

New Dimensions of Railway Safety for Natural Hazards



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The 21st century has been seeing a marked increase in natural hazards across the world that are causing tremendous damage.

In recent years, average temperatures are rising, typhoons are becoming more significant in size and strength and heavy rain events are occurring more frequently, all on a global scale. Those and other similar events have prompted experts to alert us to the underlying climate change associated with global warming. The ever-increasing severity of those natural hazards poses a significant threat to railways.

Damage done to the railways in Japan because of natural hazards include a derailment and overturning event caused by gusts of wind (December 2005), a derailment event caused by slope failure (December 2015) and a severed route event in a heavy rain disaster of extreme severity in Hokkaido (August 2016).

Japan is also known for a high frequency of earthquake occurrences. Two of the most recent major earthquakes to hit Japan, namely the 2011 off the Pacific coast of Tohoku Earthquake (March 2011) and the 2016 Kumamoto Earthquake (April 2016), caused significant damage to the local railway systems.

Railway safety has largely been ensured through years of everyday effort on related fronts. With natural hazards likely to continue to grow in intensity and frequency, however, the conventional approaches and measures appear not enough to effectively ensure railway safety in more events than ever.

With the above in mind, this issue of *Ascent* features an overview of some of the new fronts RTRI has been pursuing to cope with ever-intensifying natural hazards.

This issue also presents an article on risk management contributed by Professor Anson Jack at the University of Birmingham in the UK.

We hope you will find this issue of *Ascent* interesting.

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