Missions of International Centre For Water Hazard and Risk Management under the auspices of UNESCO (ICHARM)

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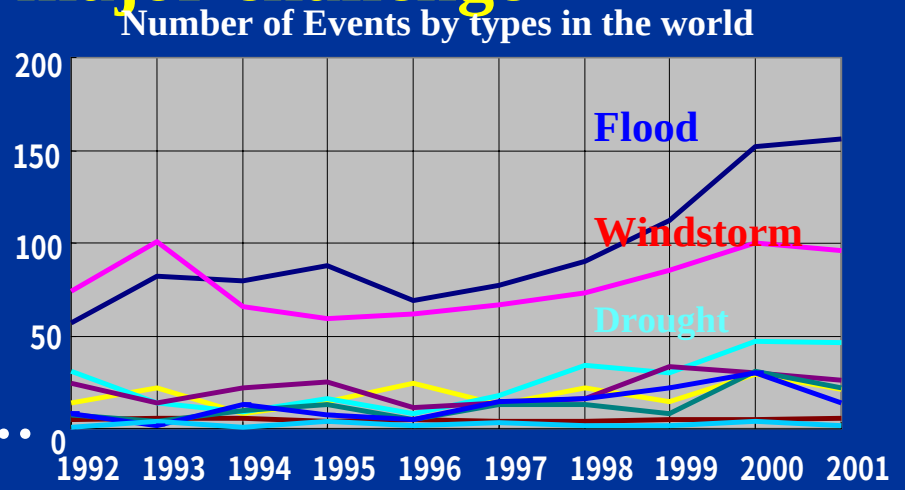
Background

-Water hazards as a major challenge-

The number of water-related disasters is increasing



Source :EM-DAT, CERD, University of Louvain, Belgium

The water-related disasters will be …

- **aggravated by population growth, rapid urbanization, and concentration of human settlements and assets in flood areas;**
- **hampering sustainable development at global scale**

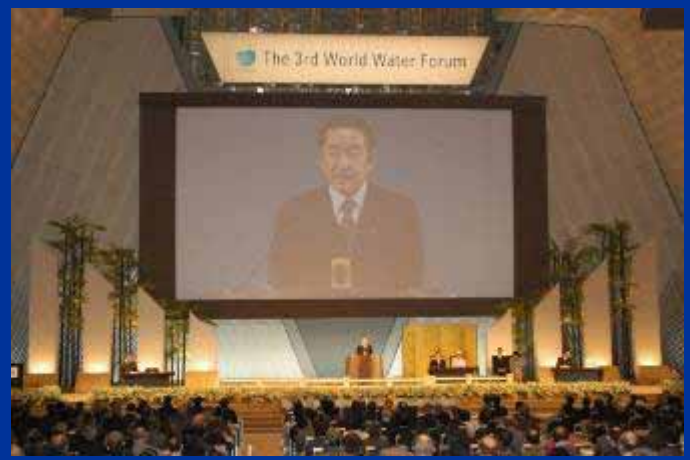
Reduction of water hazards is crucial issue.

Background

-Necessity for dealing with water-related disasters-

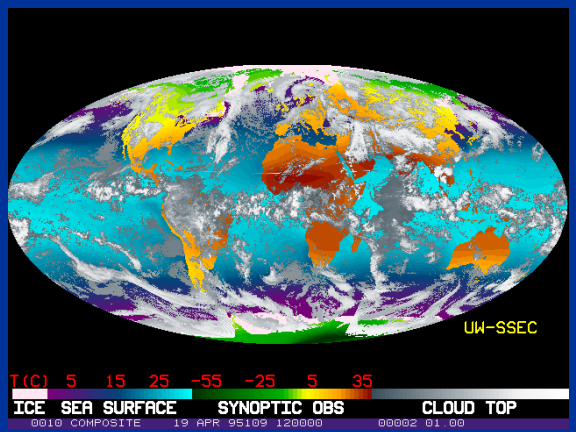
2002 **World Summit on Sustainable Development (Johannesburg)**

2003 **3rd World Water Forum (Kyoto, Shiga & Osaka)**

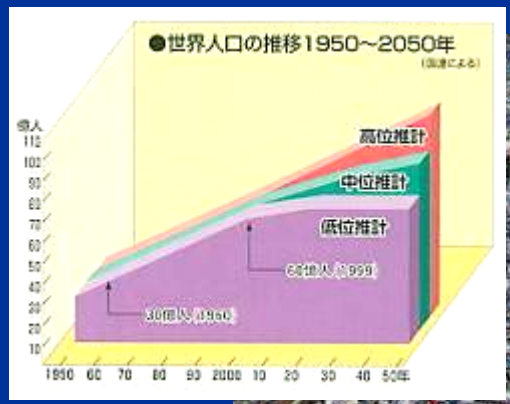


- Necessity to improve risk management measures, technologies and capacity building relevant to water-related disasters

Water hazard for the future



Climate Change: Increased trend and variations of extremes?



Population growth and urbanization: Increased vulnerability

More damage is expected.

Immediate and appropriate actions are required

History of Public Works Research Institute (PWRI)

1927: Established in Ministry of Interior (later Construction Ministry)

1979: Relocated to Tsukuba (Area:126 ha, Staff: 550)

2001: Re-organized as an independent institution

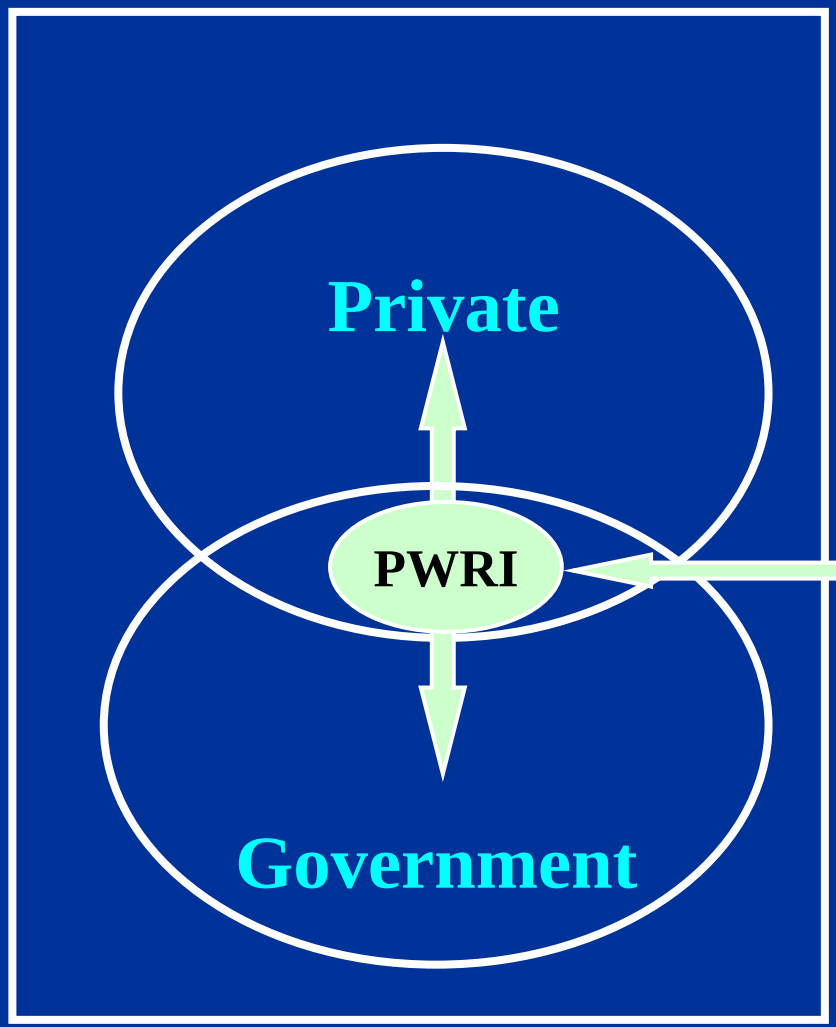
Vision and Missions of PWRI

Assist Japanese Government through:

- **Technical assistance to government field offices and policy making**
- **Practical, applied, user-oriented, and problem-solving research and development**
- **Interdisciplinary and intersectional research**

PWRI's position

Limited to only Japan

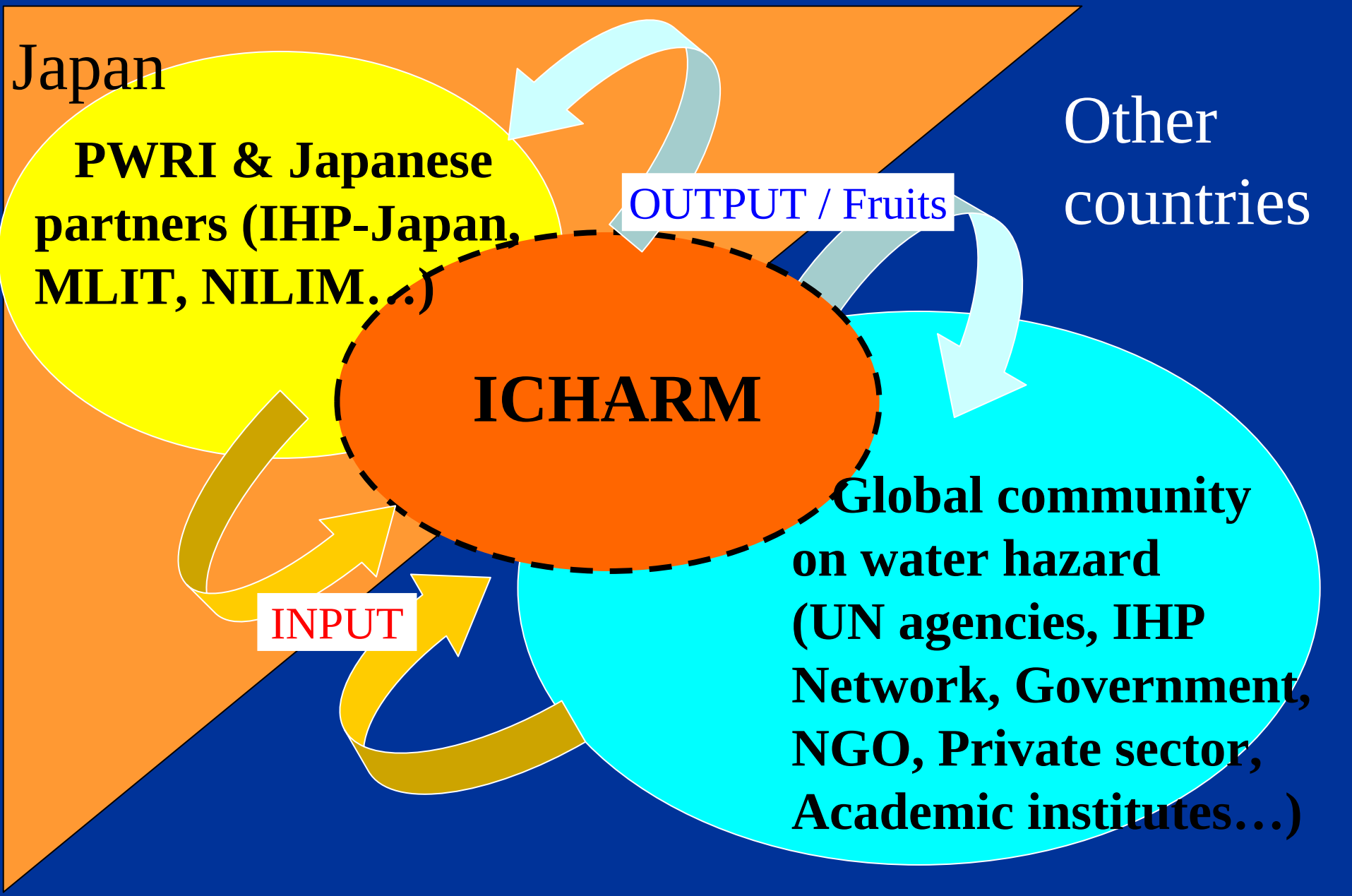


PWRI water section's main function is bridging different worlds for the government.

Academia

Visibility and connectivity

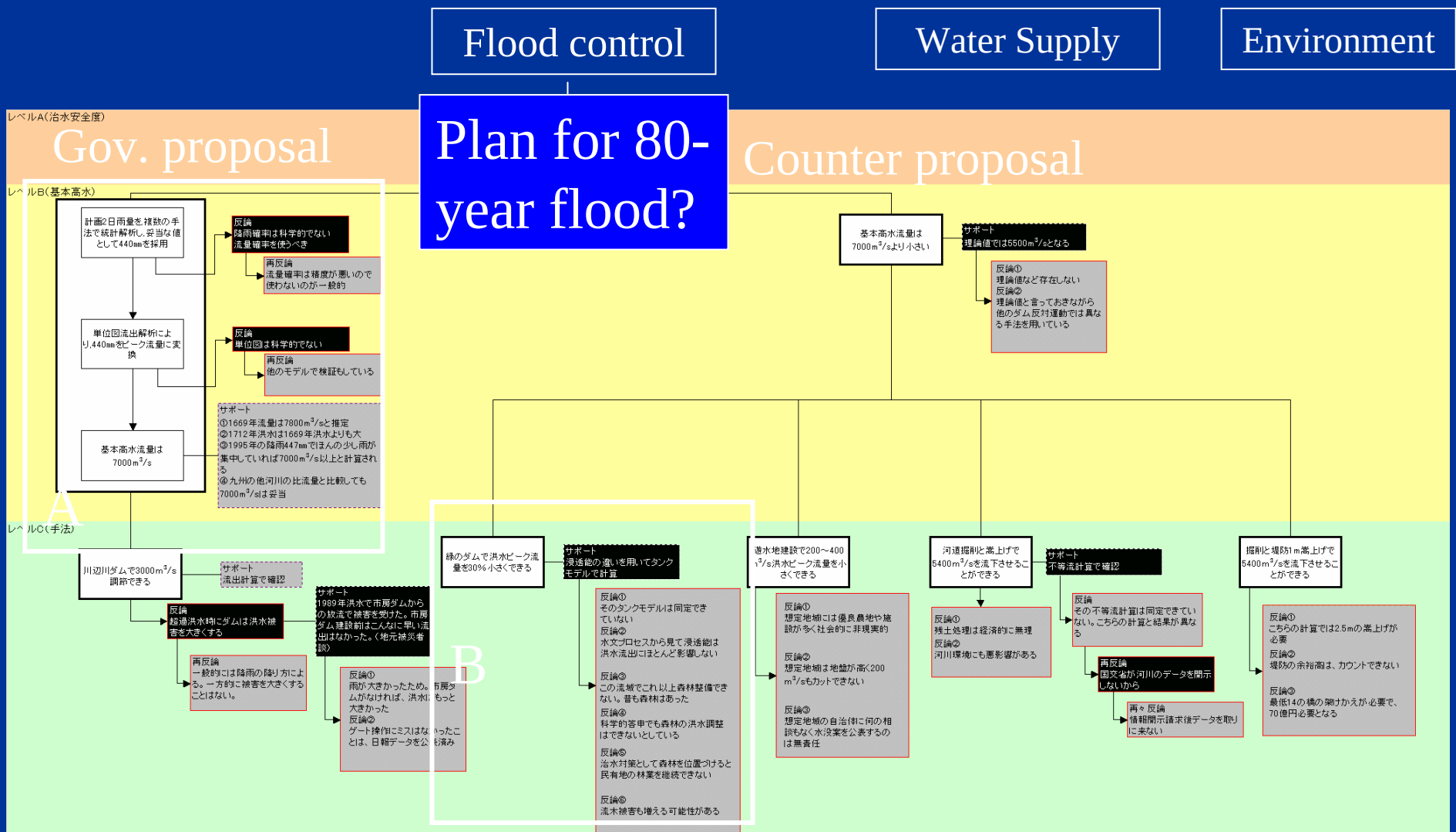
Expansion of the Arena



Public discussions on a Multi-purpose Dam Construction Project (700-800 participants, 6-8 hours, each)

- First on December 9, 2001
- Second on February 24, 2002
- Third on June 23, 2002
- Expert meeting on July 28, 2002
- Fourth on September 15, 2002
- Fifth on December 21, 2002
- Sixth on February 16, 2003
- Seventh on May 24, 2003
- Eighth on July 13, 2003
- Ninth on December 14, 2003
- More…

Structure of main issues on flood control argued in the public discussions



A. Argument on Frequency Analysis

Rain event of 440mm/2-day is derived as design from frequency analysis.

Convert the design rain to design Hydrograph by unit hydrograph method.

The design peak discharge is 7000m3/s.

Rebuttle
Use of rain for design is not scientific.
Flow data should be used.

Surrebutter: Natural flow data are inaccurate and data period is too short.

Rebuttle
Unit Hydrograph method is not scientific.

Surrebutter
Results are checked by other hydrology models.

Support
(1) Peak discharge of the 1669 flood is estimated as 7800m3/s.
(2) The 1712 flood was bigger than the 1669 flood.
(3) If the 447mm rain amount in 1995 had little more rain, peak discharge could be more than 7000m3/s.
(4) The 7000m3/s design is not too big to compare with other river plans.

Frequency Analysis: Historical development (1)

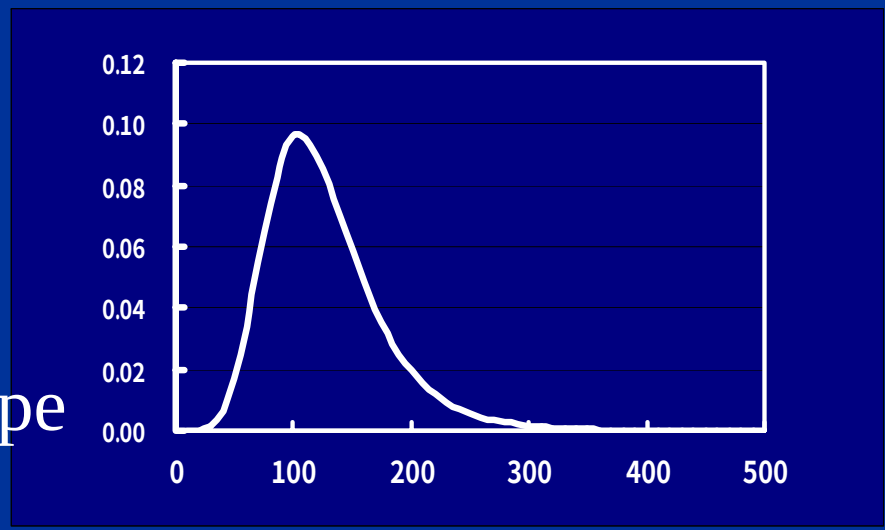
Distribution Models

1880s first application of frequency analysis: graphical application of normal distributions

1910s log-normal type

1920s pearson type

1940s extreme value type



Frequency Analysis: Historical development (2)

Fitting methods

moments (high bias)

1970s maximum likelihood

1980s L-moments,
Probability Weighted Moments

Frequency Analysis: Historical development (3)

mathematical development

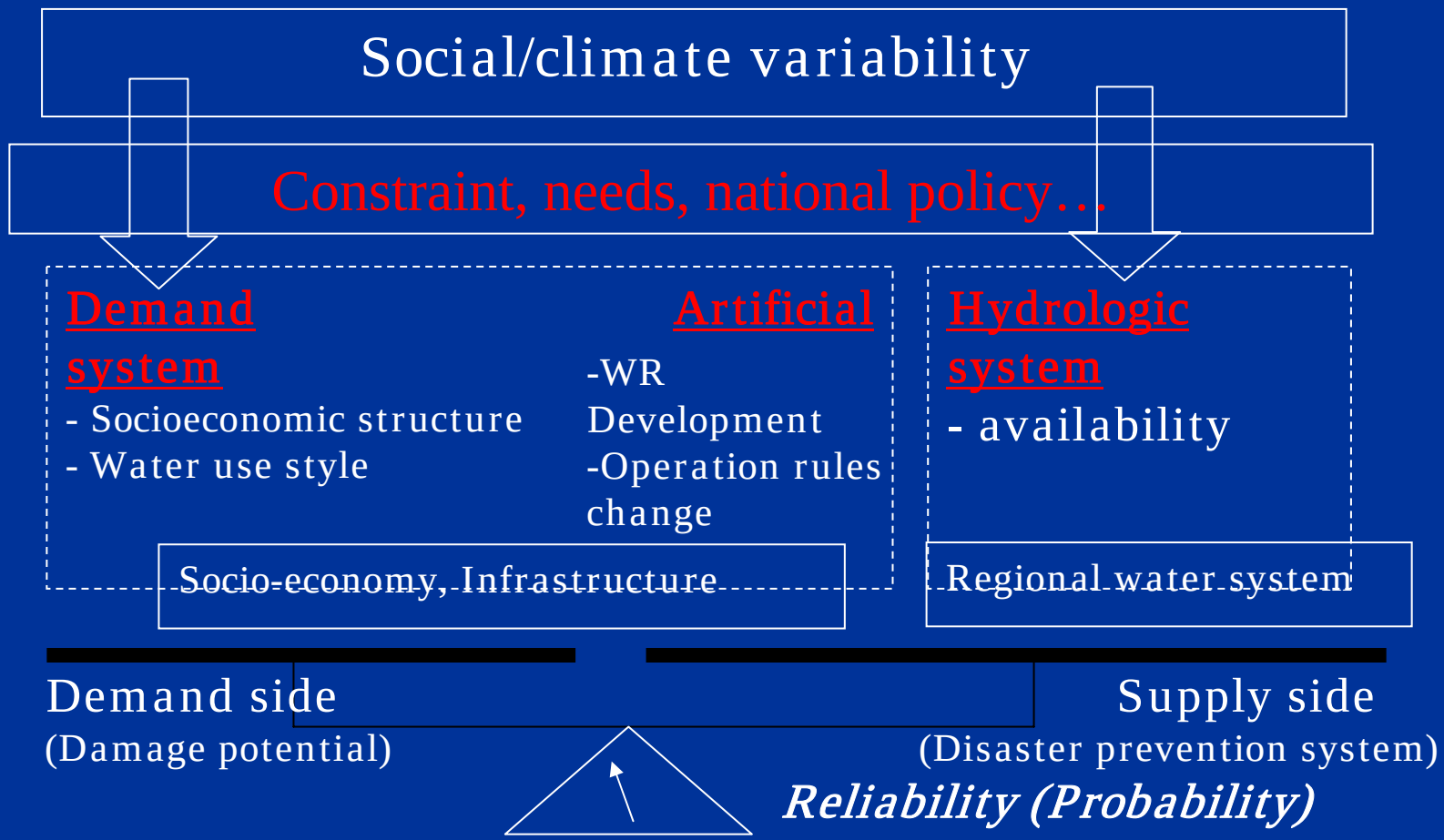
increased confusion
in planning decision

none of new methods replace old ones

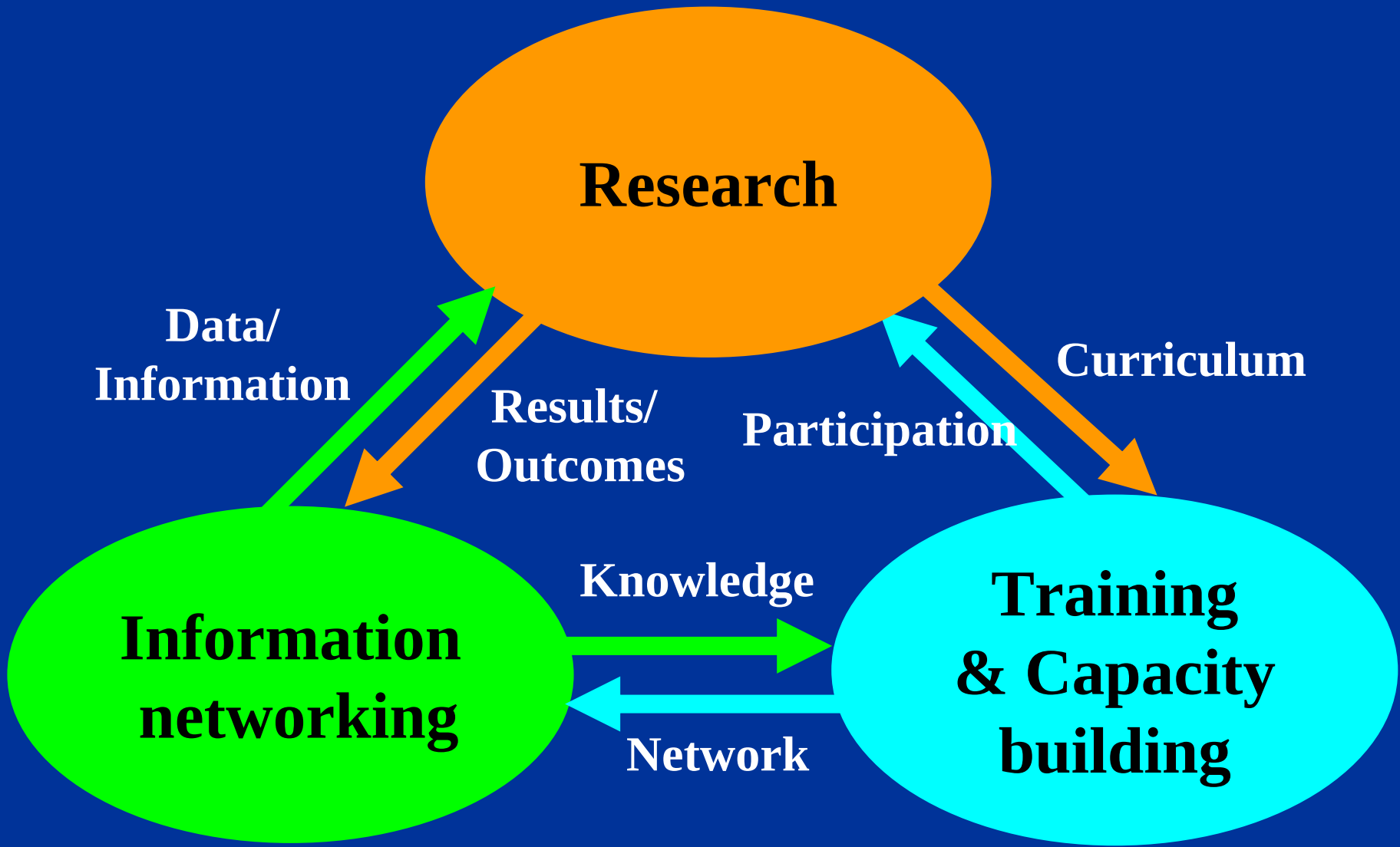
many more methods

no selection criteria

Wider Structure of Water Resources Issues



Pillar Activities of UNESCO-CHARM

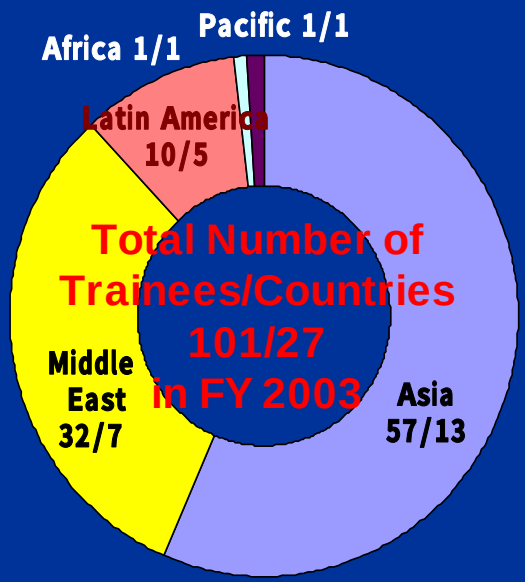


Activities
- Training and Capacity building -

JICA training courses:

- River and Dam Engineering for 12 trainees in 2004
- Flood Hazard Mapping for 16 trainees in 2004
- Others

Tsunami Course under planning



For more information, visit http://www.unesco.pwri.go.jp