diverse weather conditions, but there's a limitation if there are extreme climate events, he notes.

Apart from agricultural solutions to climate change, Japan is well placed to export renewable and energy-efficiency technologies that can reduce greenhouse gas emissions.

Japan's energy use per unit of GDP is currently about 30 percent less than the average of other G7 nations, making it one of the top performers globally, and it is targeting a further 35 percent improvement in energy efficiency by 2030.

While car manufacturers like Toyota are well known for introducing environmentally friendly hybrid cars to the mass market, there are other lesser known Japanese companies developing green technologies that help companies and homeowners to make huge savings on their energy bills, as well as to reduce their carbon footprint.

Miura Co. makes high-efficiency industrial boilers that use up to 15% less energy than standard boilers.

These boilers are widely used in hospitals, schools, homes, shopping centers and industrial plants throughout Japan, but the company would like their products to be widely used around world, particularly to the U.S., where standard boilers are still commonplace, according to President and CEO, Daisuke Miyauchi.

"The configuration of our boilers is totally different from others; it is truly unique. This configuration is what helps us to save energy," says Mr. Miyauchi, who believes this kind of innovative green technology bearing the "Made in Japan" tag is a source of pride that gives Japanese companies a competitive advantage in the international market.

Mr. Miyauchi also wants to support China in its efforts to shift from coal to gas-fired boilers. "This is a big opportu-

nity for us and as soon as the shift occurs, we want to be there ready to provide for their needs," he explains.

This focus on innovative technology designed to meet future needs could, some argue, help Japan replicate successes of the past made by cutting-edge companies like Sony, Toshiba and Honda.

"We would really like the world to see that after the two lost decades and disasters, we have come back," says Asunaro Aoki Construction Co. President Mr. Ueno.

"We are focusing on buildings like public structures and apartment buildings, and reinforcing them to better withstand earthquakes"

Yasunobu Ueno, President,
Asunaro Aoki Construction Co.

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DMM.com leads Japan Inc.'s innovation drive

If there is any business that typifies the new forward-thinking, outward-looking mindset of Japan Inc., it is DMM.com

Founded by Keishi Kameyama in 1999, DMM.com began as an online entertainment provider, but has since diversified into a wide range of high-tech businesses, including online retail, robotics, online English-language learning, 3D printing services, cloud sourcing services, virtual reality theaters, solar panels and online financial services.

"At the very beginning we started with video rentals, and went from there to DVD sales," recalls Mr. Kameyama, who is also the company's Chairman. "We saw the writing on the wall, and thought that video rentals were at some point going to disappear. We moved to other things online."

Mr. Kameyama and DMM.com's success has stemmed in part from his willingness to take risks and try his hand at anything he believes can be profitable. "Essentially, we have been following the trends, and picking up what we thought would be popular or is becoming popular with the Internet. We do not have any hangups in terms of business sectors."

Having lost out to the likes of the U.S., Europe and South Korea in recent years, Japan has been trying to rediscover its innovative edge. DMM.com has been at the forefront of this innovation drive since it launched in 2014 its business incubator,

DMM.make Akiba, which helps budding Japanese inventors and entrepreneurs develop and commercialize their ideas.

This \$9.5 million, state-of-the-art facility in Tokyo has more than 150 machines for hardware production, such as 3D printers, testing devices for acquiring public certification for electric appliances, and platforms for mass production. By paying a small monthly fee, members of the incubator can also receive guidance on how to start and develop a business. Some of the innovative products that have been developed in the DMM.make incubator include a prosthetic robotic arm for amputees, and FOVE, the world's first virtual reality headset with intuitive eye tracking.

"DMM.make is basically a high-end workshop for people to develop and innovate," Mr. Kameyama explains.

"We want to facilitate the younger people to create something new, noble, and innovative. Through our format, we turn young motivated people into the protagonists, give them power to make something new, and we are going to augment their weak points by funding them. We are going to help them with the legal side, the logistics of shipping, the sales channel and then things such as patents."

"They are going to facilitate connections with venture capitalists to secure capital. Once capital is secured, they are looking to make money through mass productions by facilitating mass production locations such as China, and pioneer sales channels in the U.S., India, and Dubai."

Products developed at the incubator are also sold online at the DMM.make store, giving members direct access to customers around the world. Some of the products sold on the online store include aluminum water and dust-proof LEDs, smartphone parts and accessories, a four-wheel carry-on suitcase with mobile batteries, and a 10-watt Bluetooth speaker.

DMM.Africa Project

While it is helping startups to take their products worldwide through its incubator, DMM.com itself, like

many other Japanese companies, is shifting its focus from the domestic to the global market, and in particular untapped markets like the countries in Africa.

Launched in September 2015, the DMM.Africa project aims to support governments and private companies in African countries by providing them with Japanese high-tech solutions, and Mr. Kameyama hopes it will become one of the pillars of the DMM.com business. The company plans to recruit a globalized team to lead its intelligence-gathering mission, to look for new business ventures and opportunities on the continent, across a range of sectors.

For the risk-taking DMM.com boss, this African venture is a case of "throwing things at the wall to see what sticks."

"We are sending people to seek different market opportunities. They will be gone for two or three months. They can do logistics, construction, or agriculture, but the idea is to do something new. There is no specific mission," he explains.

"Once something sticks or gains traction, then we will allocate a budget. We will dedicate staff to the project. The U.S. is more of a mature market however. This Africa initiative, just like DMM.make, will be in the red for probably five years. If this can be something profitable then it can become the core of the business."

DMM.com also hopes to introduce and commercialize in Africa some of the innovative products developed at its Tokyo incubator. Earlier this year it held a 'DMM.make Akiba' exhibition for African diplomats in Japan. The high-tech products showcased at the event were well received by the attendees, one of whom commented on their "potential for various kinds of business development, and perhaps for the future of the African market".

Entering the African market is a pioneering move for a Japanese firm. Being one of the first companies there on the ground will give DMM.com an advantage as more Japanese companies follow suit, Mr. Kameyama believes.

"We feel there is business opportunity in Africa because not



"We feel there is business opportunity in Africa because not many Japanese people or companies have gone there yet. If we are there first, then when the major Japanese companies come we can teach them, solve their problems, advise them, and create opportunities for ourselves"

Keishi Kameyama,
Chairman, DMM.com

many Japanese people or companies have gone there yet. It is very uncommon. So, because there are not many of us there it is easy to meet with country leaders."

"We are early to Africa. I imagine in a few years there will be a lot more people there, and there will not be the same opportunities as there are now. If we are there first, then when the major Japanese companies come we can teach them, solve their problems, advise them, and create opportunities for ourselves."

But while DMM.com is focused on bringing more of its innovative solutions abroad, it hasn't been neglecting things on the domestic front. The company is active in robotics and solar power – industries which are charged with developing products that can help address some of Japan's biggest issues, such as energy security, an aging population and a shrinking workforce.

"Through our format, we turn young motivated people into the protagonists, give them power to make something new, and we are going to augment their weak points by funding them"

Keishi Kameyama,
Chairman, DMM.com

R&D: Japan's intangible asset

An increasing number of multinationals are choosing to set up research centers in Japan, while Japanese companies themselves are also investing heavily in R&D facilities, both at home and abroad

Japan is one of the highest spenders on research and development (R&D) in the world. In 2014 its expenditure on R&D as a percentage of GDP was 3.4%, the highest of the G7 nations, according to the Organization for Economic Co-operation and Development (OECD), which also calculates that there are 10.2 full-time researchers for every 1,000 people in Japan.

It is this commitment to R&D that has traditionally made the country a global leader in technology and innovation. It has however lost ground to the likes of the U.S., the EU, China and South Korea in recent years. Because of this, Japan has set its sights on strengthening its R&D capabilities as part of Prime Minister Shinzo Abe's revitalization strategy launched in 2013, which calls for Japan to become the "world's most innovation-friendly country".

To meet these goals, the government has set a target of at least 4% of GDP for total R&D investment by the public and private sectors, and at least 1% of GDP invested in R&D by the government.

With extensive R&D happening in both the public and private spheres, organizations such as the New Energy and Industrial Technology Development Organization (NEDO) act as a bridge between the government, academia, and corporations to promote and boost R&D measures. Established in 1980 as a semi-governmental organization to promote the development and introduction of alternative energy, it has since grown to become one of the largest R&D institutions in the world.

"We are not just limited to energy and environment; we have broadened the scope of our activities to include robotics, artificial intelligence, the internet of things and cyber-physical systems," says Chairman of NEDO Kazuo Furukawa.

"We are also working to make Japan a stronger, more vital country. One thing that we are trying to do as a nation is to breathe some life into and support medium-sized venture-type firms similar to Silicon Valley. These kinds of corporations have not settled in Japan, and we are trying to find a way to nurture them."

Japan has however found a way to attract an increasing number of multinationals to establish R&D facilities in the country, thanks to its reputation as an international hub for R&D and heavy investment in this area. These include several American firms, such as Apple, which will open up a research lab in Yokohama in 2017; Johnson & Johnson, whose Tokyo Science Center opened in 2014 as a research and training facility for healthcare providers; and 3M Health Care, which opened its R&D base in 2013 in Kanagawa. Under the Act for the Promotion of Japan as an Asian Business Center, which came into force in 2012, these companies can enjoy incentives such as income tax breaks, reduction of patent fees and shortened investment procedures.

Both at home and abroad, Japanese companies themselves are also investing heavily in R&D facilities. Last year Toshiba launched a new Hydrogen Energy Research & Development Center at its Fuchu complex in western Tokyo; while in Spain Fujitsu has opened a center that is focusing on research in areas as diverse as finance, healthcare, tourism and the environment.

Biomedical firm Takara Bio Inc. recently inaugurated a state-of-the-art facility for gene and cell processing in Kusatsu City. "[This center] serves as a manufacturing facility for our in-house projects relating to the development of gene and cell therapy products," says Takara Bio President Koichi Nakao. "In Japan, we have a relatively new standard – Good Gene, Cellular, and Tissue-based Products Manufacturing Practice (GCTP) – that regulates the manufacturing of gene and cell therapy products. The Center for Gene and Cell Processing facility that we built in Shiga Prefecture meets all of the regulations from the EU, the U.S., and Japan, including the above GCTP."

The construction industry may not be the first industry that springs to mind when thinking about the use of robotics. But Japanese developer Asunaro Aoki Construction Co. is pioneering robotics in building, and has set up a research center at Tsu-

kuba Science City to further develop its robotic capabilities, as well as earthquake resistance technologies.

"The institute is located about an hour from central Tokyo and we have just under thirty people working there. As a general contractor, it is not like the university research centre where they are focused more on fundamental technology. We are focusing on technology that we can actually put to work in our own applications there. One thing that we are focusing on in particular is seismic technology – earthquake countermeasures," says President Yasunobu Ueno.

"We already have robot driven machinery out in the field that is in application. Another thing we are looking at is using drones, which is coming into wider circulation. I believe there is a lot that can be done in the area of drones."

Nicca Chemical Co. is another Japanese firm that has recently established a new R&D facility. "Our value is not the product. Our value is product innovation, our customer support, and our human capital. Those are our value propositions. I would like this innovation center to be the value-proposition place," explains President Yasumasa Emori.

"This concept is very clear. Forty very young, selected employees, get together, and discuss future action. Those forty meet periodically, and decide on what kind of innovation center we would like to have. We are not only creating a product, but we also create a place where people want to work. This innovation center is where we design, and innovators work with their full motivation."

Over the past 40 years, Sakata Seed Corporation has managed to grow its global business thanks to its firm commitment to R&D. It has established 15 research facilities, five at home and ten abroad, where it is constantly developing new vegetable and flower varieties for a diverse global market. "The demand for varieties in each region in the world may be quite different, but we can provide the right products within five to ten years, by utilizing our global research and development network," says President Hiroshi Sakata.

"We are not only creating a product, but we also create a place where people want to work. This innovation center is where we design, and innovators work with their full motivation"

Yasumasa Emori, President,
Nicca Chemical Co.

JAPAN LEADS G7 ON EXPENDITURE ON R&D (AS % OF GDP)

3.8%
JAPAN

2.8%
GERMANY

2.7%
U.S.

2.3%
FRANCE

1.7%
U.K.

1.6%
CANADA

1.3%
ITALY

Source: Organization
for Economic
Co-operation and
Development (OECD)