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Building Resilient Societies: Towards a Safe, Climate Adaptive and Disaster Resilient Transport System for Asia

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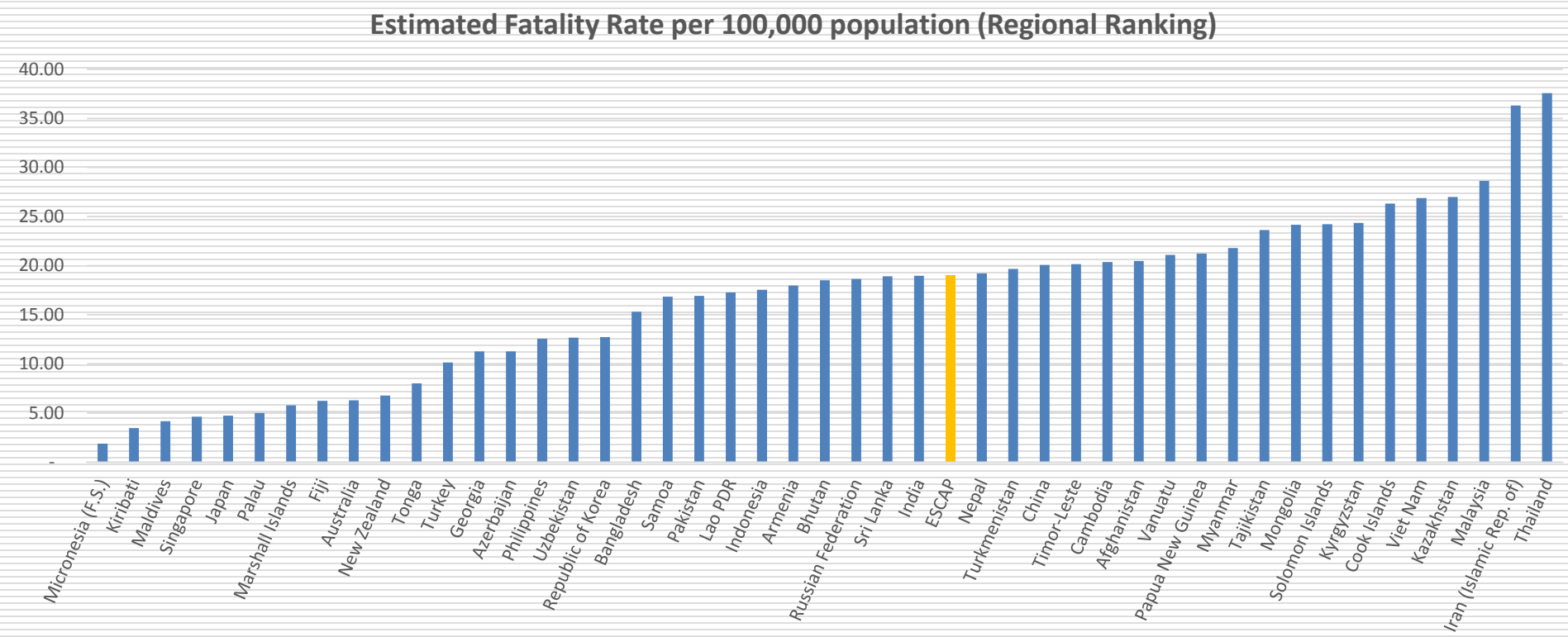
Outline:

- Transport Safety
- Climate Change Impacts
- Impacts of Natural Disasters
- Climate Adaptive & Disaster Resilient Transport
- Policy Recommendations

Different Forms of Transport

- Modes
  - Roads
  - Railways
  - Maritime and Inland waterways
  - Air
- Geographical Hierarchy
  - Interregional
  - Intra-regional
  - Subregional
  - Intercountry
  - Inter-city
  - Urban
  - Rural

Estimated road traffic death rate per 100,000



ESCAP average is at 18.99

Sources: WHO 2013, World Bank 2015

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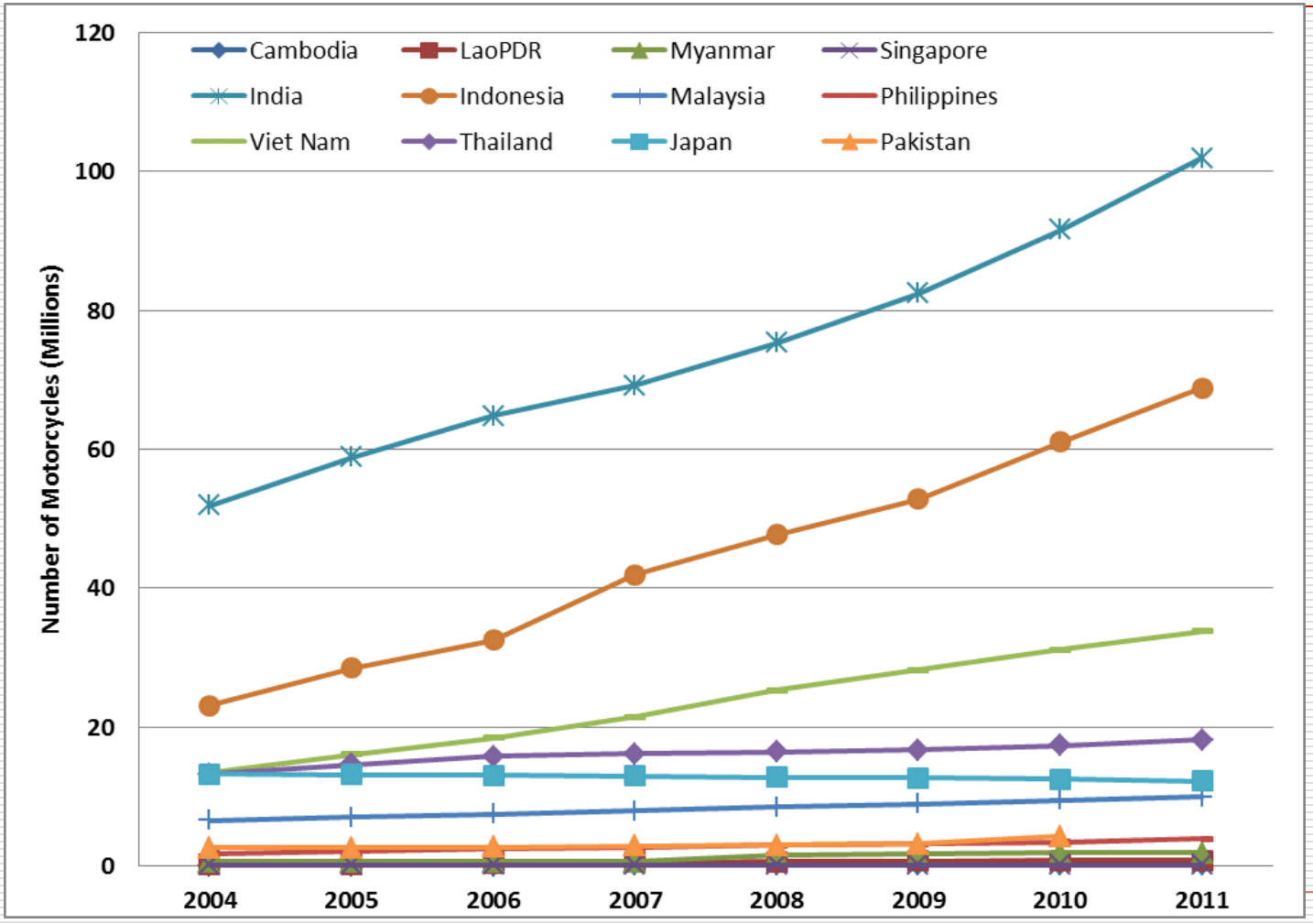
Motorcycle ownership in Asian countries



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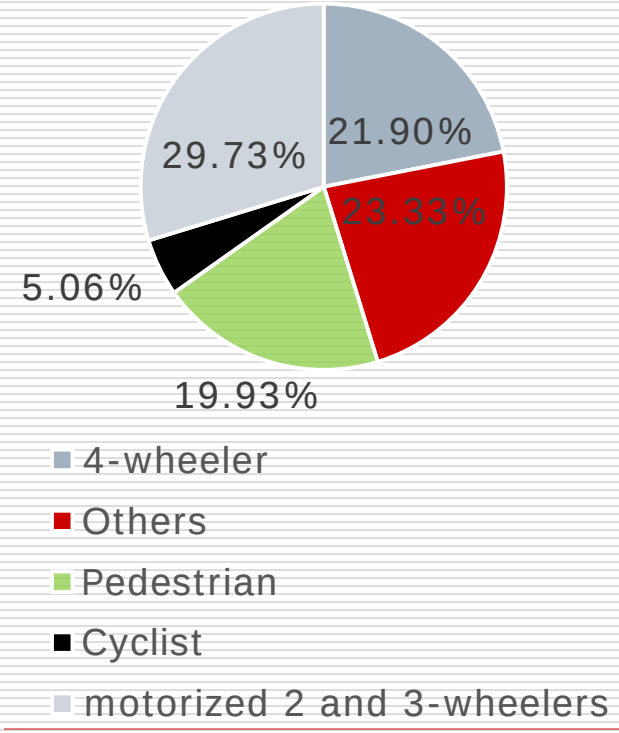
Road Safety Situation in Asia-Pacific

Share of road traffic death in ESCAP region (2013) by road user type



Motorcyclists, pedestrians and cyclists are more vulnerable in the region

VRUs account for **more than half (55%)** of total deaths

Cambodia, Kiribati, Palau, Singapore, Sri Lanka and Thailand are among countries in ESCAP region that have over 80% of VRU share of total traffic fatalities

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Railway, Maritime and Inland Waterways Safety

- Railway Safety
  - Railway level crossing (Fatality rate in India 55%)
  - Derailment (Fatality rate in India 36%)
- Maritime and Inland Waterways Safety
  - Safety issue near ports –maritime and coastal shipping
  - Safety issues in Cruise shipping
  - Informal form of Inland Waterways

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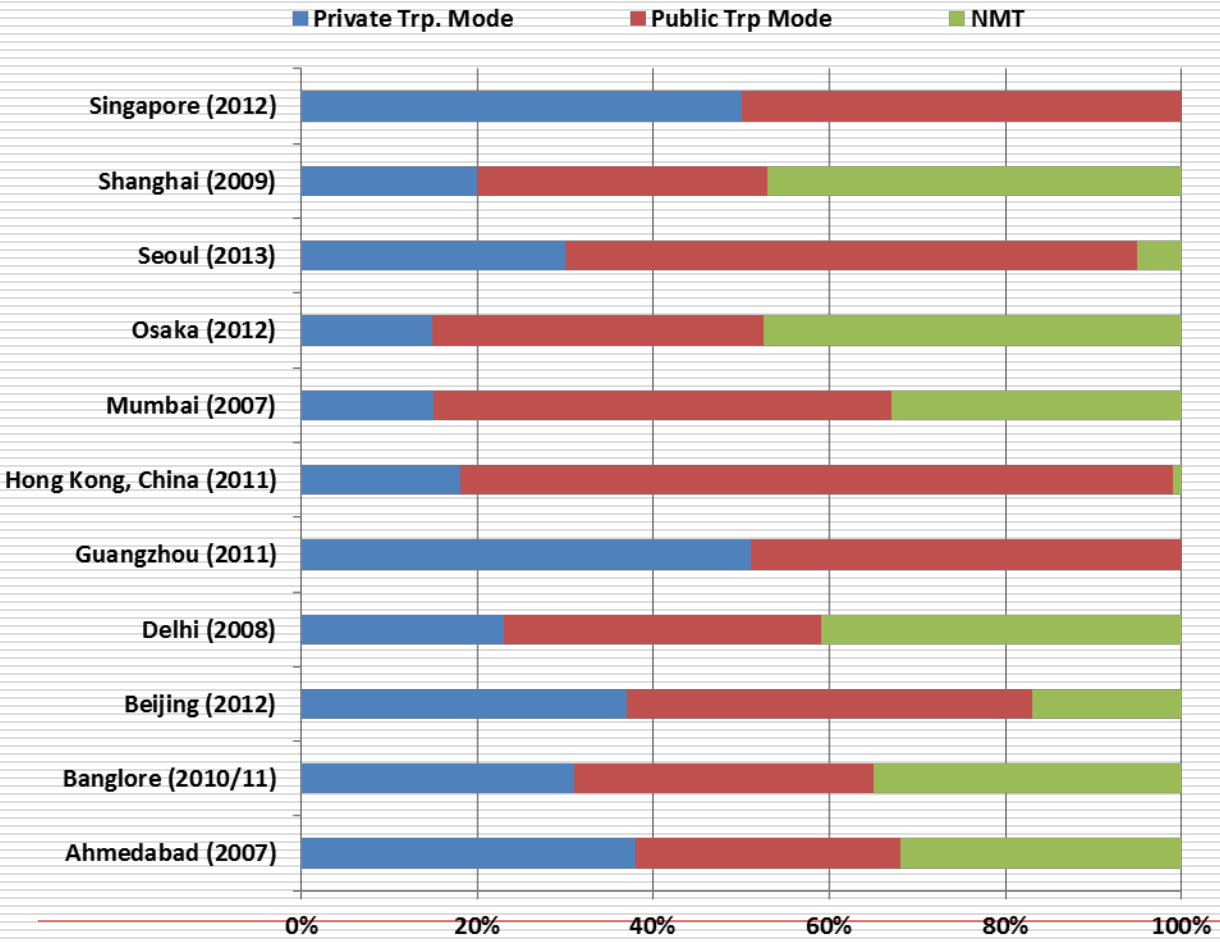
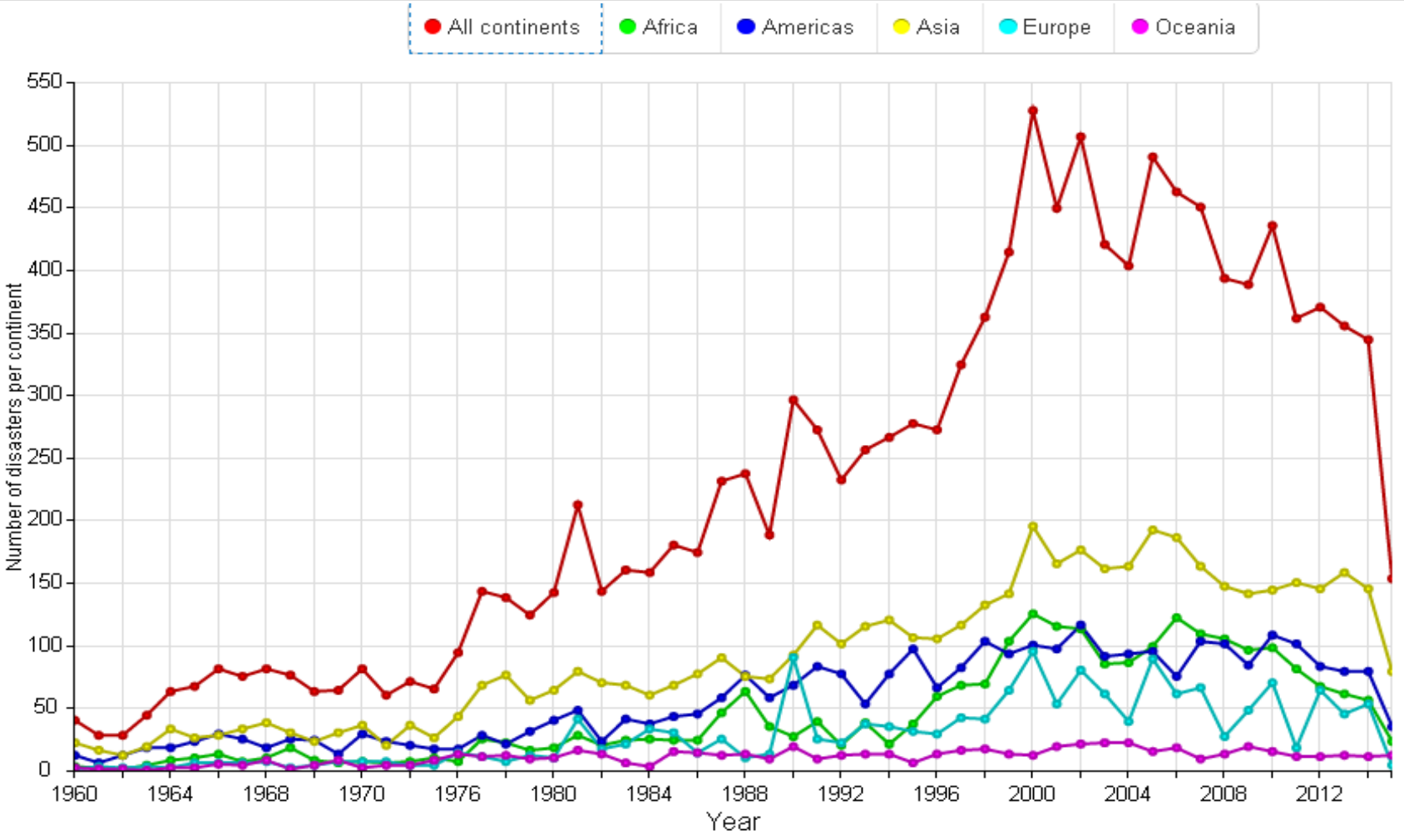
Share of urban transport modes in Asian cities



Source: LTA, 2014

Number of Reported Natural Disaster 1960-2015



Source: CRED EM-DAT International Disaster Database (2015)

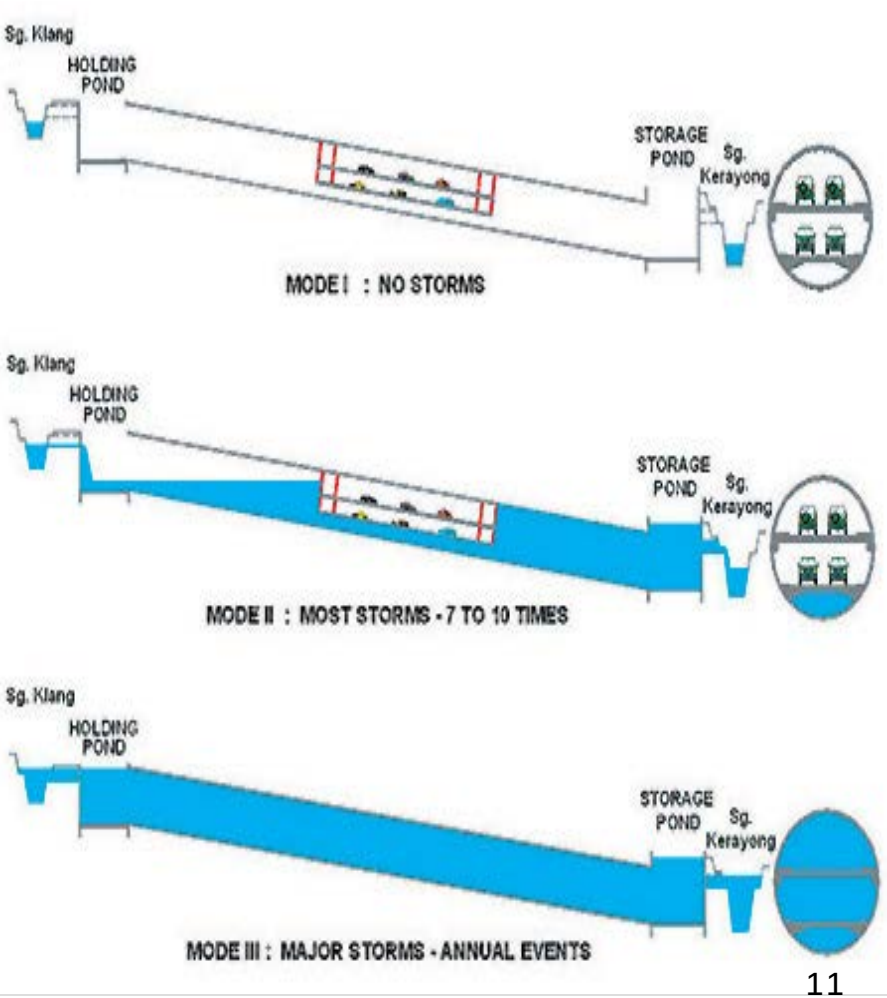
Sendai Framework on Disaster Risk Reduction 2015-2030

Climate Events and Impacts

- Climate events
  - Increase in number of hot days and heat waves
  - Sea level rise
  - Increases in storm surges and intensity
  - Increase in intense precipitation events
  - Increase in drought conditions
- Asia experienced frequent disasters, extreme climate events, sea level rise- Nepal Earthquake, Thailand Flood, Japan earthquake
- Many Asian cities and Pacific Small Island communities are located in coastal areas with unstable settlements that are highly vulnerable to climate change
- Damage to transport infrastructure, affect services & safety
- Higher construction, maintenance and operation costs

Kuala Lumpur Storm Water Management and Road Tunnel (SMART) – Innovation in Design

SMART allows large volume of flood water to be diverted from the city's financial district to a storage reservoir, helping solve congestion and flash flood



Source: Darby A. (2007)

Climate Adaptive & Disaster Resilient Transport

- Planning for resiliency of critical infrastructure
- Higher design standards, review guidelines & specifications
  - Height of bridges, embankments,
  - Drainage capacity
  - Coastal transport infrastructure
- Avoid vulnerable location and high risk areas
- Life cycle costing
- Transport network redundancy- for disaster relief operation
- Reliance on one mode to the concept of multi-modal transport
- Network hierarchy- prioritization, de-prioritization

Suggested Policy Recommendations (1)

- Integrated transport planning
- Prioritize public and non-motorized transport
- Improve safety of transportation systems
- Identify critical transport infrastructure
- Transport demand management

Suggested Policy Recommendations (2)

- Explore use of electric vehicles and alternate energy-reduce dependency on fossil fuels
- Use of ICT and Intelligent Transport Systems
- Capacity development for data collection, analysis and design
- Improve cooperation among transportation and other sectors

Concluding remarks: The way forward to build resiliency of communities

- Use existing body of Knowledge: Share information & create awareness
- Focus on developing quality, safe & resilient transport infrastructure - rather than increasing network length
- Build properly engineered and maintained rural roads
- Review design standards, guidelines and specifications to consider potential impacts climate change and disaster
- Strengthen capacity of designers, engineer and consultants to plan and design safe, resilient transport infrastructure-encourage innovations
  - Top-down and Bottom-up approaches
- Strengthen institutions, stakeholders & community

Thank you

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