The damage to Chugoku region in "the heavy rain disaster in July 2018."

# Historic heavy rain

# Levee failure

## Sediment-related mass movement disaster

# Road network was cut everywhere

# Historic heavy rain that we have ever seen

Rainfall records in a 24-hour period, a 48-hour period, and 72-hour period were passed at tens of observation points around Okayama and Hiroshima. On this downpour, "Special heavy rain warnings" were issued in three prefectures : Tottori, Okayama and Hiroshima.



平成30年7月3日0時~8日12時までの期間降水量:気象庁より



# Human casualties and Building damages

# in five prefectures, Chugoku region



### [Yamate Town, Fukuyama City, Hiroshima] Inundation due to overflow of Ashida River

### [Mabi Town, Kurashiki City, Okayama] Inundation due to overflow of Oda River



	damage to citizens			damage to buildings					
place	The dead	Missing	The injured	Completely destroyed	Half destroyed	Partially destroyed	Flooding above floor	Flooding below floor	The maximum number of evacuees
	Number of people	- Number of people	Number of people	Number of buildings	Number of buildings	Number of buildings	Number of buildings	Number of buildings	- Number of people
Tottori	0	0	0	0	0	3	7	54	1, 324( (July 7)
Shimane	0	0	0	55	127	2	0	61	923( (July 7)
Okayama	61	3	161	4, 822	3, 081	1, 108	2, 921	6, 035	4, 787( <b>(July 8)</b>
Hiroshima	109	5	138	1, 085	3, 258	1, 996	3, 234	5, 603	11, 707( (July 7)
Yamaguchi	3	0	13	21	448	95	135	653	41 (July 7)

Source: The damage due to "The Heavy Rain in July 2018" (as of October 9, 2018) (CAO)

# The Highest Water Level which passed observation records

### Legend



### Hinogawa River



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### Sendaigawa River





# Flood Disaster in five prefectures, Chugoku region

The record rainfalls flowed into rivers to burst their banks, causing large-scale floods.

Levee failures: 36 Number of inundated houses: about 34,800 Flooded areas: about 8,000ha



[Mabi Town, Kurashiki City, Okayama] Oda River collapsed its levee.

### [Places of burst levees in Chugoku region]

Prefecture	

Name of river system



	(Number of burst levees)		
Shimane	Yato River(1)		
Okayama	Asahi River(2) Takahashi River(15)		
Hiroshima	Ashida River(3) Hongo River(1) Nuta River(8) Kamo River(1) Noro River(3) Kurose River(1)		
Yamaguchi	Shimada River(1)		
(Source: MLIT Japan, as of September 5, 2018 at 15:00)			



### Levees succumbed at 36 sections of 10 river system 4 prefectures in Chugoku region.

Flood situation, at Mabi Town, Kurashiki City, Okayama

# Sediment-related mass movement disaster

# in five prefectures, Chugoku region.

Mass movements and landslides in various parts of Chugoku region have recorded the highest death toll in Japan since 1988. About 1,500 mass movements were seen. The road was terribly damaged, affecting commercial distribution and regional economy. Significant sediment wash-out has reached downstream hillside business and residential areas. The damages were worsened due to scattered sedimentation.

[Yasuura Town, Kure City, Hiroshima] landslide

[Mizushiri, Saka Town, Aki District, Hiroshima] landslide



- がけ崩れ Hillside failure
- 🔵 地すべり Landslide



Keep in mind  $\sim$ How we responded to "the heavy rain disaster in July 2018"  $\sim$ 

土砂量(万m3)

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# Road network scissored in five prefectures, Chugoku region

The major east-west highway, Sanyo Expressway and National Highway 2, were severely damaged because of mass washout or slope protection collapse.



	<ul> <li>Expressways</li> </ul>	had been	lifted traffic	closed by	September 21.
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National highway under the direct control of MLIT had been lifted by July 21.

Auxiliary national highways and local roads had been lifted about 80% of traffic closed by October 15.

	<b>Traffic closed points</b> (National highway under the direct control)	<b>Traffic closed points</b> (Auxiliary national highways & local roads)		
Tottori	6 points	22 points		
Shimane	0	37 points		
Okayama	4 points	197 points		
Hiroshima	36 points	405 points		
Yamaguchi	8 points	104 points		
Total	54 points	765 points		





Traffic closed due to the loss of riverbank protection [Aki Ward, Hiroshima City, Hiroshima] (National Highway 2)

Mass washout and driftwood inflow out of the road [Higashihiroshima City, Hiroshima] (Sanyo Expressway (Around Takaya IC, JCT))

Hillside failure, Washout of bridge, Slope Protection failure



Hillside failure at Mizushiri (Saka Town, Aki District, Hiroshima) knocked down "Hiroshima-Kure road," "Kure Line (JR West)," and "National highway 31" at the same time that transportation infrastructures links between Hiroshima and Kure were lost.

Prefectural roads in Chugoku region were also damaged and the road traffic were closed in many areas. Survivors in need of help and support in disaster areas were forced to wait days.





# lown transportation infr

# infrastructure

# About 800 points of roads were so severely damaged that disaster survivors were forced to wait.