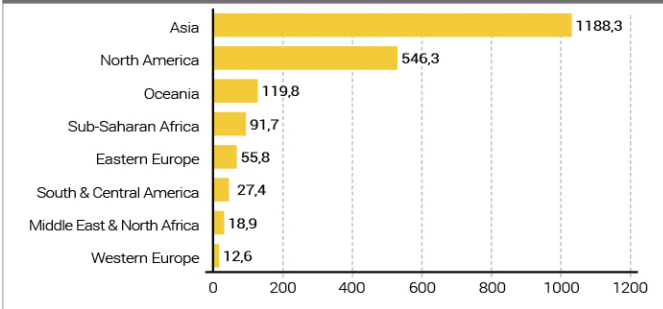


The race to build the world

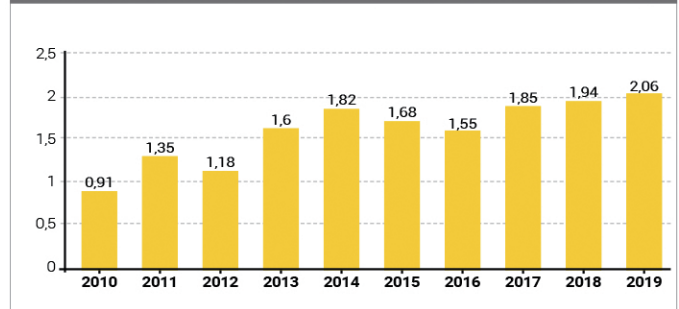
Leveraging on their technology, expertise and experience in delivering high-quality infrastructure projects and machinery, Japanese companies are set to play a major role in infrastructure drives in Asia, the United States and beyond over the coming years.

Value of overseas construction contracts by companies in Japan in fiscal year 2019, by region (in billion Japanese yen)



Source: Overseas Construction Association of Japan, Inc.

Value of overseas construction contracts awarded to companies in Japan from fiscal years 2010 to 2019 (in trillion Japanese yen)



Source: Statista 2021

What do Australia's Olympic Stadium and Singapore's Jewel Changi airport have in common? As surprising as it may seem, the answer is that the leading contractor in both construction projects was Japanese.

From a Shinkansen railway system boasting zero passenger fatalities in fifty years of operation to the world's longest suspension bridge connecting Awaji Island to Kobe, Japan is

recognized as an undisputed leader in infrastructure. Since the country's first construction boom prior to hosting the 64th Olympics, Nippon enterprises have been admired not only for their ability to build engineering marvels, but for their capacity to do so in one of the world's most inhospitable environments, marked by tectonic activity and mountainous regions. It is therefore no surprise to

find that since 1990, the 'land of the rising sun' has consistently ranked amongst the Top 5 in the WEF's 'quality of infrastructure' assessment.

Today, the Japanese construction market has matured. With the oldest population in the world, Japan's demographic line has been sharply declining since 2011, which has lowered the amount of new projects. The Japanese market is currently sustained by the rising need for maintenance and repair of aging infrastructure, and by certain mega redevelopment projects, such as the new Chuo Shinkansen Maglev or the preparations for the Olympic Games.

Japan's international push

Aware of the market's maturity, the country's private and public institutions have engaged in an aggressive campaign to expand overseas, a move which has been aptly timed. In spite of the coronavirus pandemic, the global construction industry is projected to grow by nearly 35% up to 2030, with the bulk of that growth predicted to stem from Asia. Driven by rapid economic and demographic changes and by reforms that facilitate PPPs, the value of mega projects (those worth more than \$25 million) in the ASEAN region alone stands at an incredible \$29 trillion. Since 2000, Japan has financed more than \$230 billion worth of projects in the region, more than any other country thus far.

On the other side of the world, President Joe Biden recently outlined an ambitious \$2 trillion infrastructure plan which has, at its core, the promise to "fix 20,000 miles of American roads". Attracted by the potential of these projects, Sakai Heavy Industries, a leading Japanese manufacturer of road construction machinery with a long-established presence in both regions, has strengthened its technological edge and international presence.

"One reason we have been so successful across Asia is because of the durability and reliability of our rollers. With our brand and quality recognition, we now see growth selling new machines as additional areas have become more prosperous. Though Asia is our primary market, we have seen our business grow across North, Central and South America, the Middle East and Africa," explains president, Ichiro Sakai.

"We offer a number of asphalt and soil compaction machines in the United States, so we are very optimistic about these future projects [under Biden's plan]. We developed a unique series of oscillatory rollers for highway, airport and bridge pavement projects. We offer asphalt rollers for all sizes of construction projects, including residential, commercial, and Interstate highway paving. We have put a lot of emphasis recently into the US market, where we promote our simple-yet-durable designs and superior reliability when compared to the competition there."

Massive roads rollout in the US and Asia

In the Asia-Pacific region, the increased need for connectivity has pushed road-related construction projects beyond the \$1 trillion mark.

Sakai's competitive edge also stems from its technologies that improve the compaction capabilities of its rollers, which ultimately leads to the building of better roads. One of the company's latest developments

Roads must be built. Worlds must be connected.

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Kotaro Hirano, President, Hitachi Construction Machinery

is the intelligent Compaction Control system with the CCV stiffness sensor for digital mapping and data gathering for soil and hot mix asphalt.

The company has also pioneered state-of-the-art autonomous rollers. Its reputed vibratory pneumatic tire rollers and high-frequency vibratory rollers were used in the paving of San Francisco International Airport. "In the US, contractors are working hard to continue to improve roadway lifespan by achieving higher density levels," adds Mr. Sakai. "Our business is really about providing the best machinery to these contractors in order to build the best roads possible."

Like Sakai, Hitachi Construction Machinery (HCM) has a prominent presence in the US and Asia, where its reputation for high-quality and industry-leading technology has set it apart from competitors. For HCM president Kotaro Hirano, the



Ichiro Sakai, President, Sakai Heavy Industries, Ltd.

reputed 'Made in Japan' brand gives Japanese construction machinery manufacturers an edge over competitors.

"One characteristic of the Japanese industry is that the whole supply chain has high standards, and those standards are applied across the entire industry. So as a result, the final products show a markedly different level of quality," he explains.

Digital technologies to address disaster prevention

As our world continues to experience environmental changes, the frequency and scale of natural disasters has increased. According to the WEF, 820 natural disasters causing insured losses were experienced in 2019, three times as much as 30 years ago. Strong of their decades of expertise in dealing with geophysical and meteorological disasters, Japa-



Masaru Narita, President, OYO Corporation

nese enterprises have developed leading technologies to address, predict and mitigate such events.

With its operations spanning four business segments (Infrastructure Maintenance, Management, and Renovation; Natural Disaster Prevention and Mitigation; Environment; and Natural Resources and Energy), OYO Corporation offers advanced disaster prevention solutions that combine geology and digital technology.

"When maintaining buildings and civil infrastructure, understanding the ground underneath is of paramount importance. Our company's underground surveys are the perfect example of how we are leveraging Industry 4.0 technologies. For example, after our sub-road cavity survey is conducted, we use AI technology to analyse 3D mapping data. Thanks to this method, we can analyse a 1km

parcel of ground in ten minutes," says president, Masaru Narita.

Pioneering digitalization in the industry, OYO boasts one of the largest databases on underground data and geology-related surveys in the world, and aims to digitize this information to make it available in an open ICT platform accessible to other companies and industries. One of the main advantages of using digital 3D modelling to represent this data is that it allows even non-experts to make more sense of it.

"Our technology has been developed from surveys conducted in Japan, one of the most complex geological regions in the world. Beginning our project in such a complex environment has forced us to develop cutting-edge technologies," Mr. Narita explains.

"While at first a challenge, developing geo-technical technologies in such a complicated environment has become one of our competitive advantages; and we believe that we can export our expertise to overseas markets. We are also working with bSI (building SMART International) to create a new international standard so that our technologies in the field of underground surveys can be recognized globally."

Becoming a next-generation developer



Hitoshi Nomura, President and CEO, Tokyo Tatemono Co., Ltd.

Tokyo's real estate sector continues to witness strong and stable growth, offering investors attractive investment yields and stable profit channels. Nevertheless, foreign investment in Tokyo remains comparatively low, which is why the government and other stakeholders have worked to build a more open, transparent and attractive market for overseas investors.

"I think the real estate market is very attractive but as a whole still receives only a small amount of foreign investment," says Hitoshi Nomura, President of Tokyo Tatemono, a leading player in Tokyo's office and condominium segments. "As a developer, we need to embark on very good projects that pique the interest and appetite of foreign investors in Japan."

Tokyo Tatemono is currently engaged in seven large-scale redevelopment projects in the Tokyo area that are scheduled to be completed in 2030, increasing the company's share of office stock from 500,000 to 800,000 sqm.

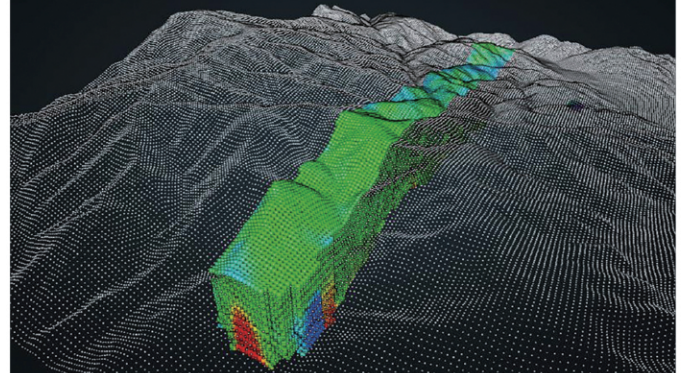
While the pandemic has not affected Tatemono's revenues, it has prompted the company to adopt a new approach to business in line with its "Becoming a Next-Generation Developer" long-term vision. Having launched its office-sharing business "+OURS", the company is also supporting the start-up scene in the capital's Yaezu district under the brand name, "xBridge-Tokyo".

Such initiatives form part of Tokyo Tatemono's efforts to "engage in business with a completely new mentality", says Mr. Nomura. "In doing so, we aim to be reborn as a corporate group that has a 'next-generation' perspective with a flexibility to adapt to any situation."



OYO: the geologist survey-based corporation

Based on its management philosophy and vision, **OYO Corporation** has developed creative technologies such as its i-SENSOR, an electromagnetic device that can 3D map underground utilities and cavities in a matter of minutes, allowing clients to have instant access to critical data. **OYO** serves both Japanese and international clients in four distinct business segments: Infrastructure Maintenance, Management and Renovation; Natural Disaster Prevention and Mitigation; Environment; Natural Resources and Energy.



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