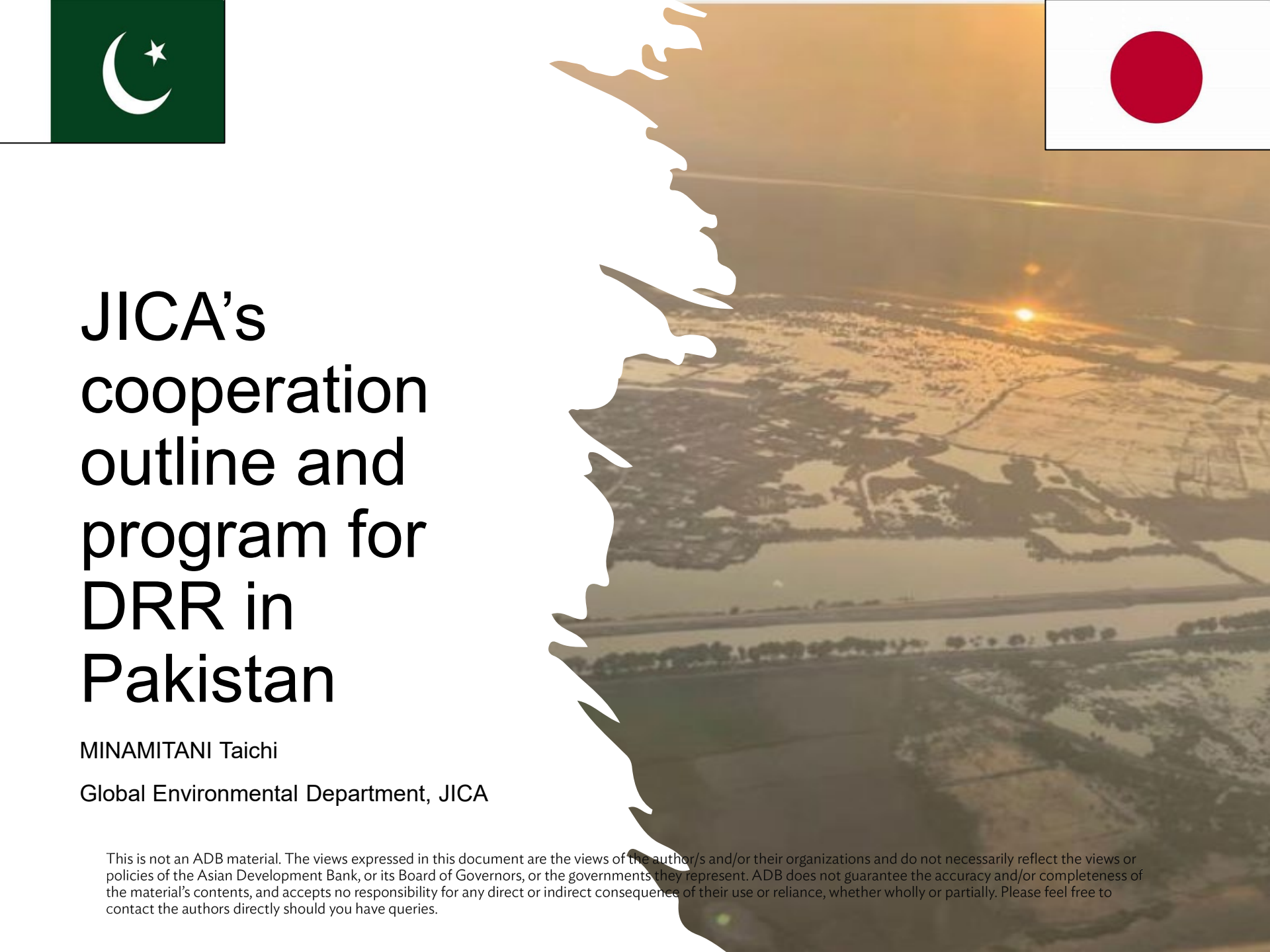


JICA's cooperation outline and program for DRR in Pakistan

MINAMITANI Taichi

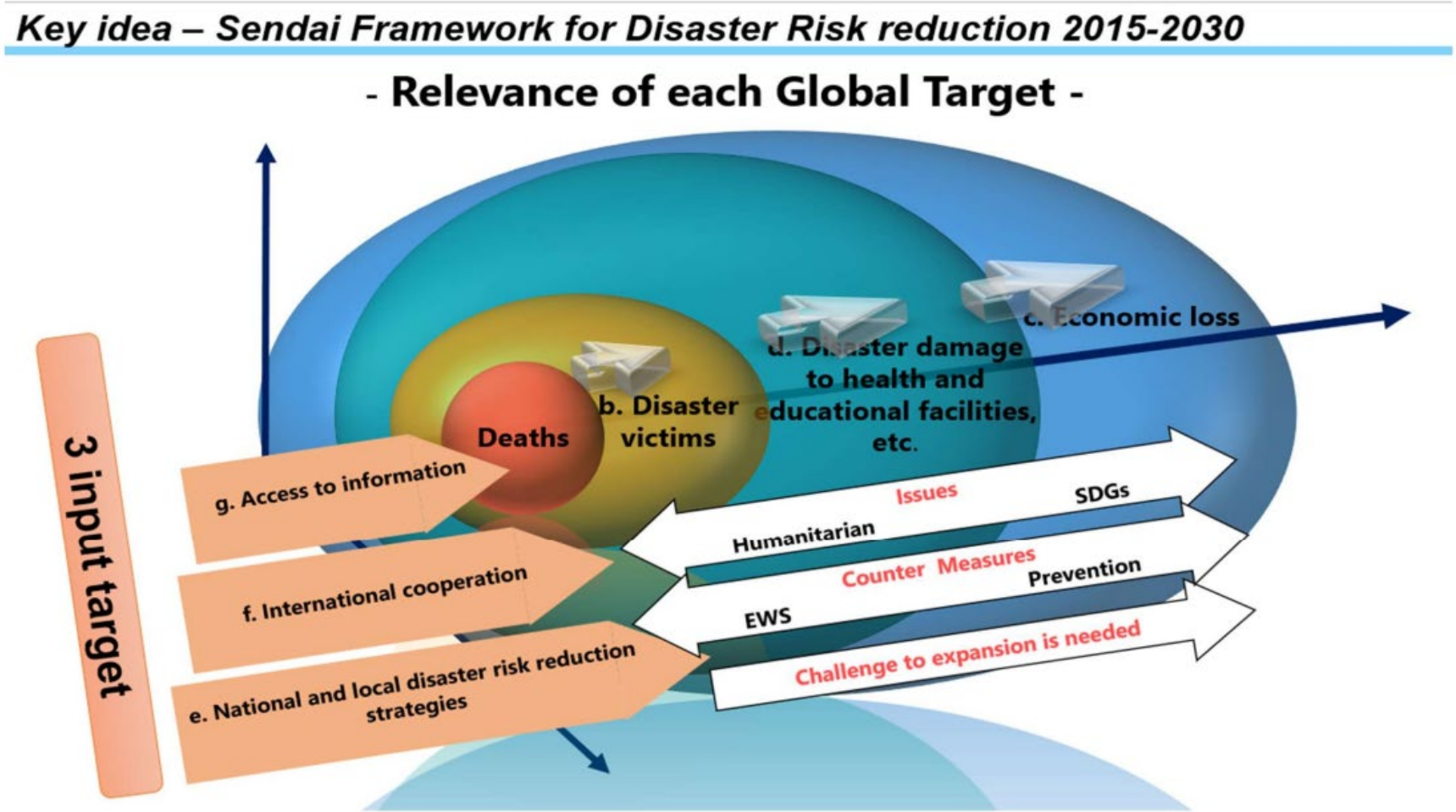
Global Environmental Department, JICA

Outline

- JICA's cooperation strategy of Disaster Risk Reduction
- JICA-Pakistan Post Flood Operations

JICA's cooperation strategy of Disaster Risk Reduction

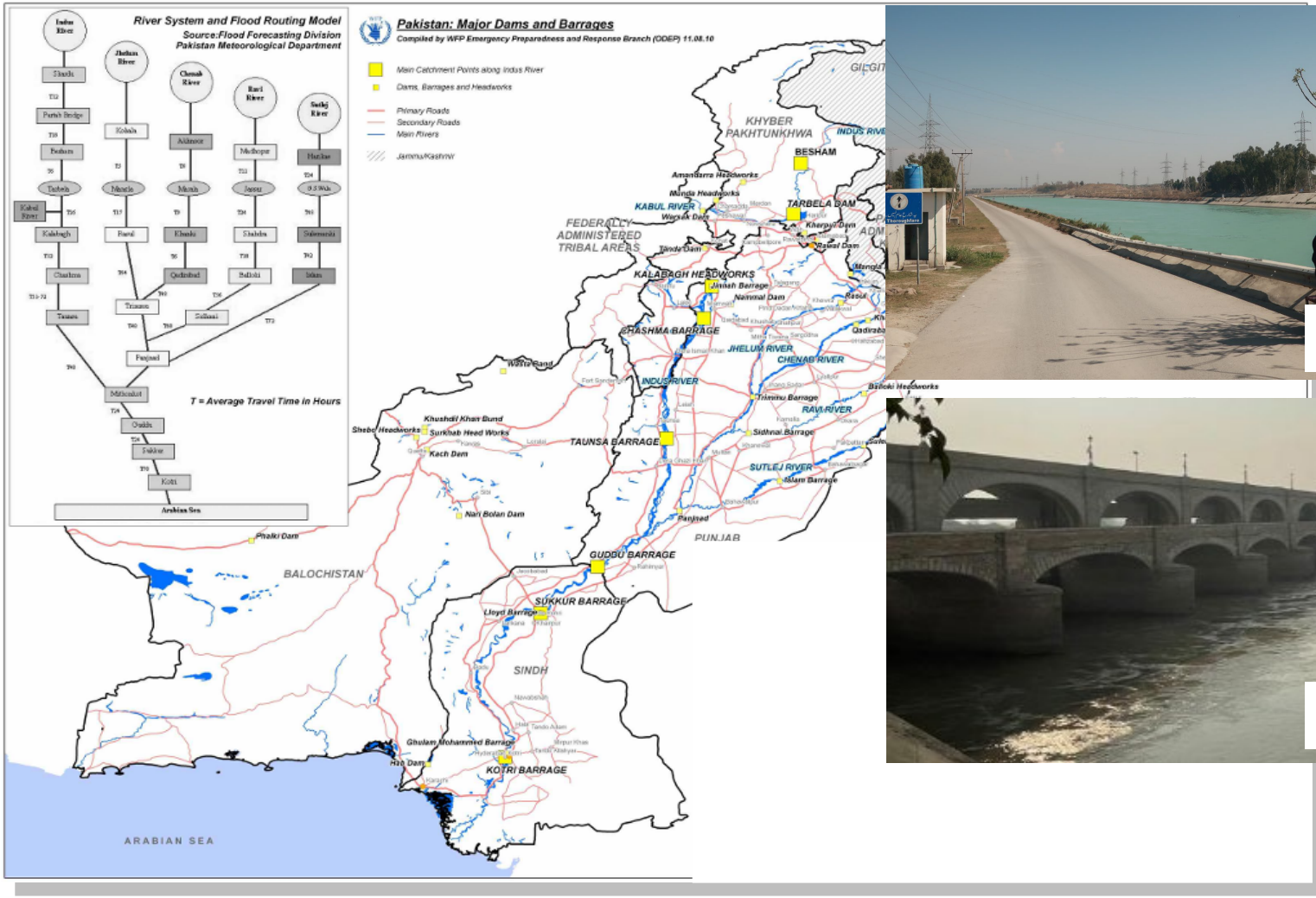
● Disaster Risk Reduction as development issue



● JICA's preliminary observation:

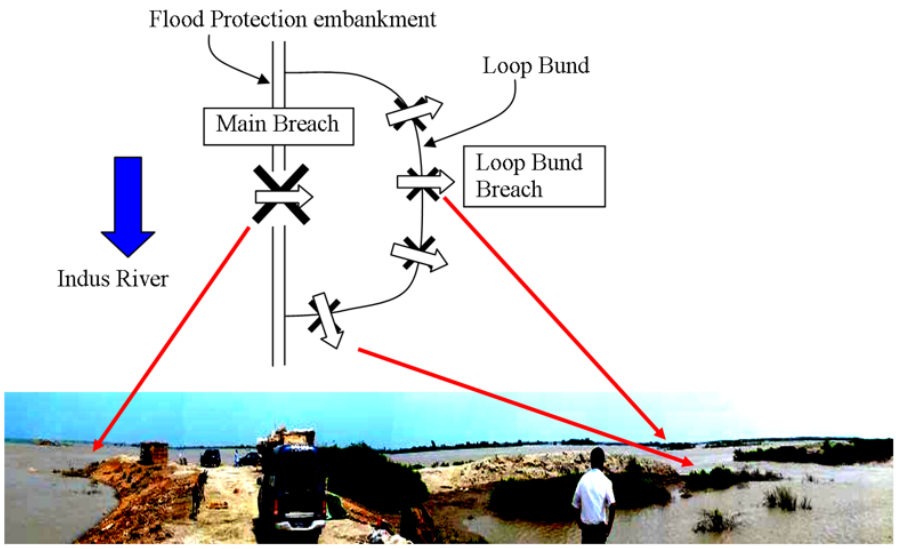
<u>Huge rivers in both countries, but a different control</u>

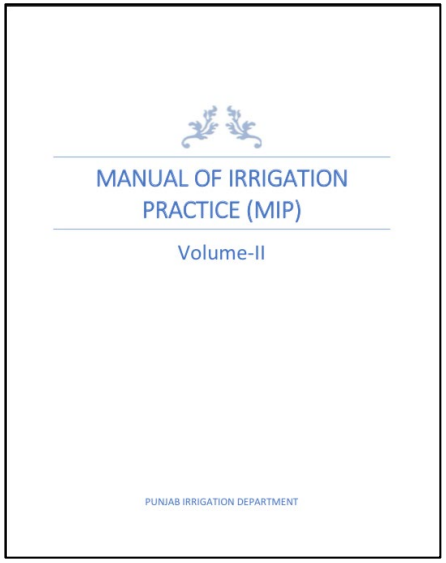
● Barrage (Irrigation system)



River Control (Flood Control) closely linked to agriculture

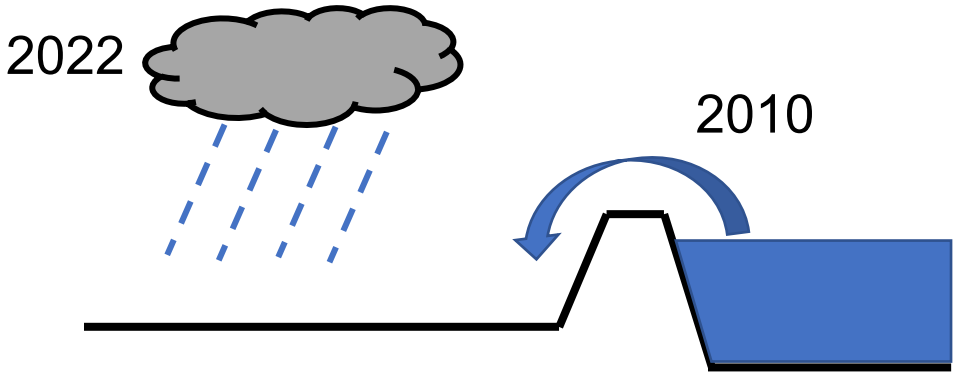
● Dike





Manual for Punjab

● Comparison of flood mechanism:



<u>2010</u>

Downstream of Sukkur being inundated **<u>due to dike breach/overflow</u>**

<u>2022</u>

Downstream of Sukkur, mainly, being inundated **<u>due to very heavy rainfall directly onto the right bank of the Indus river basin at downstream of Sukkur and the Suleiman Mountains</u>**

● Comparison of flood mechanism:

Table 1 Flood Damage in the Indus Basin, 1950–2011

Year	Direct losses ($ million)[a]	Lost Lives	Affected Villages	Flooded Area (km²)
1950	227	2,910	10,000	17,920
1955	176	679	6,945	20,480
1956	148	160	11,609	74,406
1957	[illegible]	83	4,498	16,003
1959	109	88	3,902	10,424
1973	2,388	474	9,719	41,472
1975	[illegible]	126	8,628	[illegible]
1976	1,621	425	18,390	81,920
1977	157	848	2,185	4,657
1978	1,036	393	9,199	30,597
1981	139	82	2,071	4,191
1983	63	39	643	1,882
1984	35	42	251	1,093
1988	399	508	100	6,144
1992	1,400	1,008	13,208	38,758
1994	392	431	1,622	5,568
1995	175	591	6,852	16,686
1998	na	47	161	na
2001	na	201	na	na
2003	na	230	na	na
2010	10,056	1,600	na	38,600
2011	66	516	38,700	9,098

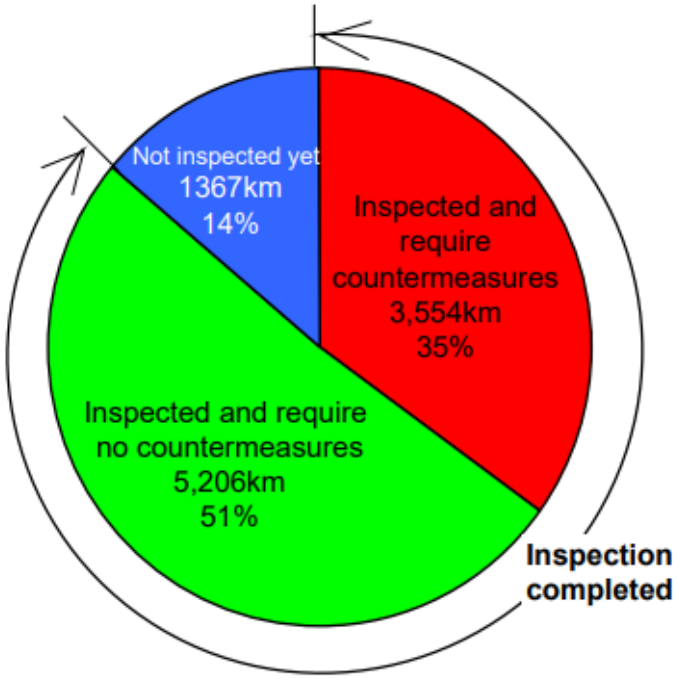
(Source: ADB)

Historically, flood damage in the active floodplain (i.e., within the levees) occurred in all medium-to-high floods (see Appendix 3 for the flood limits). Levee breaches occurred only in exceptionally high floods, but they caused especially heavy casualties and economic losses. Although constrictions at bridges and barrages, with the resultant fluxes, were the primary reasons for these breaches, the damage was aggravated by the flat topography, slow drainage, and the long periods of inundation.

Breaches in the main river are a impactful risk factor

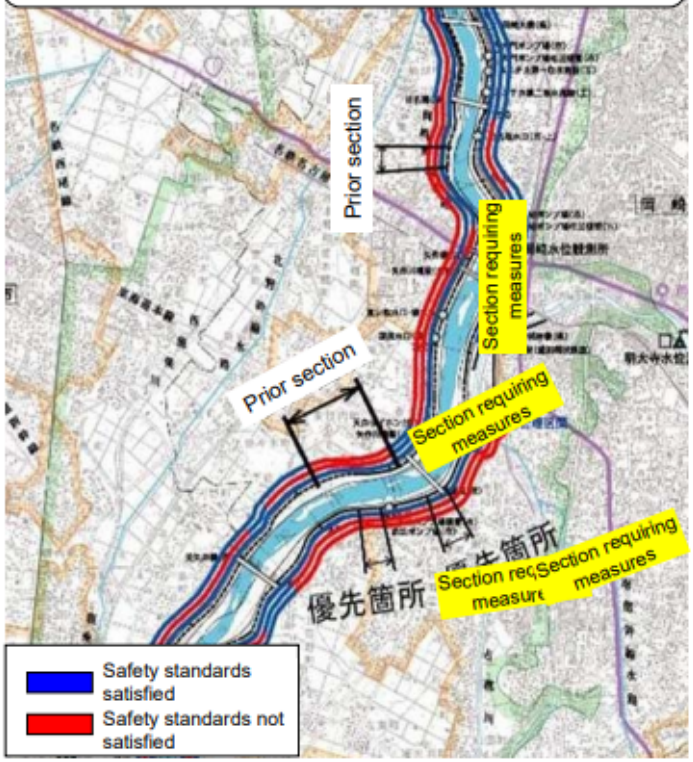
● Japan's experience:

○ Of the entire levee of about 10,000 km, 8,800 km has been inspected for safety by the end of March 2008.
○ About 3,500 km was found to be insufficient in safety against seepage.
○ Inspection of the remaining 1,400 km will b completed by the end of fiscal 2009.



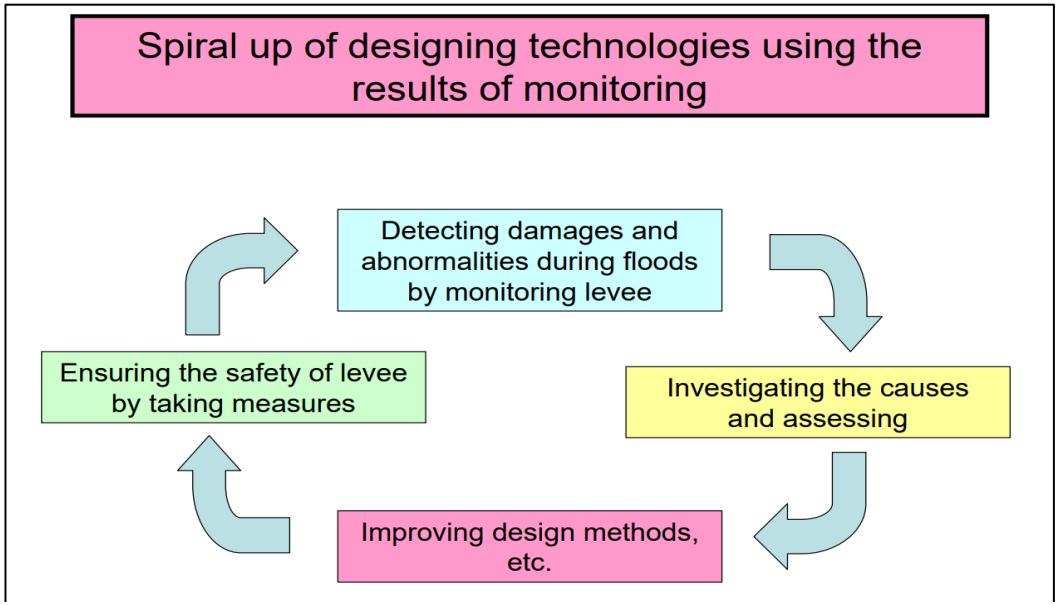
Percentage of levee sections inspected for safety against seepage
(As of the end of March 2008)

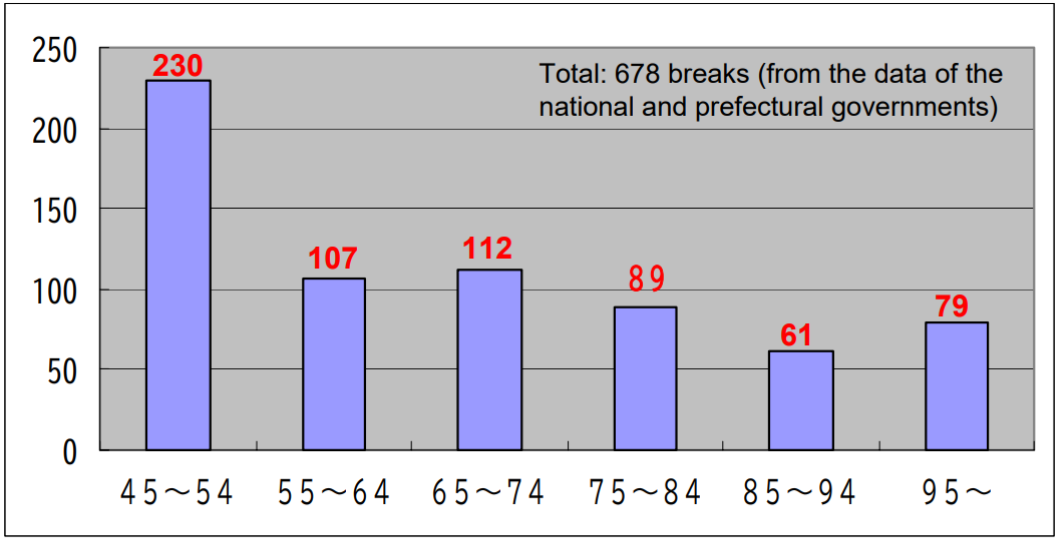
An example of publishing sections requiring countermeasures (Yahagigawa River)



Source: MLIT

● Japan's experience:





Reference: Actual states of breaking of dykes WWII (2002, River Improvement and Management Division)

<u>Basic</u>

Not to heighten the high-water level

Continuous maintenance

JICA-Pakistan Operations

- **Overall goal through its operations**

Support in the Indus River Basin to help Pakistan reduce economic loss through disaster risk reduction with flood control measures

<u>Letting dike network fulfil its function with a consideration of climate change</u>

JICA-Pakistan Operations

● Package idea for better river management

①Flush flood in upstream area

③Inundation in downstream area

②Improvement of river dikes

telemetry system

Needs Category	
①**Flush flood in upstream area** Riverbank damage caused by flush floods in mountainous region.	Grant Aid
②**Improvement of Indus river dikes** Breach risk due to floods that occur with some frequency, such as the 2010 floods	This TA
③**Large scale inundation in downstream area** Some frequency of inundation in low-lying areas (right bank side in downstream of Sukkur)	
④**Reflection on national planning** Necessity of effective plans	On-going TA


شکریہ.