XVI WORLD WINTER SERVICE AND ROAD RESILIENCE CONGRESS
CALGARY, CANADA - 7-11 FEBRUARY 2022

Session Report

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TECHNICAL SESSION R9.2: ENHANCING RESILIENCE OF DISASTER MANAGEMENT
MONDAY FEBRUARY 7, 06.00 PM TO 07:30 PM

1. KEYWORDS

Disaster Finance, Emergency Management, Impact Assessment, Heavy Goods Vehicles Management, Road-On Map, Disaster Information

2. PRESENTATION OF THE SESSION

In recent years, natural disasters have tended to become more frequent and more severe. In many cases, natural disasters affect the functioning of roads. The impact on road functions is likely to lead to the disruption of supply chains and people mobility, which may have a significant impact on social and economic activities.
Therefore, it is an important responsibility of road managers to maintain or immediately restore road functions and secure the connectivity and transit ability in the event of a disaster. In other words, road managers are required to take appropriate actions in each one stage of disaster management: mitigation, preparation, response, and recovery to keep economic and social effects under certain control.
In order to avoid unforeseen events, it is important to consider the worst-case scenario for disasters, however, it is not realistic to prevent or minimize technical impact of roads on such disasters, that for sure will impact financially. Therefore, it is desirable to reduce and minimize technical as well as financial impacts of disasters on roads to sustain the supply chain by implementing comprehensive countermeasures from both perspectives, structural and non-structural.
This session will provide an opportunity to share the world's efforts to sustain supply chains in disaster management focusing on financial aspects regarding sustainable road operations in the face of natural disasters.

3. PROGRAMME OF THE SESSION

Session Chair: Christopher ENGELBRECHT (WG3 member, TC1.5 PIARC, USA)
Session Organiser: Yukio ADACHI (Chair, TC1.5 PIARC, JPN)
Session Secretary: Christopher ENGELBRECHT (WG3 member, TC1.5 PIARC, USA)
Session Q&A master: Tomohiro FUJITA (Web master, TC1.5 PIARC, JPN)

Person	Organisation, Position…	Title of the presentation
Sara CHINNICI Saki YOTSUI	ANAS, ITA Ritsumeikan University, JPN	Financial aspect of disaster management "PIARC study"
Hugh DEEMING John LAMB	HD research, UK Local government technical advisors' group, UK	Highway sector emergency management: building new competencies. A study of the UK's approach to 'lifeline' rapid impact assessment to support excellence across emergency response, stabilisation, and repair. (Paper IP0012)
Andre TANARKI Joerg. DREIER	Federal Roads Office, FEDRO, CHE	Heavy Goods Vehicles Management under winter conditions (Paper IP0059)

	Federal Roads Office, FEDRO, CHE	
Hidenori TOMIYAMA	Ministry of Land, Infrastructure, Transport and Tourism, JPN	Risk Management for a disaster with “Road-On Map” (Paper IP0242)

4. TECHNICAL FINDINGS AND DEBATE

・The international survey found heavily dependent on the national or subnational contingency response budget.
・**Rapid impact assessment** was suggested in order to share situational awareness of highway impacts.
・**Operations using holding areas** were discussed to be effective for mountainous roads management against heavy snowfall.
・It was reaffirmed that necessary to inform people of the **passable roads** just after a disaster for evacuation and recovery.

5. RECOMMENDATIONS FOR DECISION MAKERS, FOR PIARC OR FOR INTERNATIONAL ORGANISATIONS

The key conclusions for decision makers within the industry included the following:

- Road networks are exposed to natural elements and disasters that may cause severe damage to these assets. It is important to be financially prepared and have disaster management processes in place, including various sources of parallel funding.

- Transportation administrators should consider investing in the development of early warning and monitoring systems for use during widespread disaster events to ensure reliable and sustainable mobility.

- Administrators should systematically quantify the financial risk associated with different disaster scenarios and make use of cost-benefit analysis for all investment plans. In anticipation of major disasters, with the great potential to induce financial losses, it is highly advisable to rely on a variety of parallel funding sources. Greater financial risk sharing between the public and private sectors should be encouraged when possible.

- Highway networks are critical “Lifeline” infrastructure, for which new competencies are needed to empower the sector as a partner in collaborative “Integrated Emergency Management”.

- State-of-the-art tools for rapidly assessing impacts to the transportation system are needed in order to provide timely and accurate situational awareness during major incidents. Providing a shared common operating picture of ongoing events through all phases of the disaster cycle is key to post-incident network recovery.

- Road networks in mountainous regions are often challenging and problematic for heavy goods vehicles due to steep inclines, geometric issues, and weather-related concerns. Road network administrators should consider strategies such as holding areas to safely accommodate travellers while addressing roadway hazards.

- The use of traveller information systems is becoming increasingly important in the overall coordination of disaster events. Road network resilience and reliability are dependent on using big data, social media and emerging technology to create redundancies in the transportation system.

6. PREPARATION OF THE SESSION

This session was planned, designed, and organised by PIARC TC1.5 “Disaster management”.