

**COST-SHARING FOR MANAGING WATER-
RELATED DISASTERS:
COMPARATIVE STUDY BETWEEN JAPAN AND US
SEPTEMBER 12, 2023, 18 WORLD WATER CONGRESS, BEIJING**

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This research is a part of the project “Research on Demand Estimate on Infrastructure in Asia” by the JICA Ogata Research Institute.

Ishiwatari, M., Aldrich, D. P., & Sasaki, D. (2023). Who Pays? Cost-Sharing for Disaster Management in the US and Japan. *Journal of Disaster Research*, 18(5), 467-474.

BACKGROUND

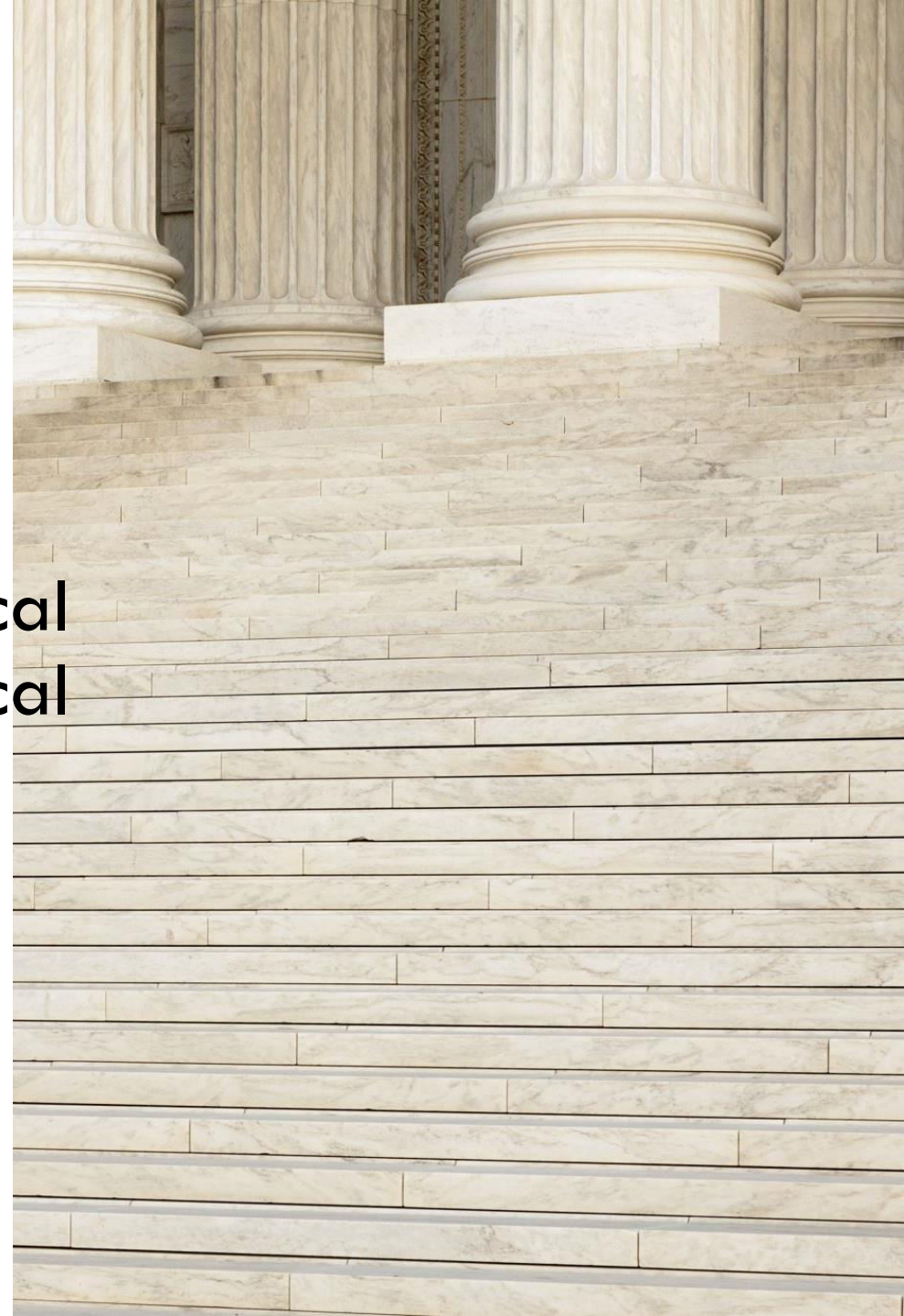
Whether the national or local government should assume financial responsibility to reduce disaster risks?

Local governments could not afford to cover all cost of managing mega-disasters because of limited financial capacity & need assistance from federal and national governments.

But covering all costs by national government may lead moral hazard, discouraging local governments to invest in ex-ante measures.

THE PURPOSE

to identify determinants of fiscal
responsibility of national and local
governments for managing disasters



THERE IS NO THEORETICAL RATIO FOR COST-SHARING BETWEEN NATIONAL AND LOCAL GOVERNMENTS



local governments cannot afford to cover all relief and recovery costs and national level assistance is essential.



In mega-disasters national government should cover all costs



to avoid moral hazard, establish cost-sharing mechanisms among national and local according to concepts or philosophy agreed



Local governments should cover costs of managing small disasters



define scales of “small” and “mega” considering economic situation, risk scales, financial capacities of different governments

EVOLUTION OF PUBLIC AND INDIVIDUAL ASSISTANCE PROGRAM IN US FEDERAL AND JAPAN NATIONAL

FROM NOTHING TO INCREASING SUBSTANTIALLY WITH LEGISLATION DEVELOPMENT

US

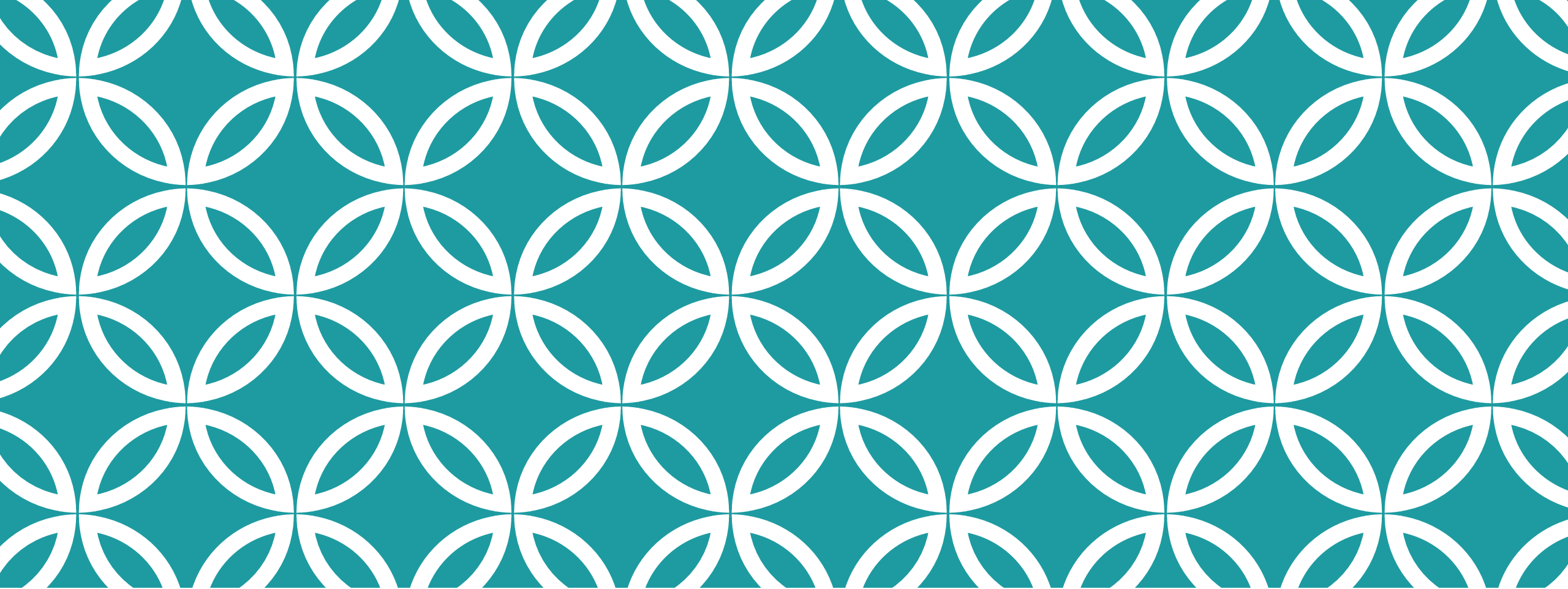
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Japan

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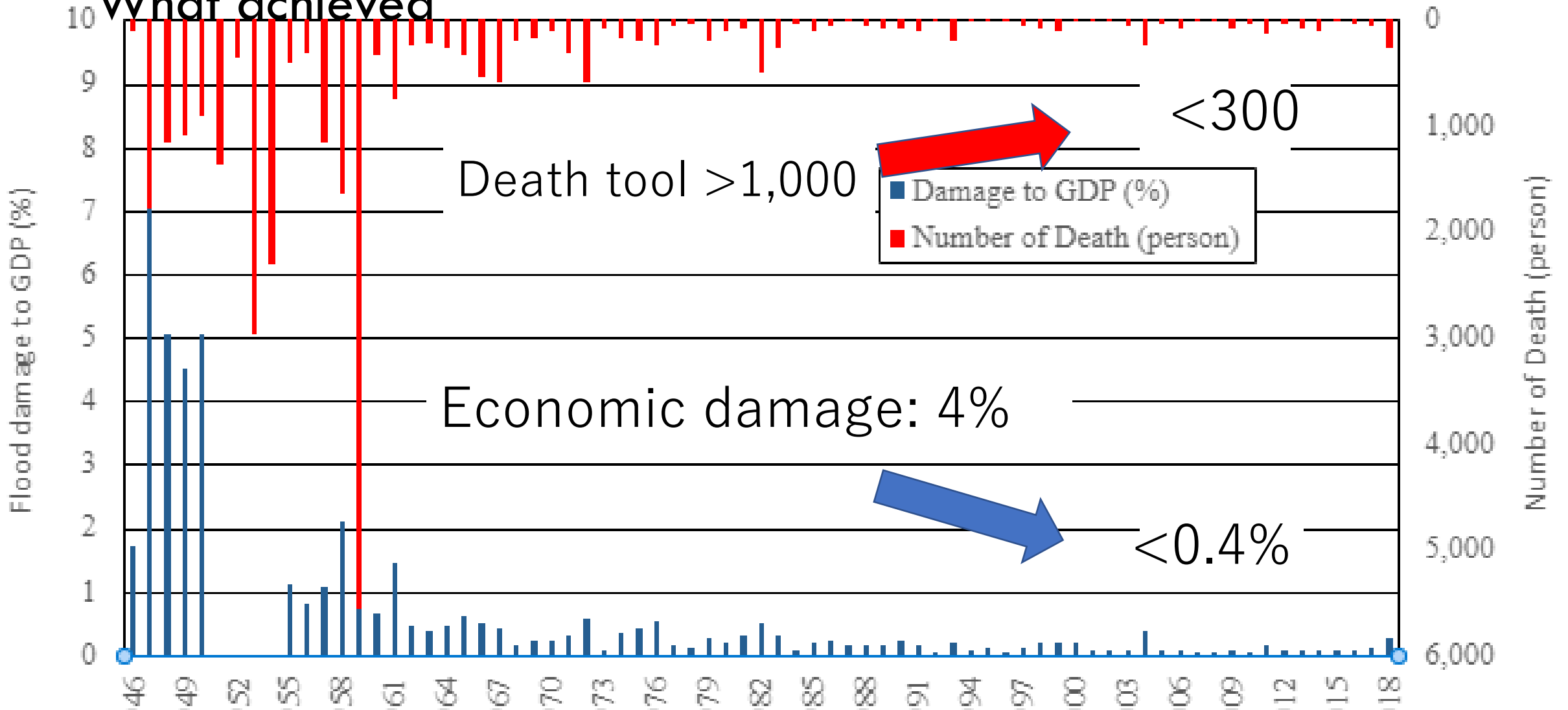




FLOOD DISASTERS IN JAPAN



What achieved

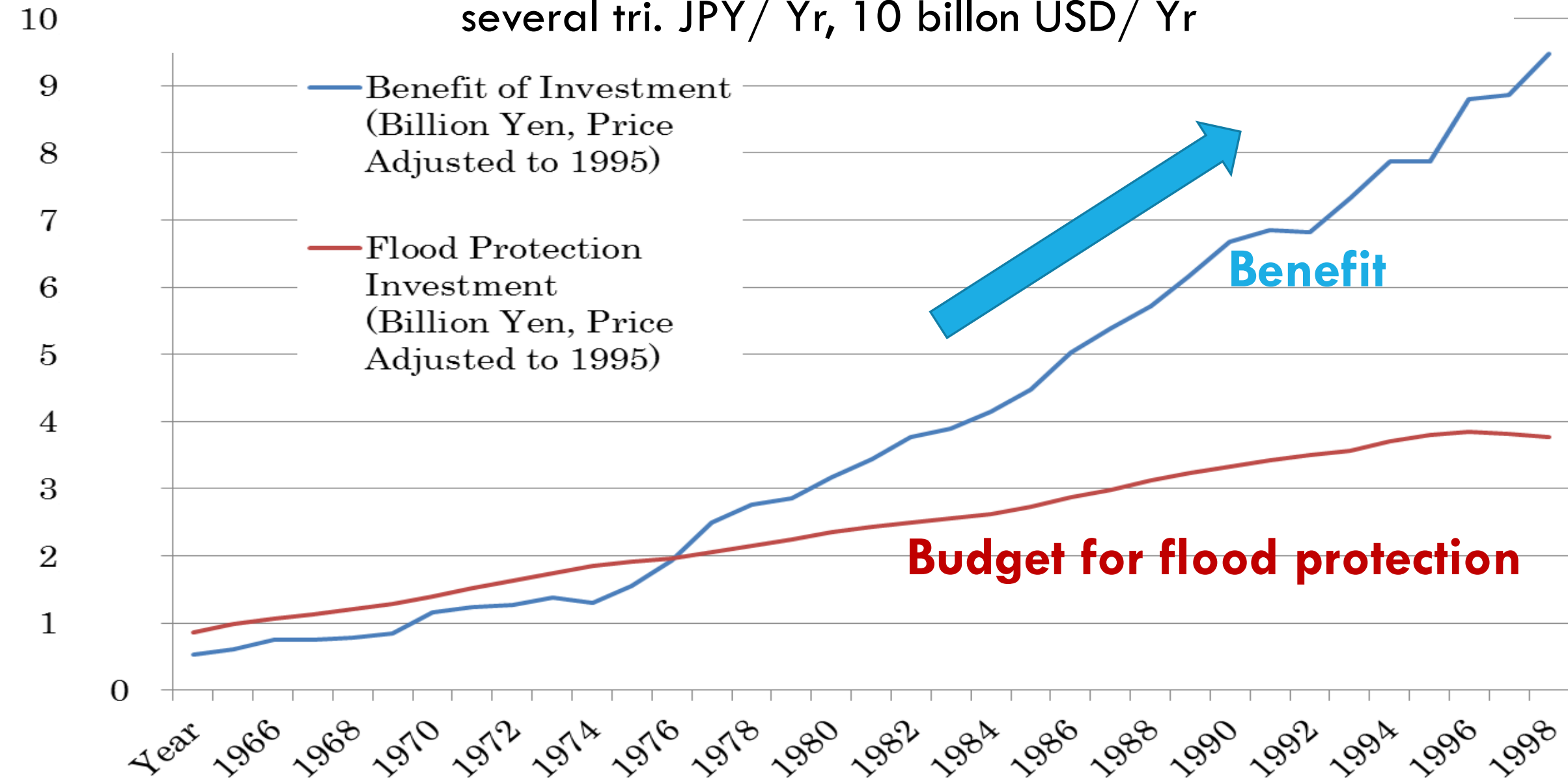


Trends of Flood Damage in Japan

Source: GDP data, "Changes in Japan's Post-war Finances and Future Challenges" 1946-1950, Ministry of Finance, "Annual economic report," long-term economic statistics from 1955 to 2019. Amount of flood damage and number of casualties: "Statistical survey on flood damage" 2018 MLIT

兆円

Flood protection paid off at the national level several tri. JPY/ Yr, 10 billion USD/ Yr



RECENT FLOODS IN JAPAN

2021 Torrential rain July & August

July

Dead or missing: 28

Flooded houses: 2600

Aug

Dead or missing: 12

Flooded houses: 7850



【九州地整】はるかぜ号

Death toll: 86

Economic damage: 0.58 bill USD


2020 HEAVY RAINFALL, KYUSYU

【へり位置】熊本県人吉市

【撮影位置】熊本県人吉市

Kumagawa River
Hitoyoshi City,
Kumamoto Pref.

Death toll: 91
Economic damage: 17 bill USD




**2019 TYPHOON HAGIBIS
MUSASHIKOSUGI, KAWASAKI CITY
“TOWER MANSION” FACING FLOOD RISKS**

An aerial photograph showing a town in Japan that has been severely flooded. The water is a muddy brown color and has inundated most of the residential and commercial buildings. A long bridge spans across the flooded area, and a road with a green median runs along the left side of the frame. In the background, there are mountains under a cloudy sky.

Death toll: 232
Economic damage: 11 bill USD

2018 WESTERN JAPAN TORRENTIAL RAIN
RAINFALL VOLUME INCREASED BY 6.5% BECAUSE OF CLIMATE CHANGE

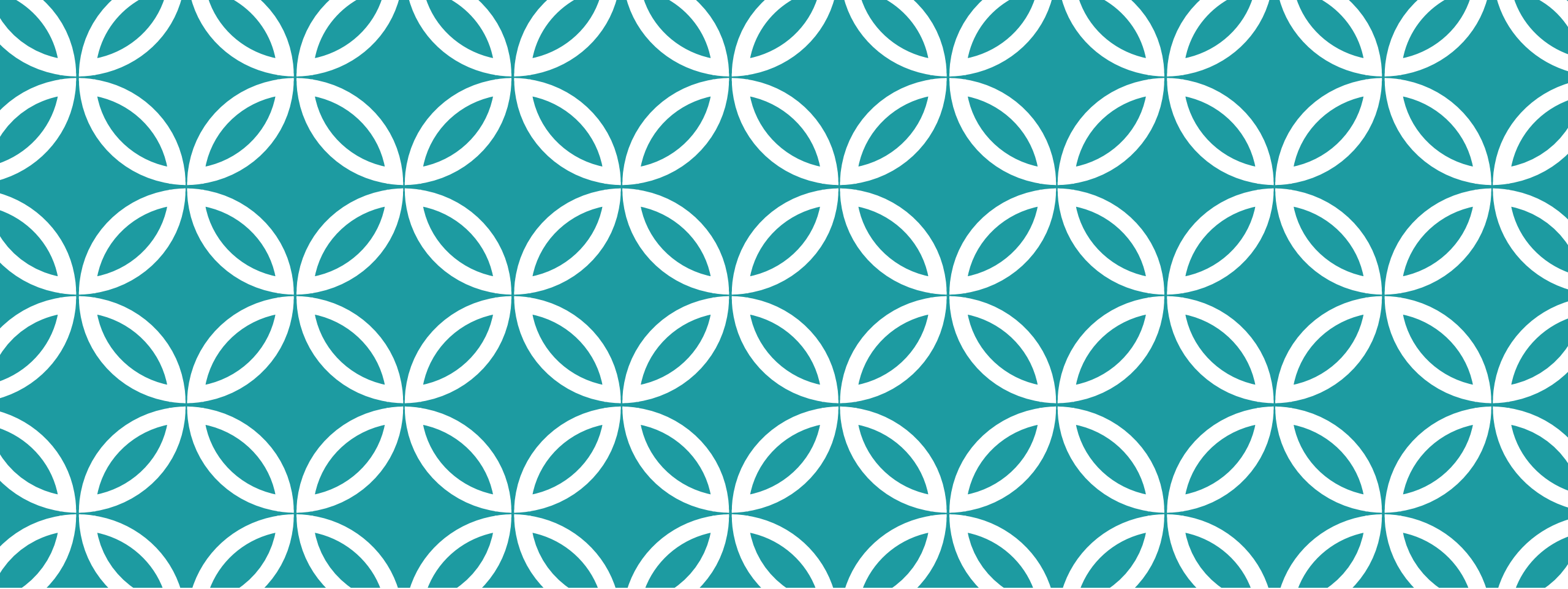


Death toll: 42
Economic damage: 1.6 bill USD

2017 NORTHERN KYUSYU TORRENTIAL RAINFALL

SEVERE FLOOD DISASTERS IN RECENT YEARS

Year	Event	No of dead & missing	No of houses destroyed	No of houses flooded	Economic loss trillion JPY (billion USD)
2015	Three typhoons	11	8,721	13,392	0.32 (3.0)
2016	Typhoon Lionrock	27	2,912	1,930	0.28 (2.5)
2017	Northern Kyushu Torrential Rainfall	42	1,476	1,667	0.19 (1.6)
2018	Western JPN Torrential Rainfall	<u>232</u>	21,460	30,439	1.215 (11)
2019	Typhoon Hagibis	91	67,016	29,556	<u>1.86 (17)</u>
2020	Kumamoto Torrential Rain	86	4,558	13,934	0.58 (5.3)



DISASTER ASSISTANCE IN US |

US FEDERAL ASSISTANCE

- ✓ Areas of assistance have expanded
- ✓ cost-share by federal raised
- ✓ president issued disaster declarations more frequently

leading to federal budget increase of disaster assistance

not responsibility by the federal government



disaster relief fund in 1947



Disaster Relief Act 1950: emergency assistance and rehabilitating public infrastructure



temporarily housing, unemployment benefits, individual & family grants, health services, food coupons 1969



Disaster Relief Act of 1974 direct assistance to disaster victims and preparedness. FEMA in 1979.



1998, Stafford Act



FEMA provides 1) individual assistance (15%), 2) public assistance (55%), and 3) hazard mitigation grant programs (7%) for presidential declared disasters.



Individual assistance: temporary housing, home repairs, personal property losses, medical expenses, and other needs assistance of essential items and services & loans from the small business administration.



Public Assistance: emergency works of debris removal and emergency protective measures, & permanent works of public facilities rehabilitation

RECENT IMPROVEMENT DISASTER RECOVERY REFORM ACT OF 2018

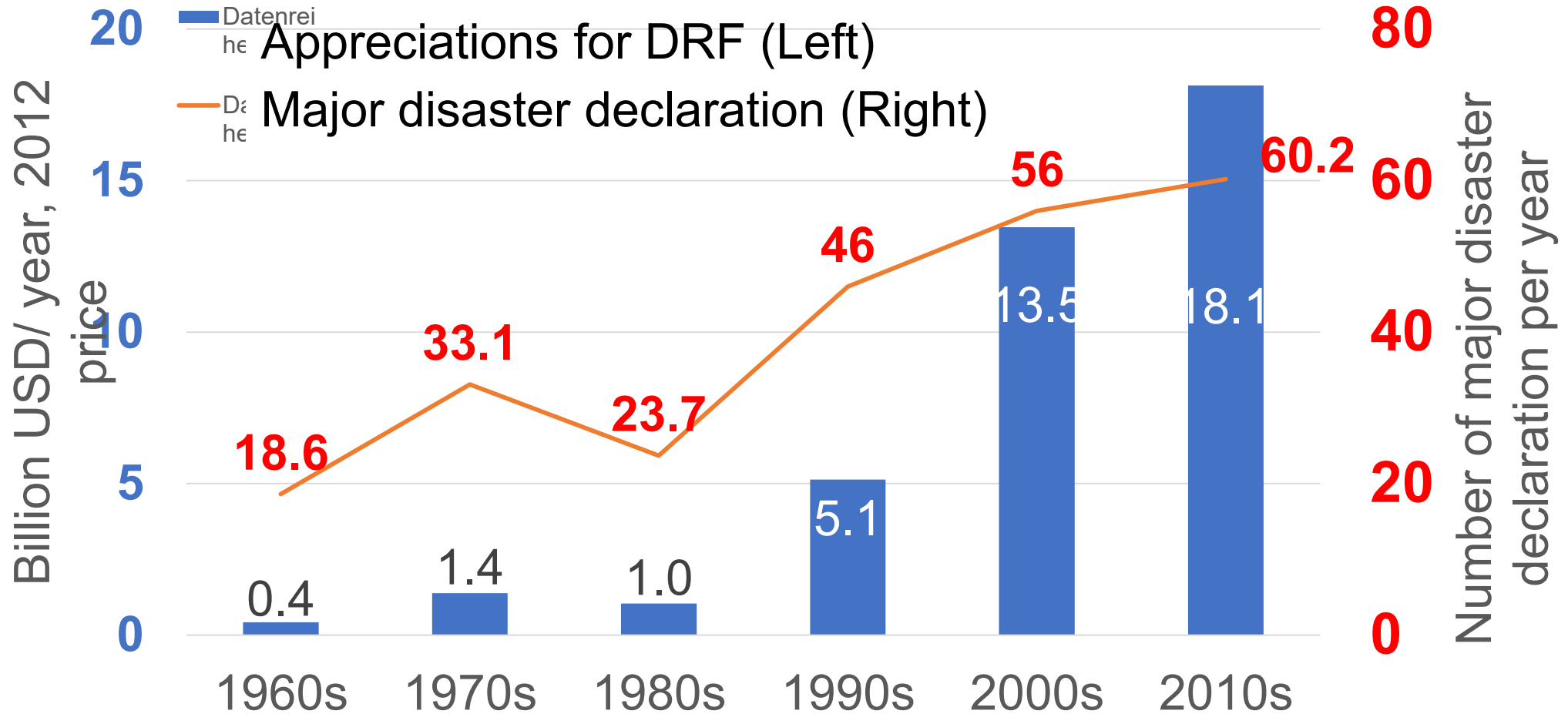


strengthens pre-disaster
efforts



allows to set aside 6% from disaster relief
fund for pre-disaster mitigation projects

TREND OF APPRECIATION FOR DISASTER RELIEF FUND AND MAJOR DISASTER DECLARATION



WHY DECLARATION INCREASING?

- frequency of disasters increased,
- population grew,
- federal policy improved
- Increased media coverage
- ✓ encouraged governors to request declarations and
- ✓ discouraged the presidents to turndown governors' request (McCarthy 2014; Sylves 2008).
- increasing states' capacity to request declarations McCarthy (2014)

PRESIDENT'S DECISION WAS INFLUENCED POLITICALLY?

 Husted and Nickerson, 2014; Roberts, 2013; Schroeder, 2019

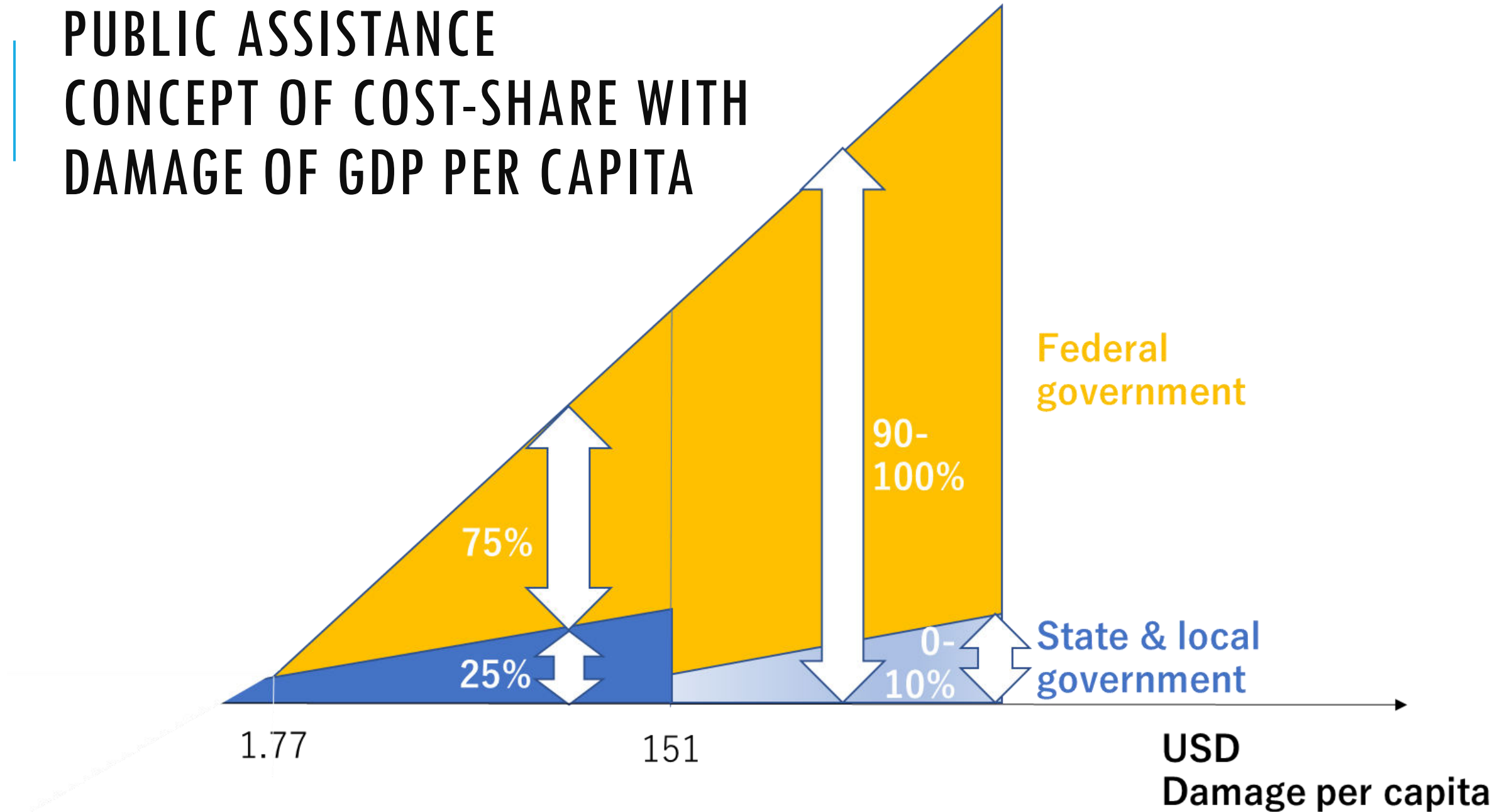
 The Congress can make influence on federal assistance since the congresses' committees oversee FEMA's operations.

 Garrett and Sobel (2003) argue that half of all disaster relief is influenced politically and not decided purely by needs.

 Following FEMA as a part of Dep. Home Security, congress's influence reduced (Sobel et al. 2007).

 Lindsay (2017) political influence is statistically insignificant by comparing numbers of declarations & turn down declarations between presidential election & normal yr.

PUBLIC ASSISTANCE CONCEPT OF COST-SHARE WITH DAMAGE OF GDP PER CAPITA





Public assistance

minimum threshold: \$1 million and 1.77USD/p

Individual assistance:

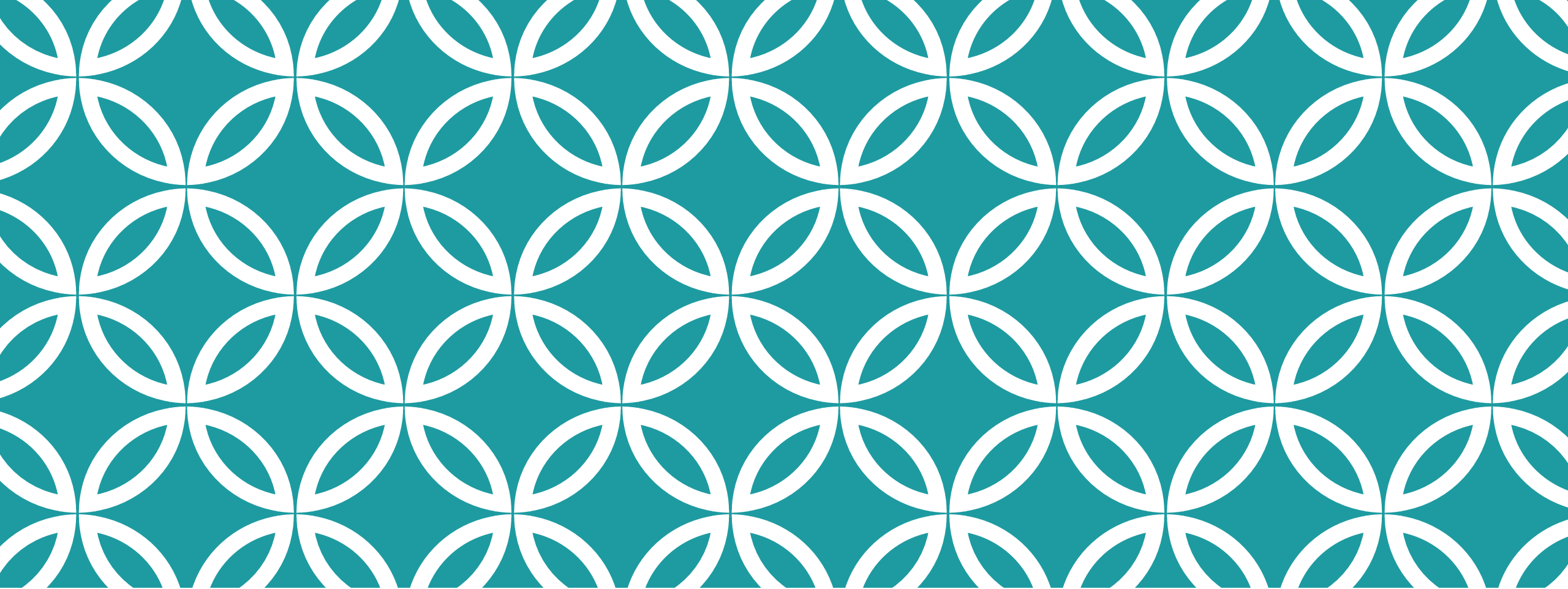
covered by Federal gov. without threshold

EVOLUTION OF PUBLIC AND INDIVIDUAL ASSISTANCE PROGRAM IN US AND JAPAN

US

Public Individual





DISASTER ASSISTANCE IN JAPAN



Rulers recognized disaster relief as important political action to the public

Rescue house established by government

Edo Period



I. INDIVIDUAL ASSISTANCE

MODERNIZED STATE: MEIJI PERIOD (1868-)

□ Edo period

GISO 義倉 Public Storage origin Chinese Dynasties in 6th century

Shaso 社層 Cooperative storage, origin 朱熹 Zhu Xi in 12th century

□ Meiji national gov. could not afford to cover

Prefecture gov. use the storage systems of Edo period.

□ 1880 Law of emergency relief storage, 1889 Emergency Relief fund

Central relief funds (until 1899) + Prefecture relief funds

AFTER WWII

□ 1947 Disaster Relief Law:

National gov. support 50-90% costs of relief by local governments

Prefecture gov accumulate 0.5% revenue for relief fund

□ 1973 Act on provision of disaster condolence:

first legislation of providing cash

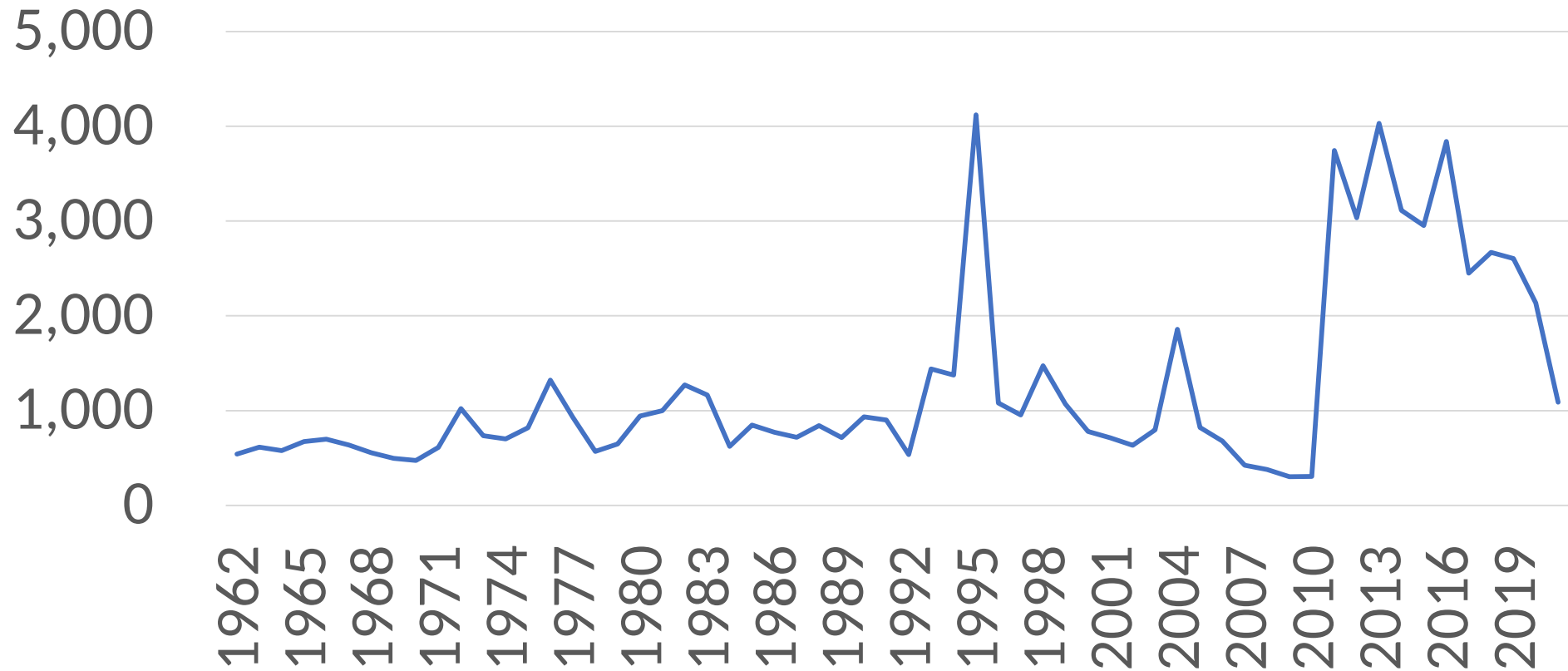
□ 1998 Law of support tot rehabilitation of daily lives for victims

housing reconstruction

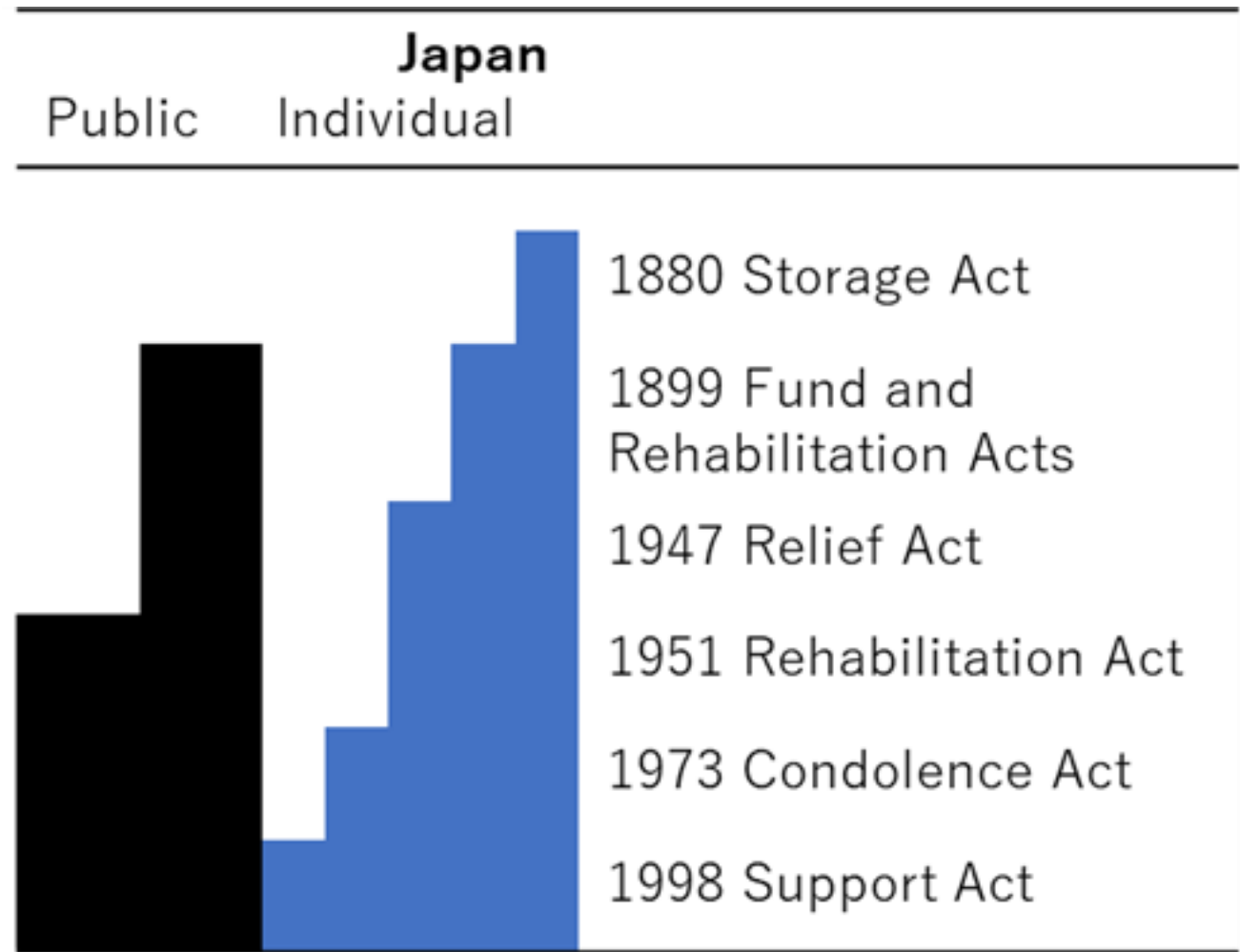
II. PUBLIC ASSISTANCE

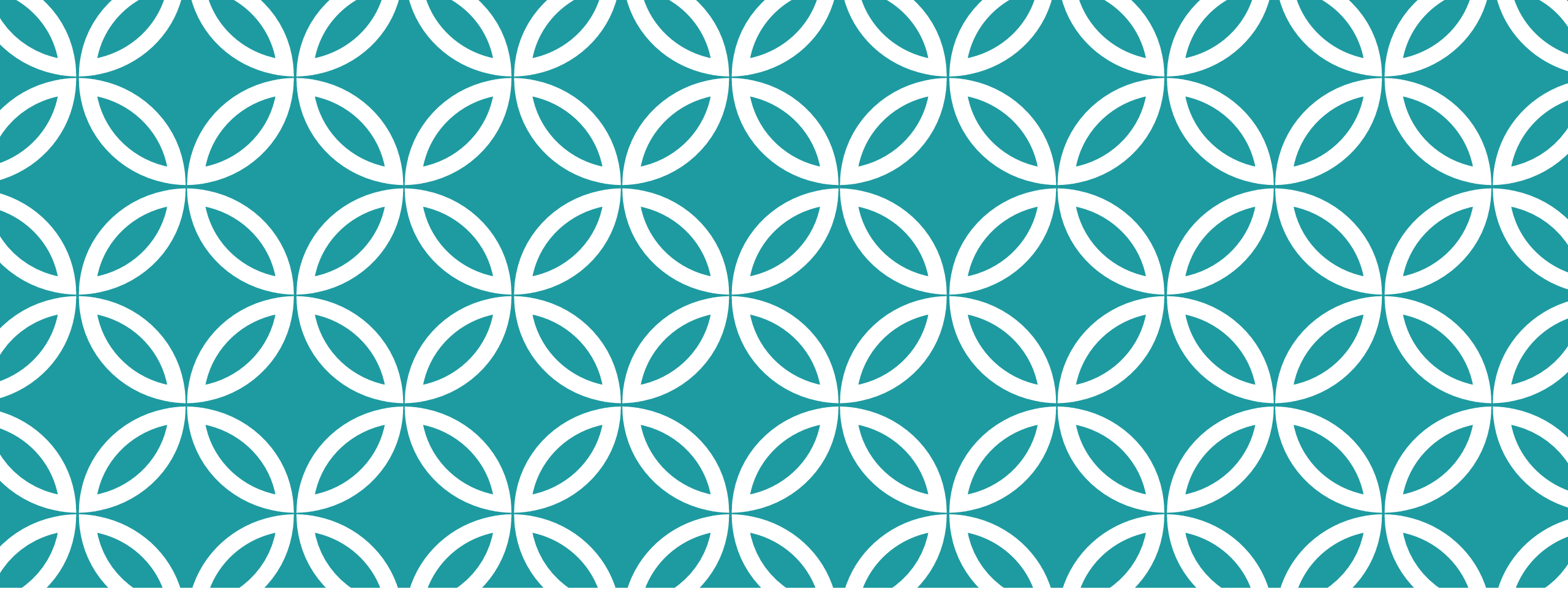
- 1899 started
- 1951 Law of assistance for rehabilitating public facilities recommended by Shoup mission
 - 2/3 assistance + tax allocation, Local governments bear 1.7% of costs
- National Gov. covers all costs for public facilities following Great East Japan EQ and Tsunami

REHABILITATION BUDGET IN JAPAN (BILLION JPY, 2015 PRICE)



EVOLUTION OF PUBLIC AND INDIVIDUAL ASSISTANCE PROGRAM IN US AND JAPAN





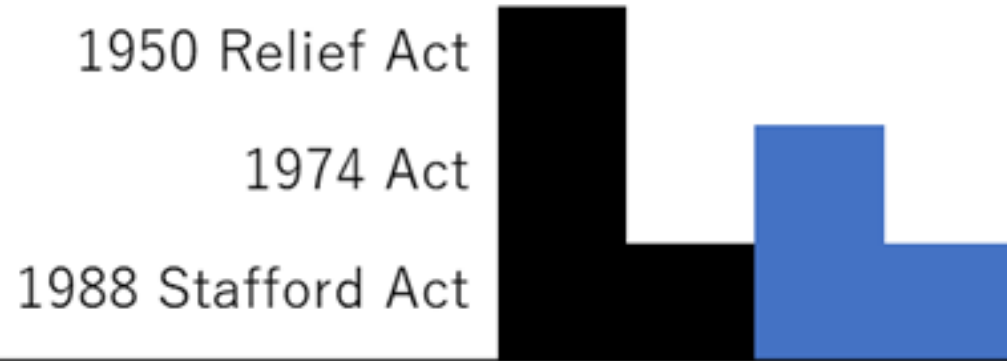
CONSIDERATIONS AND CONCLUSIONS



EVOLUTION OF PUBLIC AND INDIVIDUAL ASSISTANCE PROGRAM IN US AND JAPAN

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DESPITE DIFFERENCES BETWEEN FEDERAL SYSTEM IN THE U.S. AND CENTRALIZED SYSTEM IN JAPAN, COMMON PRACTICES:

Historically limited, but

Continuously expanded financial responsibilities for relief and recovery efforts, as disaster damage increased.

Legislations could clearly define roles & responsibilities of each level of government and ensure effective coordination during disaster.

Covered all costs of relief and recovery in mega-disasters of Hurricane Katrina & Great East Japan EQ and Tsunami.

CONCLUSION AND RECOMMENDATION



local governments cannot afford to cover all relief and recovery costs and national level assistance is essential.



In mega-disasters national government should cover all costs



to avoid moral hazard, establish cost-sharing mechanisms among national and local according to concepts or philosophy agreed



Local governments should cover costs of managing small disasters



define scales of “small” and “mega” considering economic situation, risk scales, financial capacities of different governments

FURTHER STUDIES

- Cases in other countries, China
- Cost-sharing of infrastructure for flood protection

谢谢大家

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MORAL HAZARD?

If local government can receive enough assistance from national government,

Local governments may just wait for disasters with less investment in preparedness and mitigation and receive as much assistance as they desire once a disaster.

increased burden on national government