

# OF EARTHQUAKES, TRAINS AND AIRPORTS

**Asian Property Review** chats with award-winning writer and entrepreneur Christopher Dillon on earthquakes and infrastructure in Japan – 2 key issues that investors are keen to know more about before investing.

**1** Japan's construction technology, which includes advanced earthquake-resistant designs, is among the most developed in the world. How effective are the buildings against earthquakes, say, above Richter Scale 6?

Earthquakes in Japan are measured using the shindo scale, which rates them as 0, 1, 2, 3, 4, 5 lower, 5 upper, 6 lower, 6 upper and 7, where 0 is only perceptible by seismometers. In a 7, it is impossible to remain standing, buildings collapse, cracks appear in the earth's surface and landslides occur.

Japan's building standards are designed to achieve two goals. In a moderate earthquake, up to about 5 on the Japanese scale, the building should suffer little or no structural damage and still be safe for occupancy. In a stronger earthquake, the building should not collapse and there should be

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no casualties as a result of structural failure. This is important because 80% of the fatalities in the 1995 Great Hanshin Earthquake (GHE) were due to collapsing buildings.

The GHE demonstrated the importance of revisions to national building standards that took effect on June 1, 1981. Of 923 buildings surveyed in central Kobe after the GHE, 35% of those built before 1971 collapsed or were seriously damaged, 40% had moderate or minor damage and 25% had slight or no damage. For buildings constructed between 1972 and 1981, the statistics were 12%, 31% and 57%, respectively. But only 8% built after 1982 were seriously damaged, with 17% incurring moderate damage and 75% sustaining slight or no damage.

**2** Is it a good idea to buy non-earthquake resistant buildings? They may be cheap but in the long run, are they worth it – perhaps because over time, the capital value depreciates as the likelihood of their being demolished grows.

Non-earthquake resistant buildings are not a bargain, because they are significantly more expensive to insure than earthquake-resistant ones.

Rents are lower in areas identified on hazard maps as having a high earthquake risk. Homes in high-risk districts that were erected before the seismic standards were tightened in 1981 rent at a discount, compared with those built after 1981.

Seismic retrofitting is not mandatory in Japan. In 2013, about 9 million of Japan's 52 million dwellings did not meet modern earthquake resistance standards.

**3** Since Japan is in the Pacific Ring of Fire and is prone to earthquakes and tsunamis, are there any cities that are completely free from such natural disasters?

All of Japan is at risk of earthquakes. The Japan Earthquake Reinsurance Co. divides the country into three categories when calculating insurance premiums. The high risk group includes Chiba, Tokyo and Kanagawa. The low risk group includes Iwate, Fukuoka and Nagasaki.

“ All of Japan is at risk of earthquakes. Premiums in high-risk areas are about three times those in low-risk zones. ”

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**4** How effective are the earthquake warning systems when it comes to preventing fatalities?

By giving people time to take shelter and automatically stopping trains and production lines, Japan's earthquake warning system has saved many lives and prevented millions of dollars in damage.



Aftermath of an earthquake in Japan.

“The high-speed Linear Chuo Shinkansen, which uses superconducting magnetic levitation technology, is expected to begin service between Tokyo’s Shinagawa Station and Nagoya Station in 2027.”

While the system is imperfect, even a few seconds of advance warning can make an enormous difference.

### 5 What are some futuristic building technologies and intelligent building solutions that Japan has created?

Japan’s base-isolation and vibration-damping technologies allow people to live comfortably in high-rise buildings despite the threat of earthquakes.

Japan’s electronic toilets are also in a class of their own.

### 6 Please share what are the new road and rail network links that will be completed before the Olympics in 2020? How will this affect the housing market particularly those that are located near the lines?

A new station on the Yamanote Line, which circles downtown Tokyo, is expected to open by 2020. The currently unnamed station will be between Shinagawa and Tamachi stations.

A new subway station between Kamiyacho and Kasumigaseki on Tokyo’s Hibiya Line is scheduled to open by 2020. The station is tentatively known as Toranomom New Station.

The Tokyo Outer Ring Road and the Metropolitan Inter-City Expressway are expected to be 90% complete by 2020, with new sections under construction in Tama, Chiba, Kanagawa and Saitama.

Over the long term, these developments will be positive for nearby homeowners. Noise and traffic disruptions will pose short-term challenges, however.



The N700A Series bullet train for Tokaido Shinkansen at Nagoya station.

### 7 Will there also be new airports coming up?

The biggest aviation stories are improved rail links at Tokyo’s Haneda airport and a new, second runway at Fukuoka airport. The government is also planning on expanding the number of landing slots at both Haneda and Narita to cater to growing tourist numbers.

### 8 What are other new infrastructure projects coming up that might impact the housing market?

The high-speed Linear Chuo Shinkansen, which uses superconducting magnetic levitation technology, is expected to begin service between Tokyo’s Shinagawa Station and Nagoya Station in 2027. The service will be extended to Osaka by 2045, and will allow you to live in Nagoya and commute to Tokyo. ■

*Ed’s Note: Christopher Dillon has authored 4 books: Landed Hong Kong (2008), Landed Japan (2010), Landed China (2013) and Landed Global—which includes case studies and data from more than 110 countries and territories—in 2014. (www.landedbook.com)*