



Overview of TC and some insights from their country on disaster management



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PIARC UK Event

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Who we are?

PIARC TC 1.5 “Disaster Management”



PIARC Strategic Plan (2024-2027)

■ External Challenges to The Road Sector



1. Responding to extreme weather events

- Extreme weather conditions ... becoming more severe and frequent.
- Road administrators need to be prepared for disasters by providing road structures that are robust against disasters and road management systems that react quickly against disasters.

PIARC TC1.5 Structure

TOR Issues

Cross Cutting Issues

GID Issues



WG1: Coping with Extreme Weather

- Leader: Marcelo MEDINA (CHL)



WG2: Social Resilience

- Leader: Tomo FUJITA (JPN)



WG3: Infrastructure Resilience

- Leader: John LAMB (UK)



WG4: Update DMM

- Leader: Yoshinori OBATA (JPN)



GID-TF

Saki YOTSUI (JPN)

Heather GLIFFIN (UK)

Disaster Management Challenges in JAPAN



Key words in disaster management in Japan



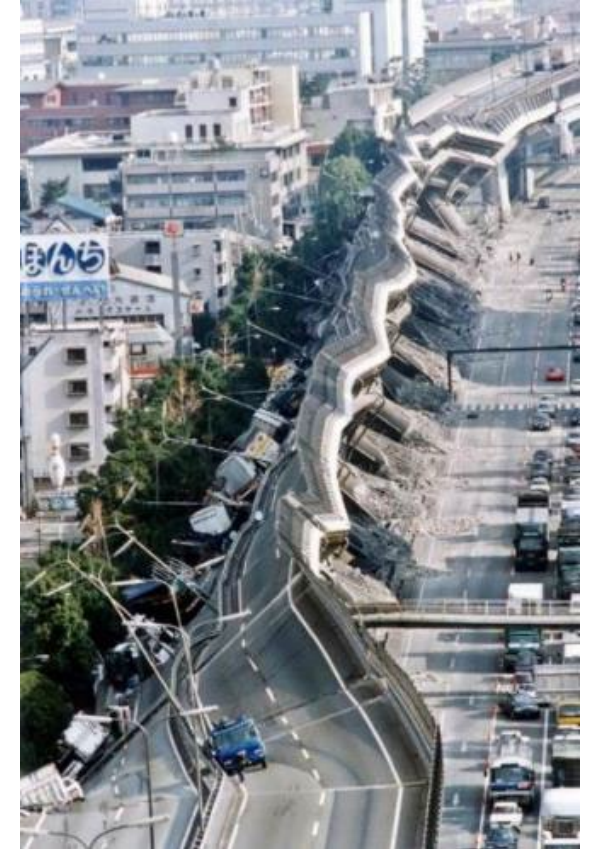
Source: https://ja.m.wikipedia.org/wiki/ファイル:Bay_Bridge_collapse.jpg

1989 Loma Prieta EQ. USA



<https://www.usgs.gov/media/images/northridge-ca-earthquake-damage-49>

1994 Northridge EQ. USA



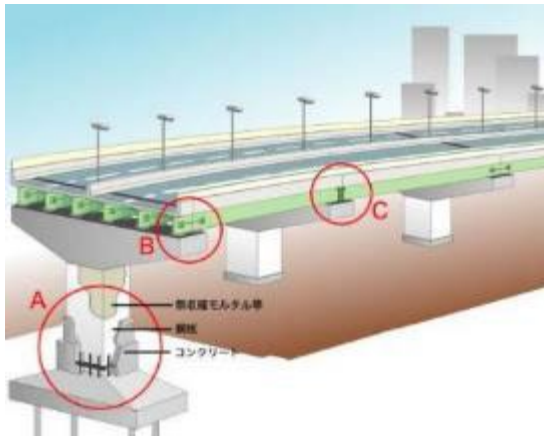
1995 Kobe EQ. JPN

At the beginning of my career, the key in disaster management was the challenges to the vulnerable structures.

Key words in disaster management in Japan



1995 Kobe Earthquake

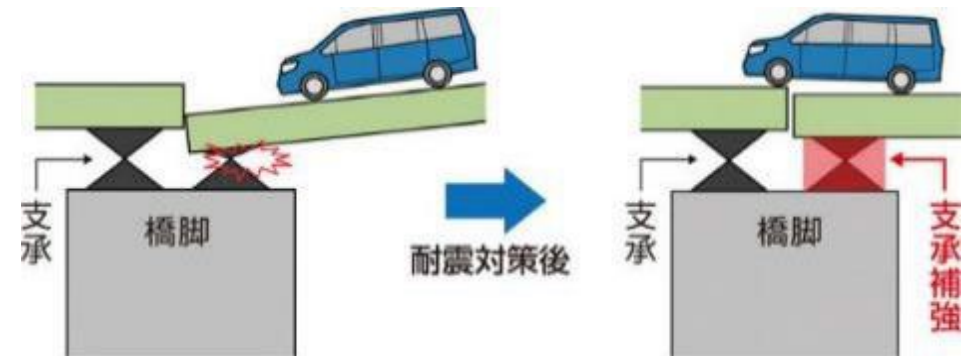


Since 1995
Retrofit for **structural safety resilience**



<https://www.npa.go.jp/hakusyo/h28/honbun/html/st600000.html>

2016 Kumamoto Earthquake



Since 2016
Retrofit for **road function resilience**

Recent key word in disaster management in Japan



<https://www.youtube.com/watch?v=f-ck4EYJeQ4>

2011 East Japan EQ. JPN



2013 Heavy rain Osaka. Japan

Recently, the key in disaster management is shifting from a structural perspective to an even more high-level view.

The most updated key word in disaster management in Japan



<https://www.youtube.com/watch?v=lxdmU74nyiU>

2018 Typhoon JEBI, JPN



<https://adachi-t.com/news/%E6%9D%B1%E6%B5%B7%E5%8C%97%E9%99%B8%E9%81%93%E5%A4%A7%E9%9B%AA%E3%81%AB%E3%82%88%E3%82%8B%E4%BA%88%E9%98%B2%E7%9A%84%E9%80%9A%E8%A1%8C%E6%AD%A2%E3%82%81%E3%81%AB%E3%81%A4%E3%81%84%E3%81%A6/>

Disaster Management Challenges in TC Member Countries

- In the area of heavy rain and flood-



PIARC Literatures: US case (Based on recent many flood events)

Reference to: PIARC Indonesian Seminar (2022)

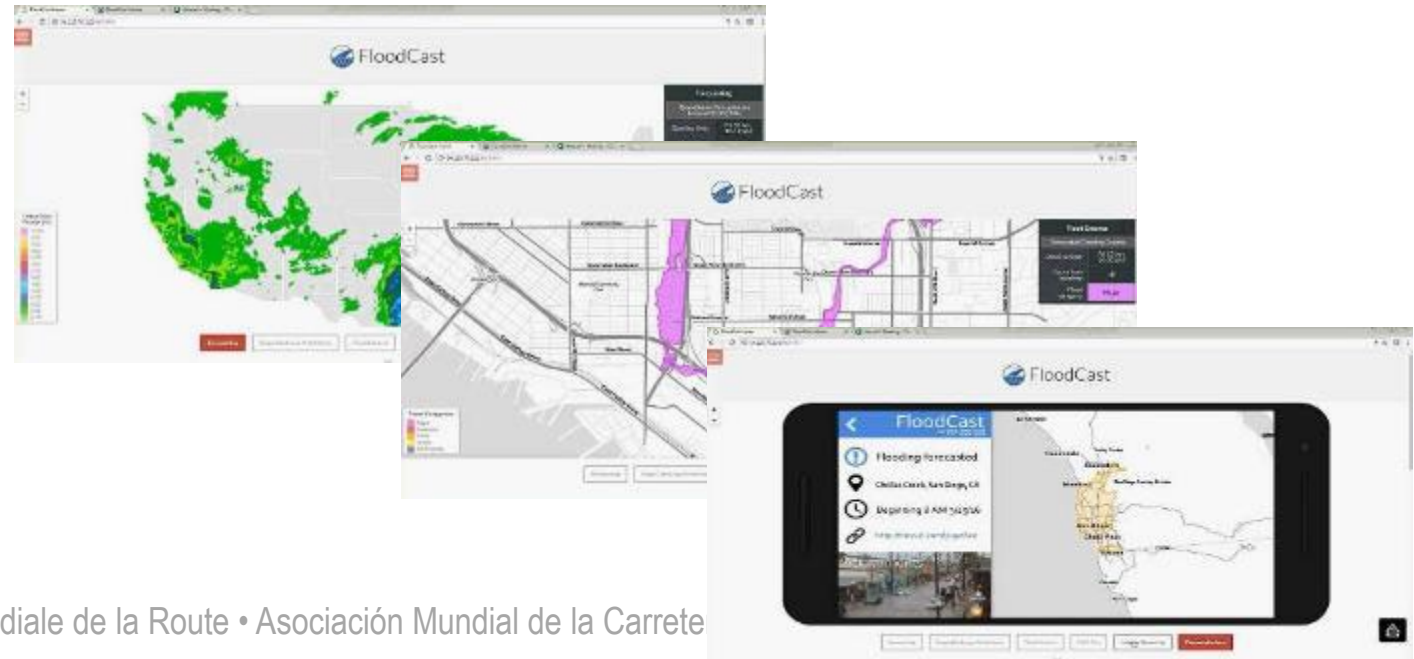
Saul Nuccitelli: FloodCast – A Framework for Enhanced Flood Event Decision Making for Transportation Resilience

[LESSONS] FloodCast

- Weather and climate forecasting tools are available but have not yet been integrated with state DOT asset and communication systems.
- FloodCast is going to be developed to enhance Flood Impact Forecasting Capacity.



(2017 Hurricane Harvey)



PIARC Literatures: South African Case case (2021 Heavy Rain)

Reference to: PIARC Cancun seminar (2023)

Gerhard Fourie: Minimizing social impacts through effective response to natural disasters: Flood damage to the national route14

[LESSONS] Communication kept all stakeholders informed

- Quick response and interim repairs by Routine Road Maintenance (RRM) contracts. This helped to reinstate access to communities, which were completely isolated.
- Communication via all available methods kept all stakeholders informed.
- A.S.A.P. repairs made possible by emergency contract.



PIARC Literatures: Italian case (2020 Flood)

Reference to: PIARC WG2 report (2023)
Sara Chinnichi et al: Manegement of the Lenzino bridge collapse

[LESSONS] Financial aspect

- Collapsed Lenzino bridge was the important bridge to the tourist attractive area.
- Considering the financial aspect of the long detour, a temporary bridge was built until the full restoration bridge will arrive.



Long detour



Temporary bridge for response



Recovery bridge

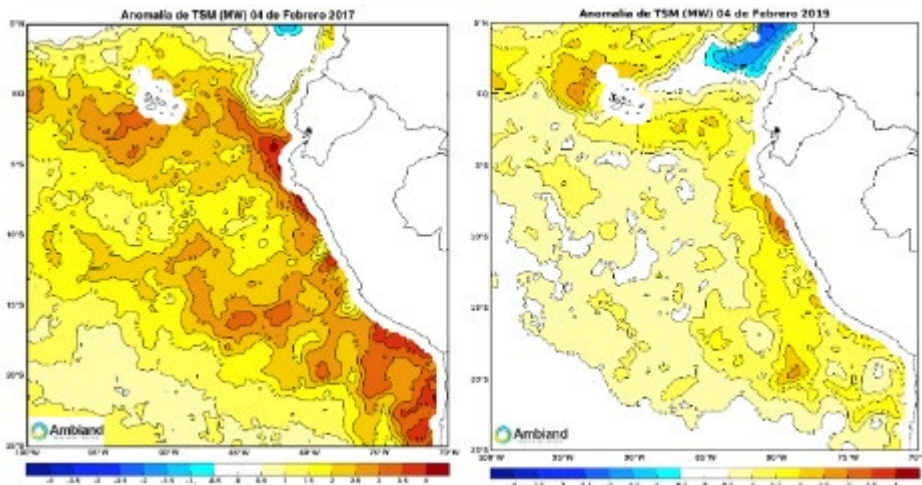
PIARC Literatures: Peru case (2019 El Nino Heavy Rain)

Reference to: PIARC Prague Congress (2023)

Victor Ariza Flores: Damages, effects and lessons learned in the construction of the Oyon Ambo Road in the high Andean zones of Peru during El Nino in 2019

[LESSONS] Hydrologically redesign

- Despite a 20-year study, the El Niño event in 2019 caused severe damage to hydrologically considered and new constructing Oyon Ambo highways.
- The drainage of the highway had to be significantly modified from previously study.



2019 El Nino



Heavy rain caused by 2019 El Nino



Alcantarilla existente visto desde aguas abajo



Re-design of Road construction

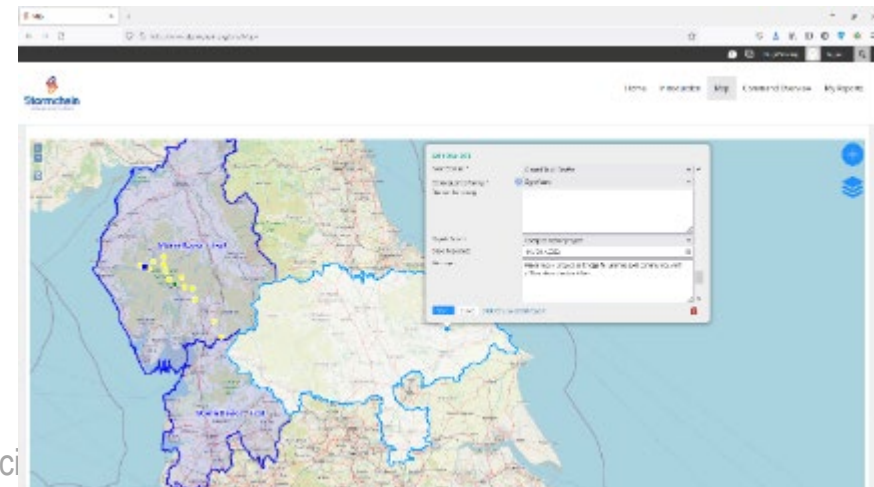
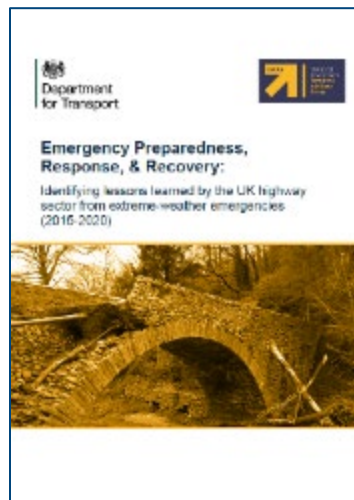
PIARC Literatures: UK case (2015-2020 extreme weather events)

Reference to: PIARC Winter and Resilience Congress (2022)

Hugh Deeming et al: Highway Sector Emergency Management: the UK's Approach to 'Lifeline' Rapid Impact Assessment to Support Excellence Across Emergency Response, Stabilization and Repair.

[LESSONS] Rapid Impact Assessment

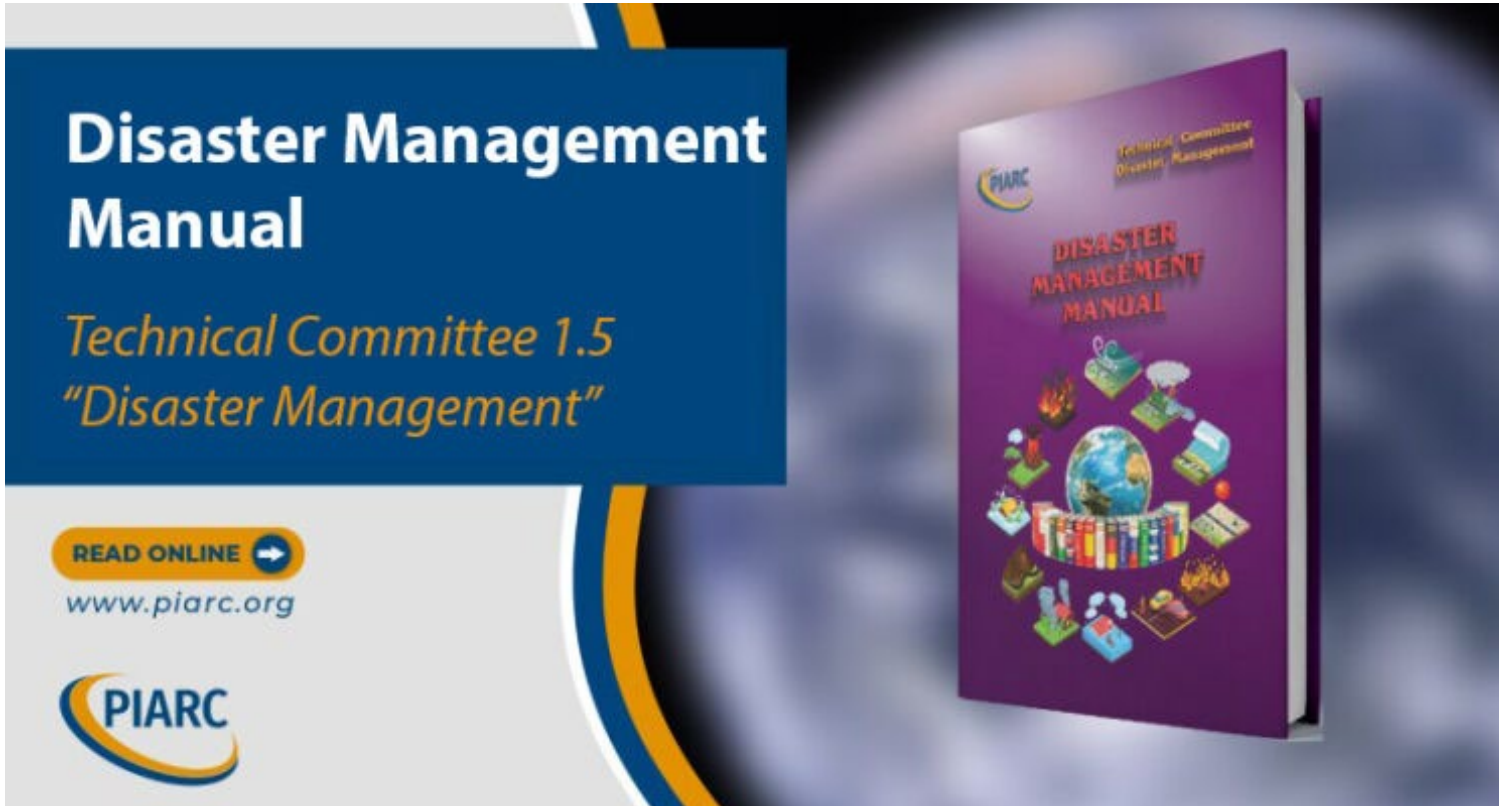
- The UK DfT's recent lessons reveals that there is a need for a change how the sector prepares, responds and recovers from emergency events.
- They developed "Effective Rapid Impact Assessment" tool for building situational awareness and supports the risk-based prioritization of asset repair.



Knowledge Exchange: The core of PIARC



Disaster Management Manual



PIARC Manual

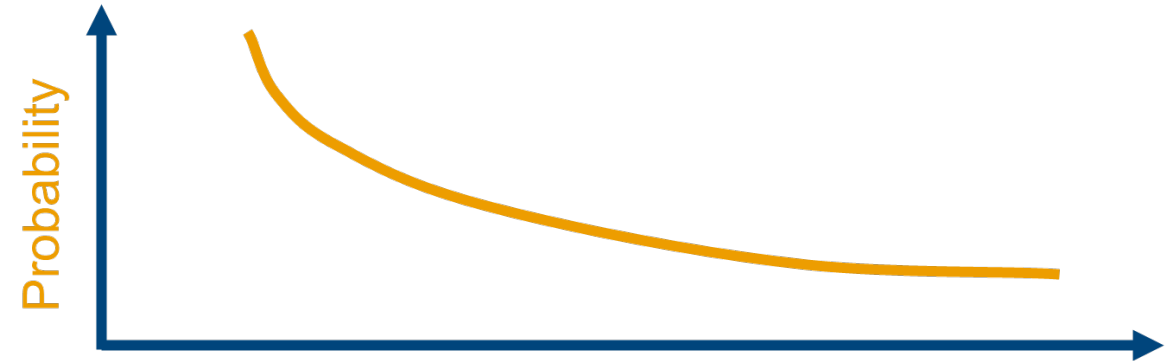


- Displays the management practices of over 50 case studies world-wide.
- Displays the references of over 80 cutting-edge technologies collaborated with JBP.

How is disaster management carried out?



Phases



Structural measures



Non-Structural measures



Social capital

Measures

Thank you for your attention!



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