

Evolution of the Tokaido Shinkansen for 50 Years and The Chuo Shinkansen using the SCMAGLEV

Toshio Otake
Technology Research and Development Department,
Manager and Corporate Officer,
Central Japan Railway Company

A Couple of Memorial Days



October 1, 1964

- Opening of the Tokaido Shinkansen



October 17, 2014

- Approval of the construction of the Chuo Shinkansen between Shinagawa and Nagoya

October 1, 2014

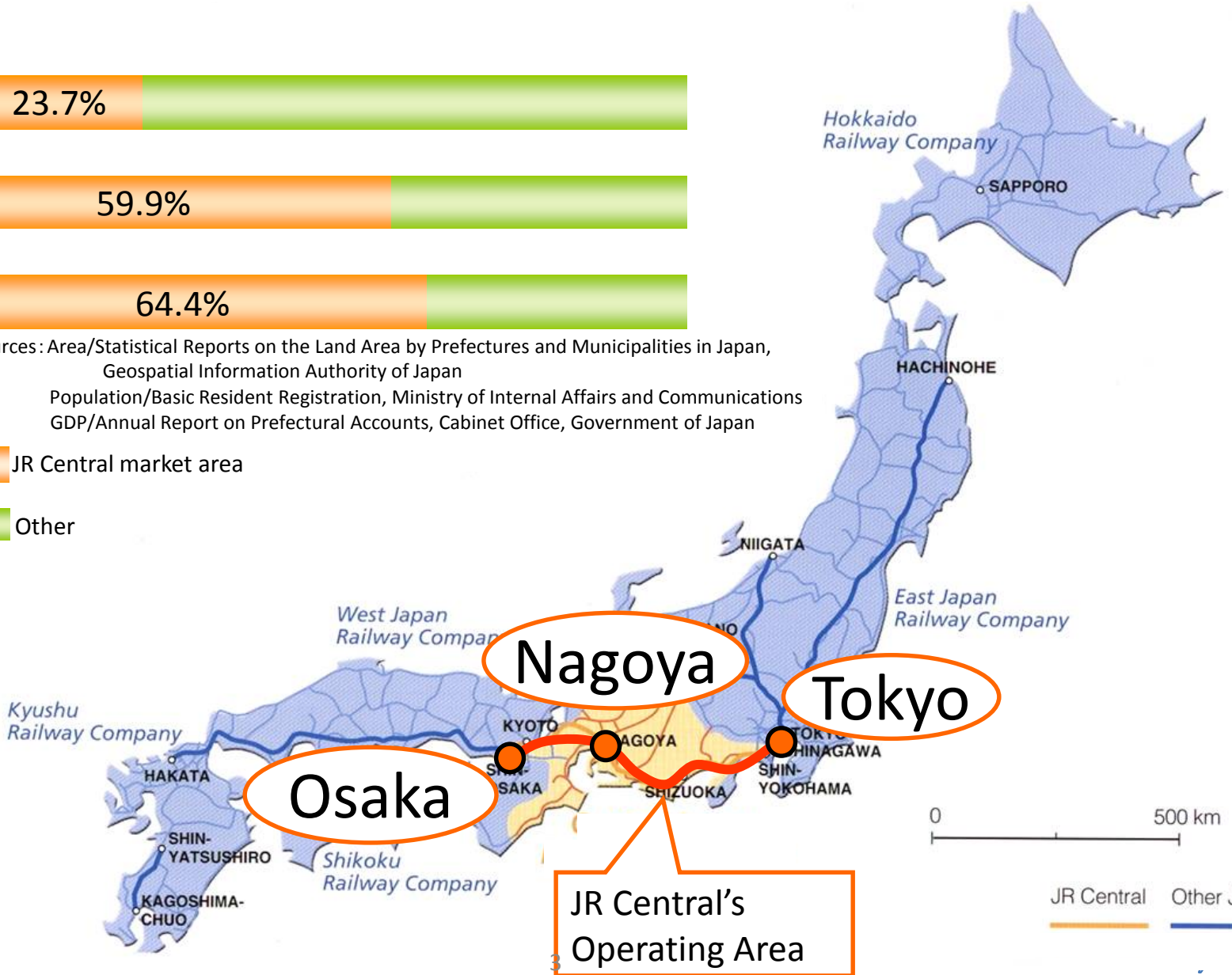
- Semicentennial of the Tokaido Shinkansen

Our Mission

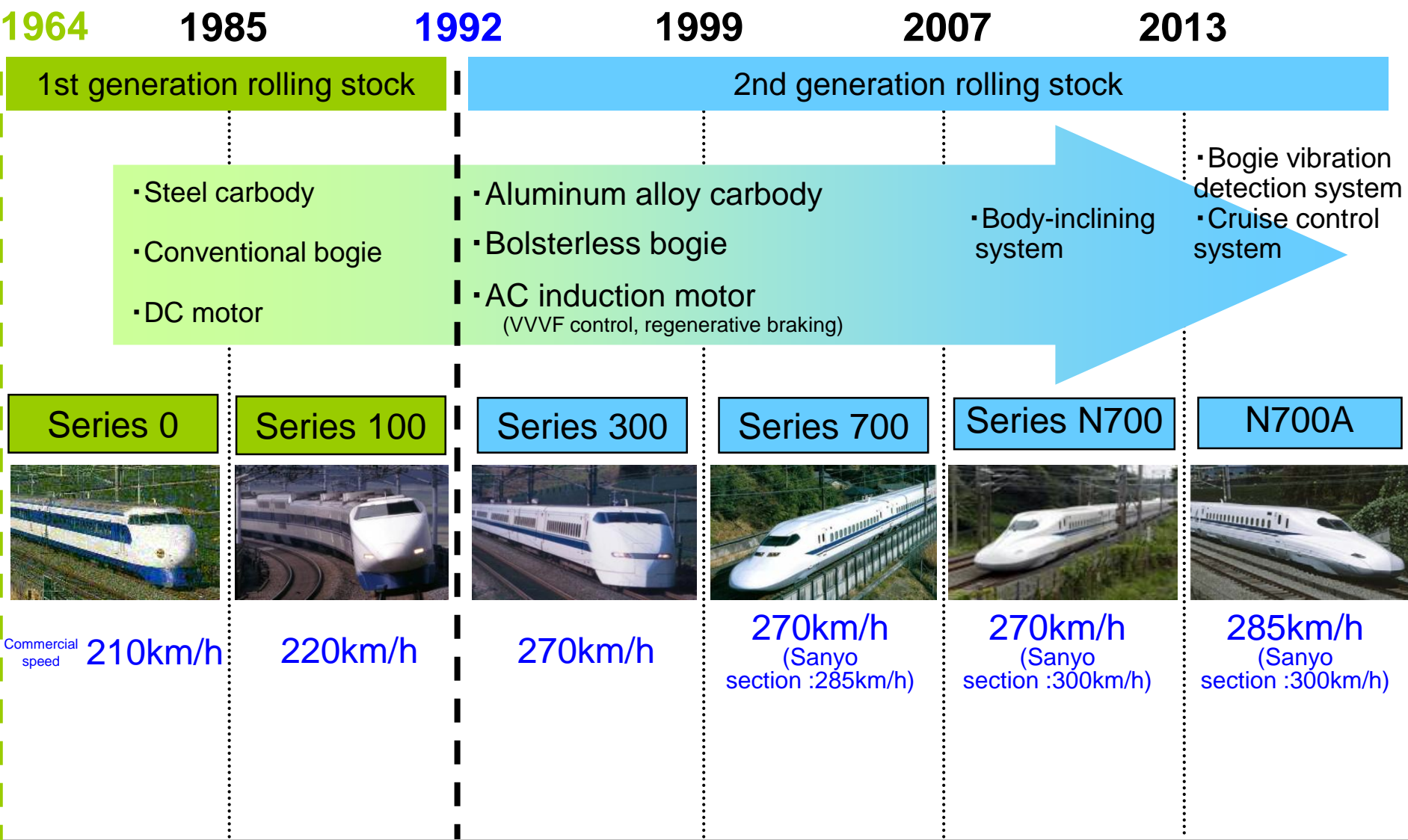


Sources: Area/Statistical Reports on the Land Area by Prefectures and Municipalities in Japan, Geospatial Information Authority of Japan
 Population/Basic Resident Registration, Ministry of Internal Affairs and Communications
 GDP/Annual Report on Prefectural Accounts, Cabinet Office, Government of Japan

JR Central market area
 Other

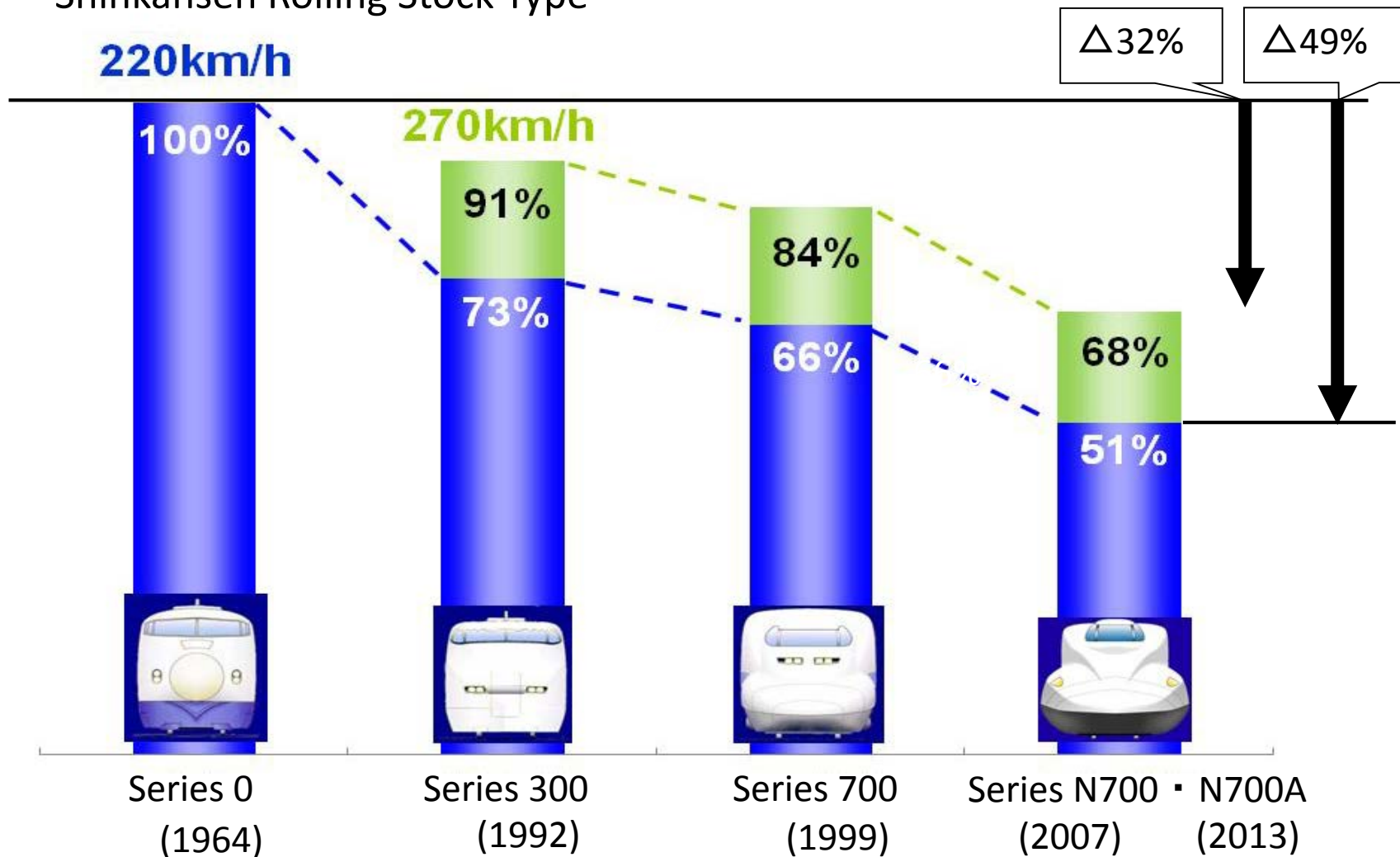


Technological Innovation in the Tokaido Shinkansen



Energy Efficiency of the Shinkansen Rolling Stock

Comparison of Electric Power Consumption by the Tokaido Shinkansen Rolling Stock Type

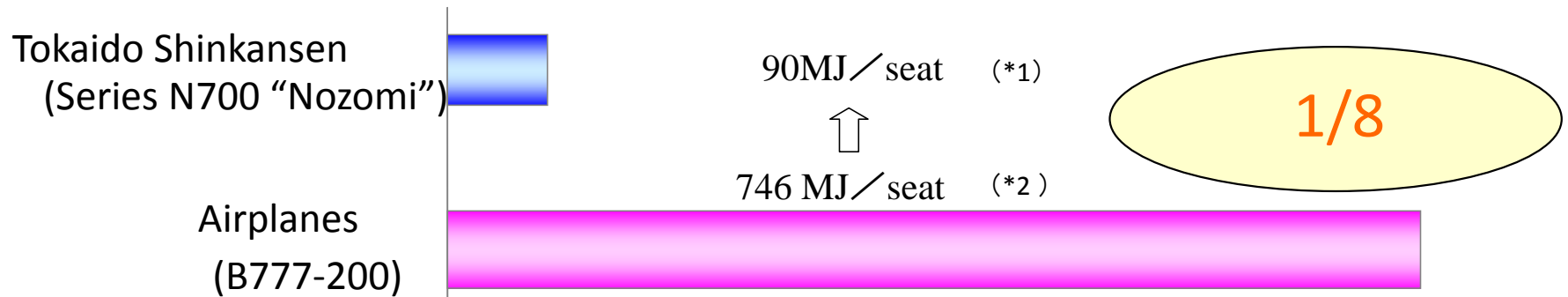


*Simulation of traveling from Tokyo to Shin-Osaka

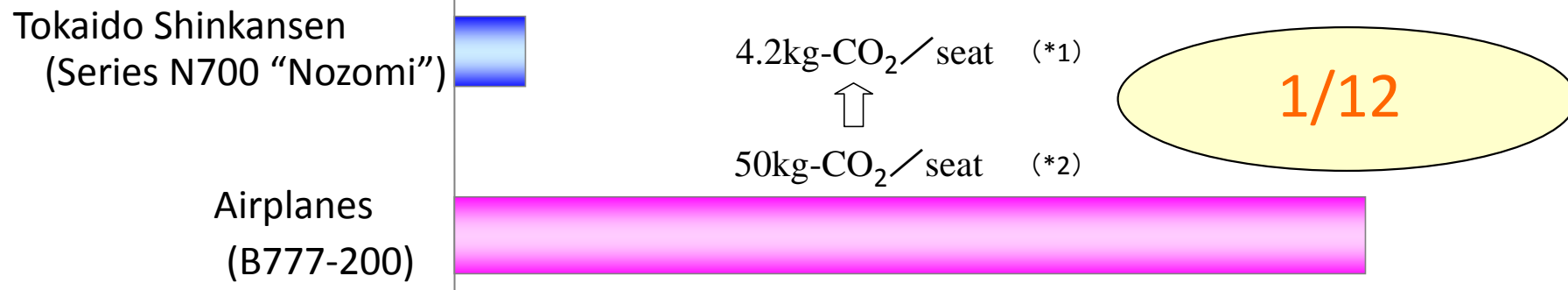
The Tokaido Shinkansen's Environmental Friendliness

CO2 Emissions of the Tokaido Shinkansen are 1/12 those of airplanes

Energy Consumption per seat



CO2 Emissions per seat



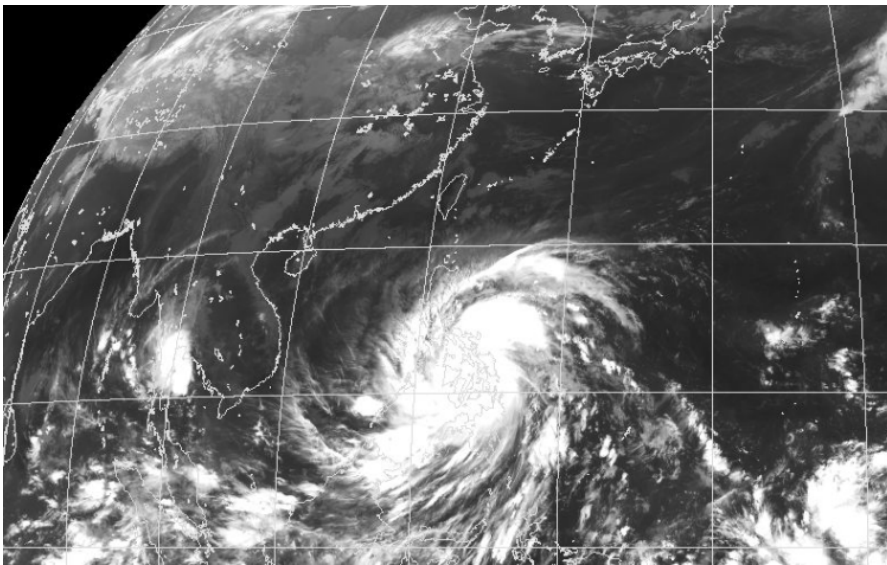
*1.Calculation based on running performance (JR Central figures) Series N700 "Nozomi" (Tokyo~Shin-Osaka)

*2.Calculated by JR Central while referencing ANA's Annual Report 2011 B777-200 (Haneda~Itami•Kansai Airport)

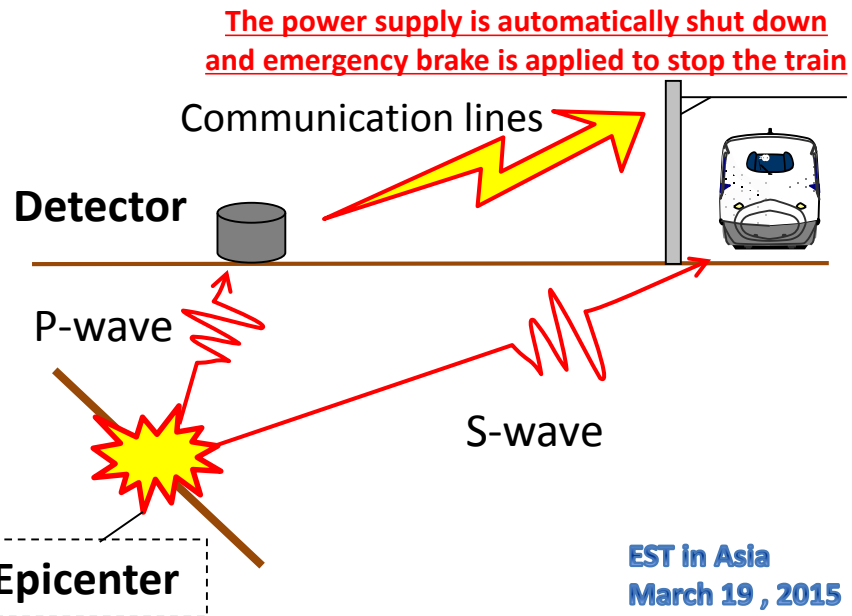
Conclusion

- 1 Railways have the outstanding characteristic of being mass transportation mode with superior environmental friendliness and JR Central has dramatically improved the superior qualities of railway
- 2 The Chuo Shinkansen that employs the SCMAGLEV will enable us to enhance the transportation capacity and offer multiple routes for preparation for risk
- 3 The Tokaido Shinkansen and Chuo Shinkansen contribute to global environmental conservation

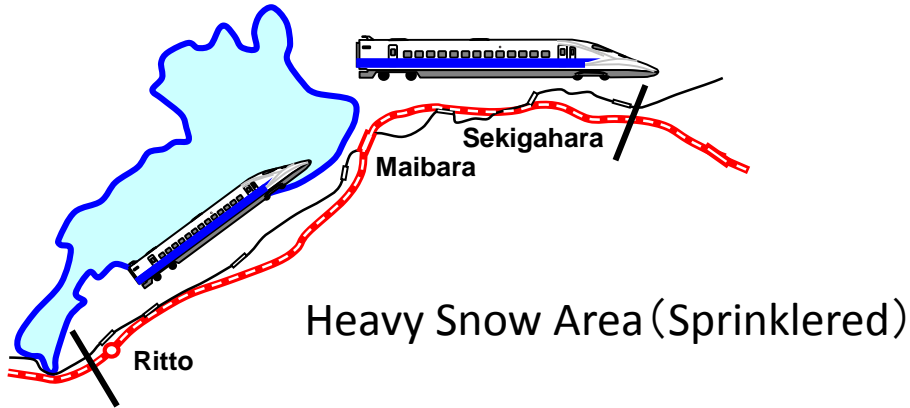
Natural Disaster





Source : HALEX Corporation HP
<http://halex.co.jp/blog/jousuke/20141110-4643.html>



Countermeasures for Snow





Ground Camera
(Detecting snow accretion)

Device

Picture
(Snow accretion)

Onboard Camera
(Detecting blowing snow)

Device

Picture
(Blowing snow)

Train Punctuality

- **No** passenger fatalities or injuries due to train accidents such as derailment or collision in commercial train operations during 50 years of service
- Annual average delay **0.6** minutes / train (1987~2013)

