Integrated Flood Risk Management
- role of CHARM -

January 19, 2005

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I am going to talk about

- Process Chain of Natural Disasters
- Concept of Integrated Flood Risk Management
- Comprehensive Flood Disaster Prevention Measures to cope with Urban Flood Problem
- Role of CHARM (International Center for Water Hazard and Risk Management under the auspices of UNESCO)

Process Chain of Natural Disasters

Extreme Natural Phenomenon — Heavy Rainfall

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Driving Force — Increased River Flow

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Hazard — Flooding

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Damage to Lives and Properties — Loss of lives and/or inundation of houses

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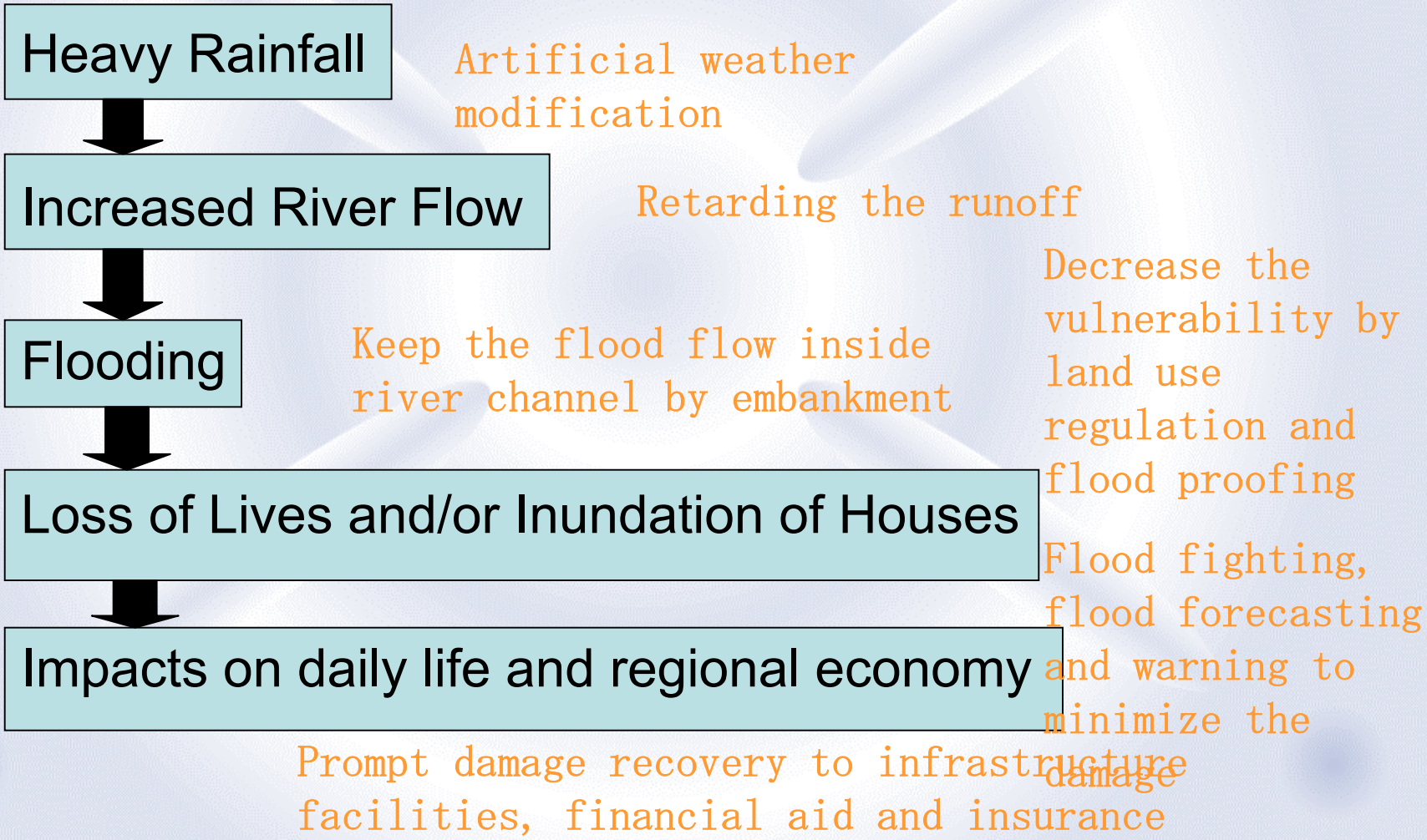
Secondary Social and Economical Impact — Hampering daily commodities supply and/or Regional production activities

Flood Risk Management to cut Process Chain of Flood Disasters



Integrated Flood Management

within the context of Integrated Water Resources Management (IWRM)

with a view to maximizing the efficient use of flood plains

and minimize the loss of life and properties

(‘Integrated Flood Management ‘ , the associate programme on flood management, c/o Hydrology and Water Resources Department, WMO)

Cut the process chain of flood disasters in an integrated manner to maximize the net benefit to the region under various natural, social and economical conditions

Various Measures for integrated River and Basin management

from 'Rivers in Japan', MLIT, 2003

Fukuoka Flood in 1999

(Source : MLIT)

Tokai Flood in 2000 (Source : MLIT)

(Dyke Break of the Shinkawa river 12th Sep. in Nishibiwajima town)

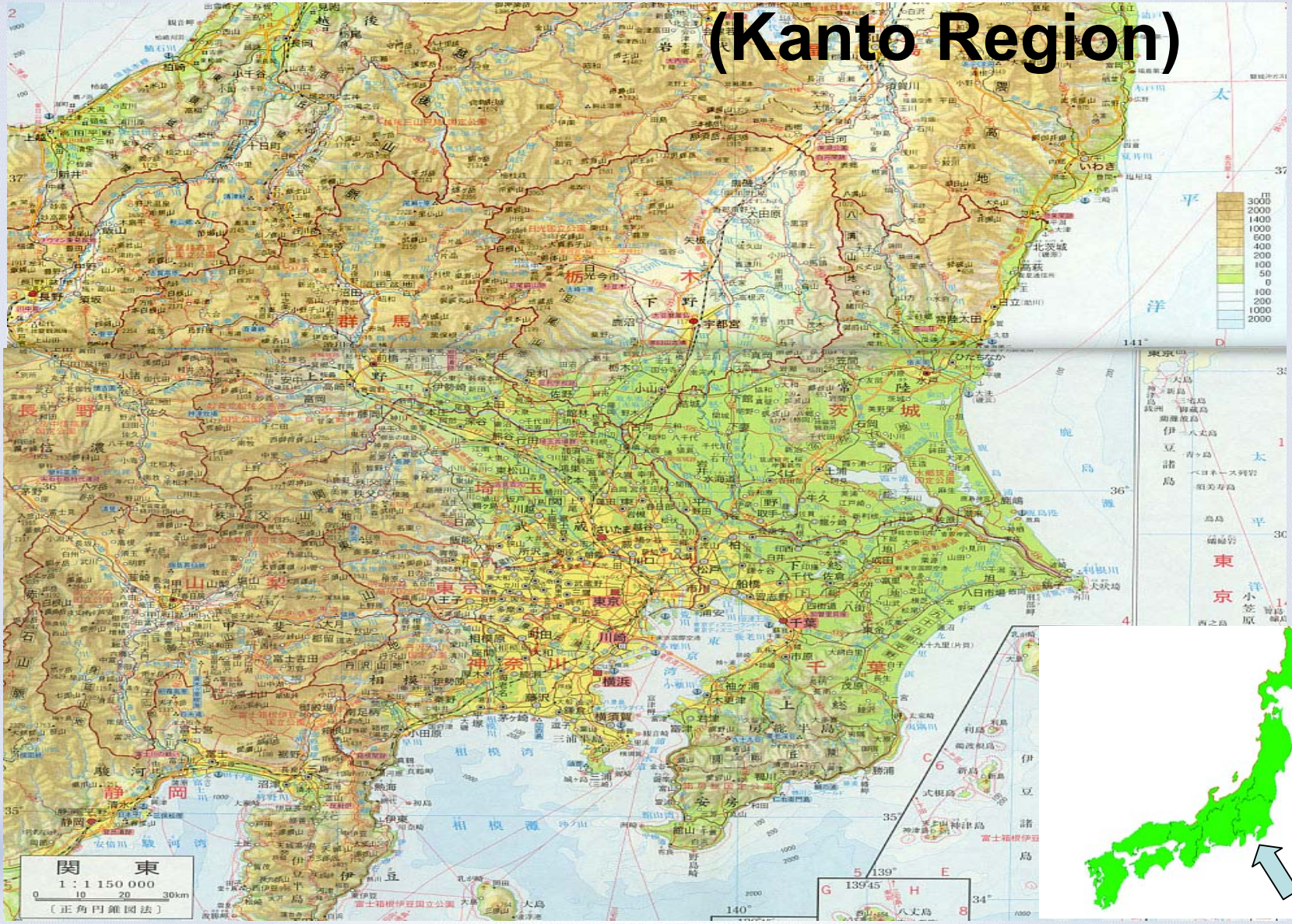
In the case of downpour in Fukui Prefecture in July 2004, 283mm/day was recorded at Miyama Observatory.

(Source : MLIT)

(Source : MLIT)

Inundated situation of Sanjo City, Niigata Prefecture after downpour in July 2004. 421 mm/day of rainfall was recorded at Tochio Observatory.

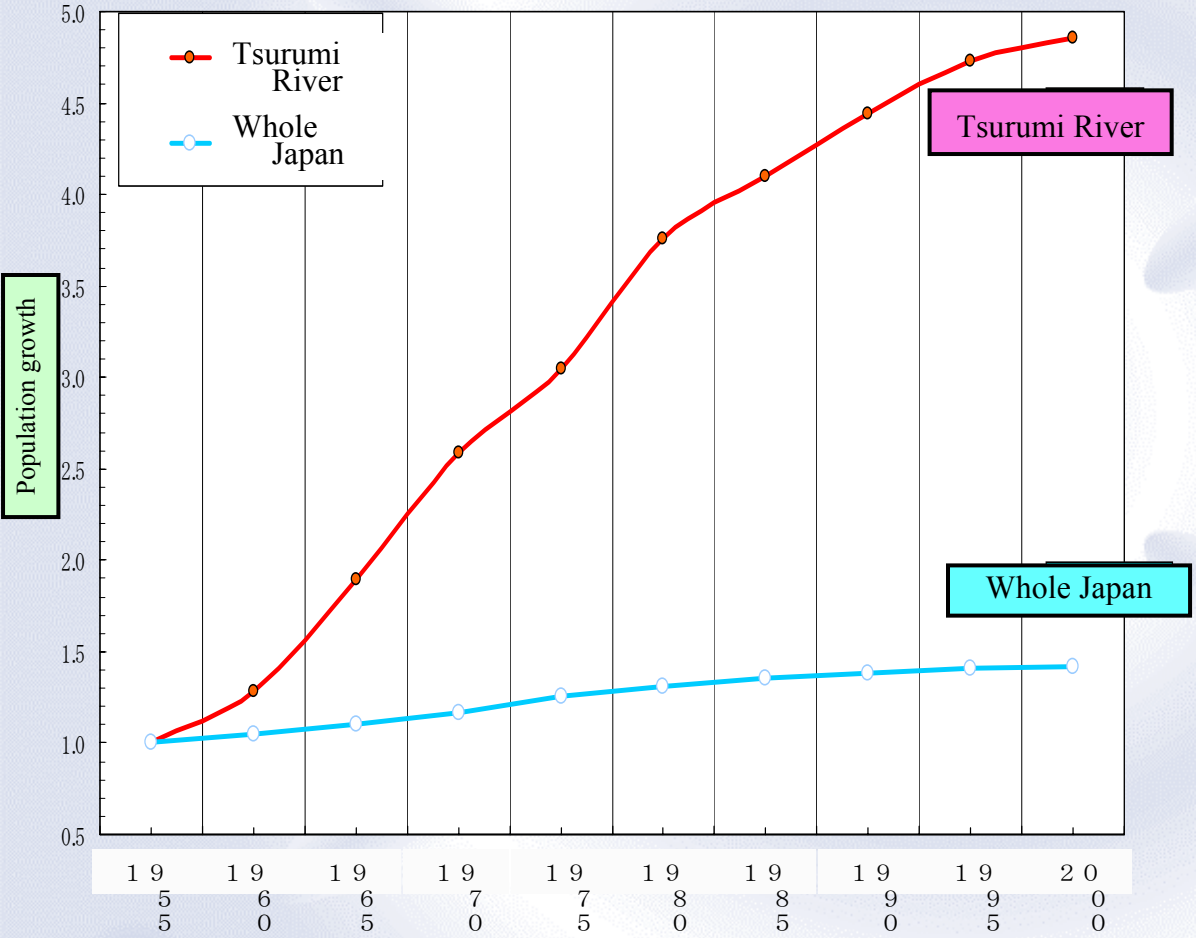
Geographical condition of Japan Island (Kanto Region)

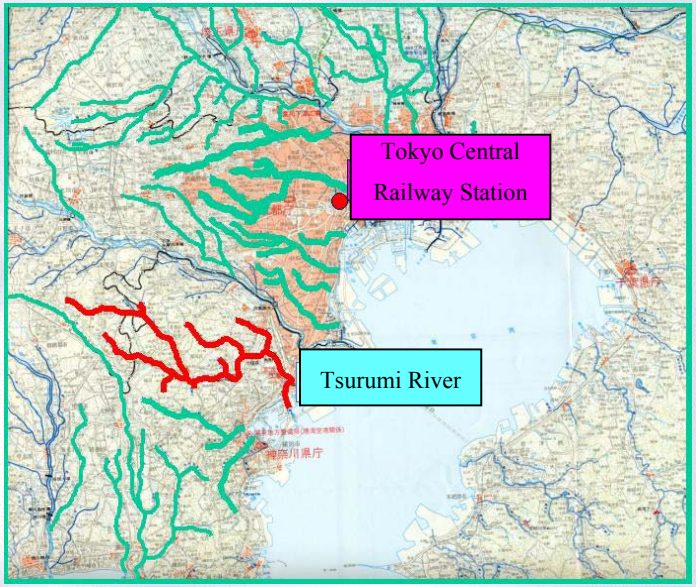


Geographic Conditions of Japan

- 70% of land is covered with forests and mostly mountaneous
- 50% of popuration and 75% of assets are concentrated in flood plains (10% of land)
- Heavy rainfall occur during rainy season in June-July and in the typhoon season in August-October
- Rivers are short and steep, causing sharp hydrograph
- The ratio of maximum/minimum discharge is extremely high (about 100 for Tone River)

The Tsurumi River basin in Kanagawa Prefecture has seen a much higher population growth rate than the national average



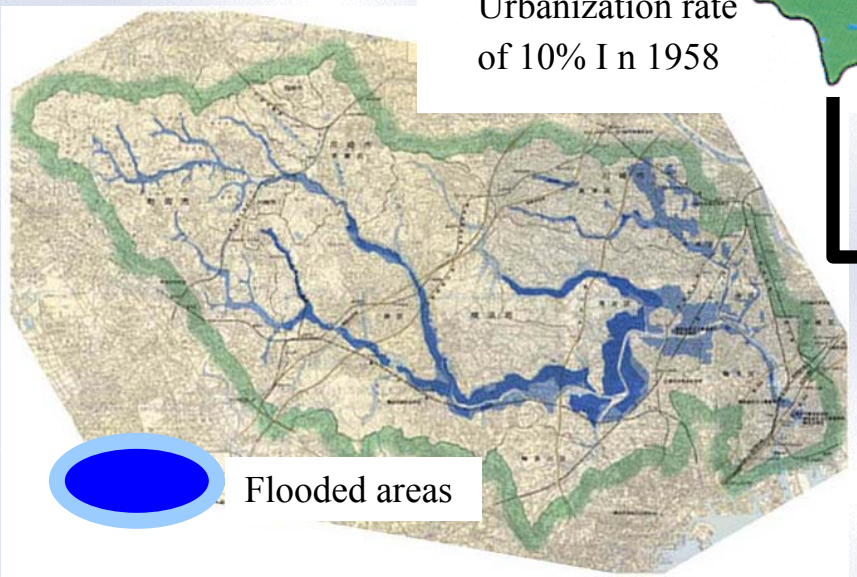


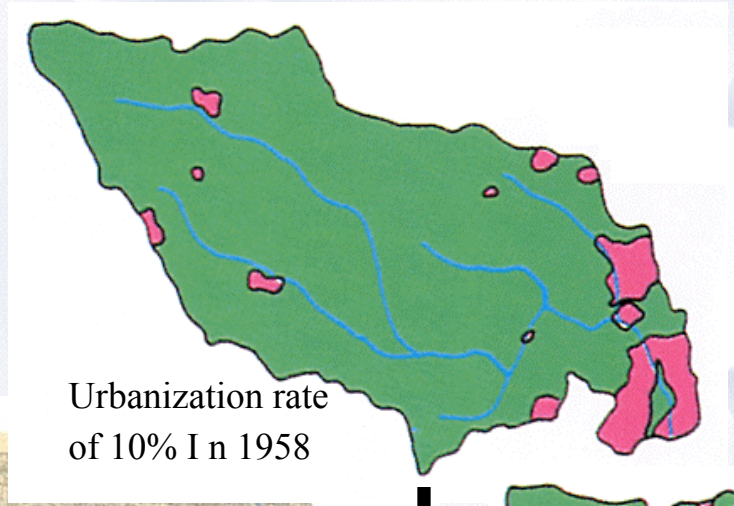
Location of Tsurumi River

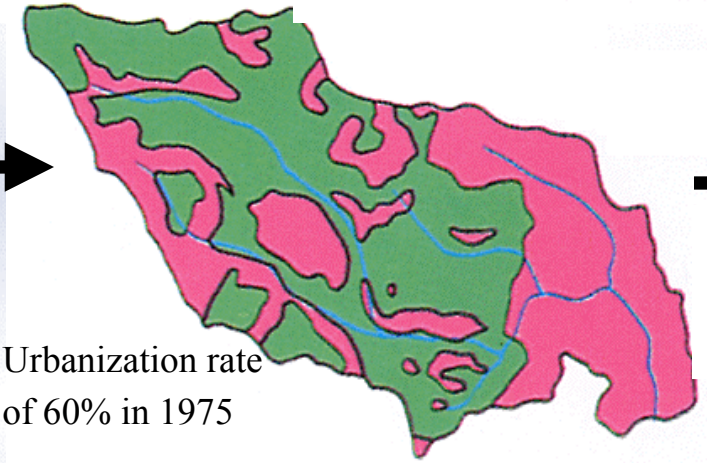
Extensive Housing Land Development has been in Progress in the Heights and Hilly Zones of the Suburban Areas in the Three Major Metropolitan Regions.

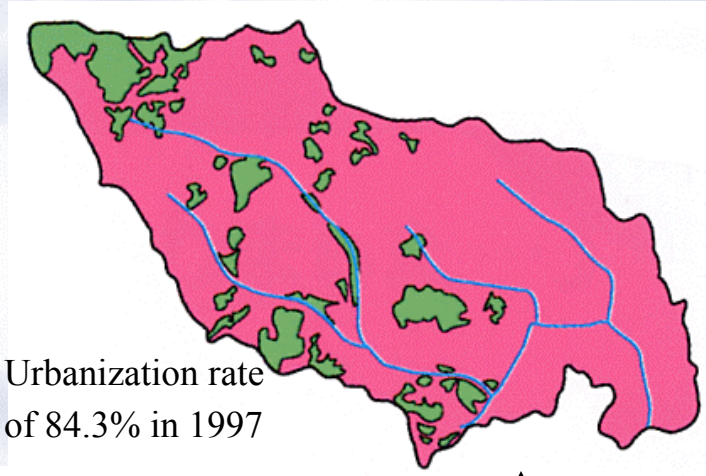
Developments of Heights and Hilly Zones: Tsurumi River (through Tokyo metropolis and Kanagawa Prefecture)

Flooding of September 1976





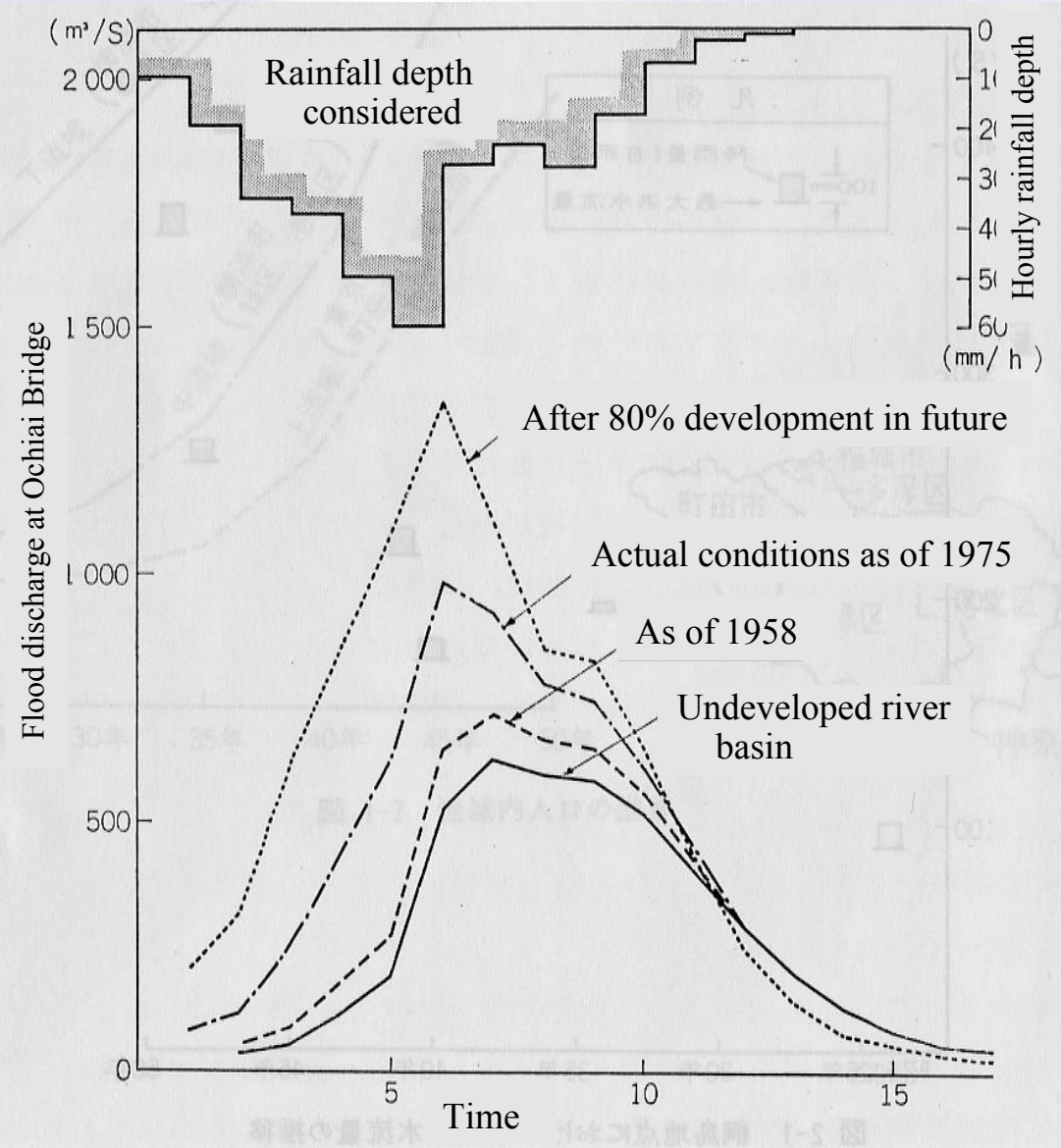




Non-urbanized area

Urbanized area

Reduction of Water Retention and Retarding Functions of River Basin Results in Increase in Peak Discharge.



Tsurumi River

(By simulation)

Source: Interim Report (June 1977) of Tsurumi River Basin Flood Disaster Prevention Planning Committee

Widening of river channel is difficult in the highly urbanized area

Tsurumi River

Source: "Tsurumi River and Renewal of Its Basin – Suggestions toward Formulation of Master Plan for Development of Tsurumi River Basin Water Resources"

Naka River and Ayase River

Source: Brochure "For Prptecing Our Town from Flood Disasters"

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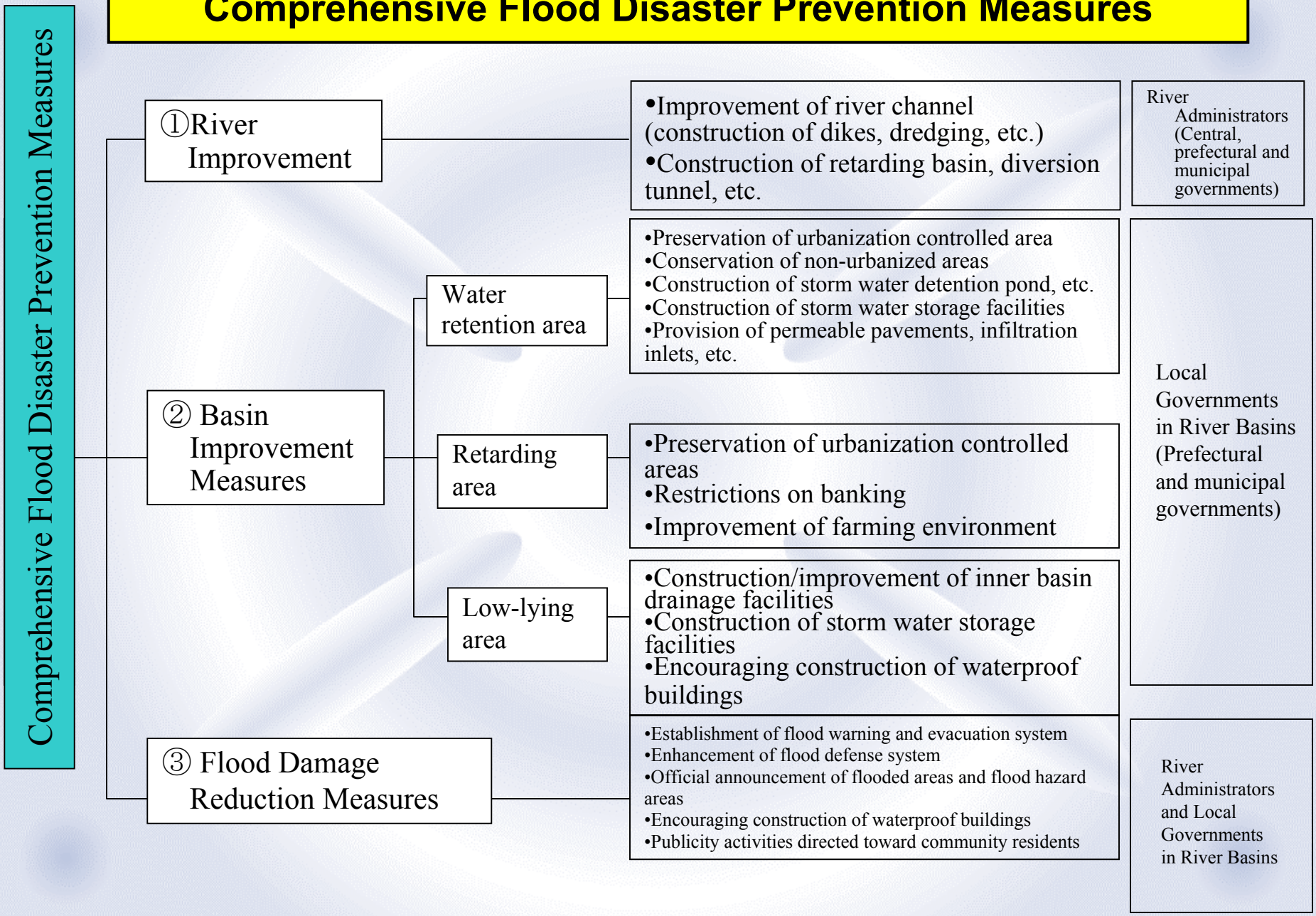
Comprehensive Flood Disaster Prevention Measures



the International Centre for Water Hazard and Risk Management under the auspices of UNESCO

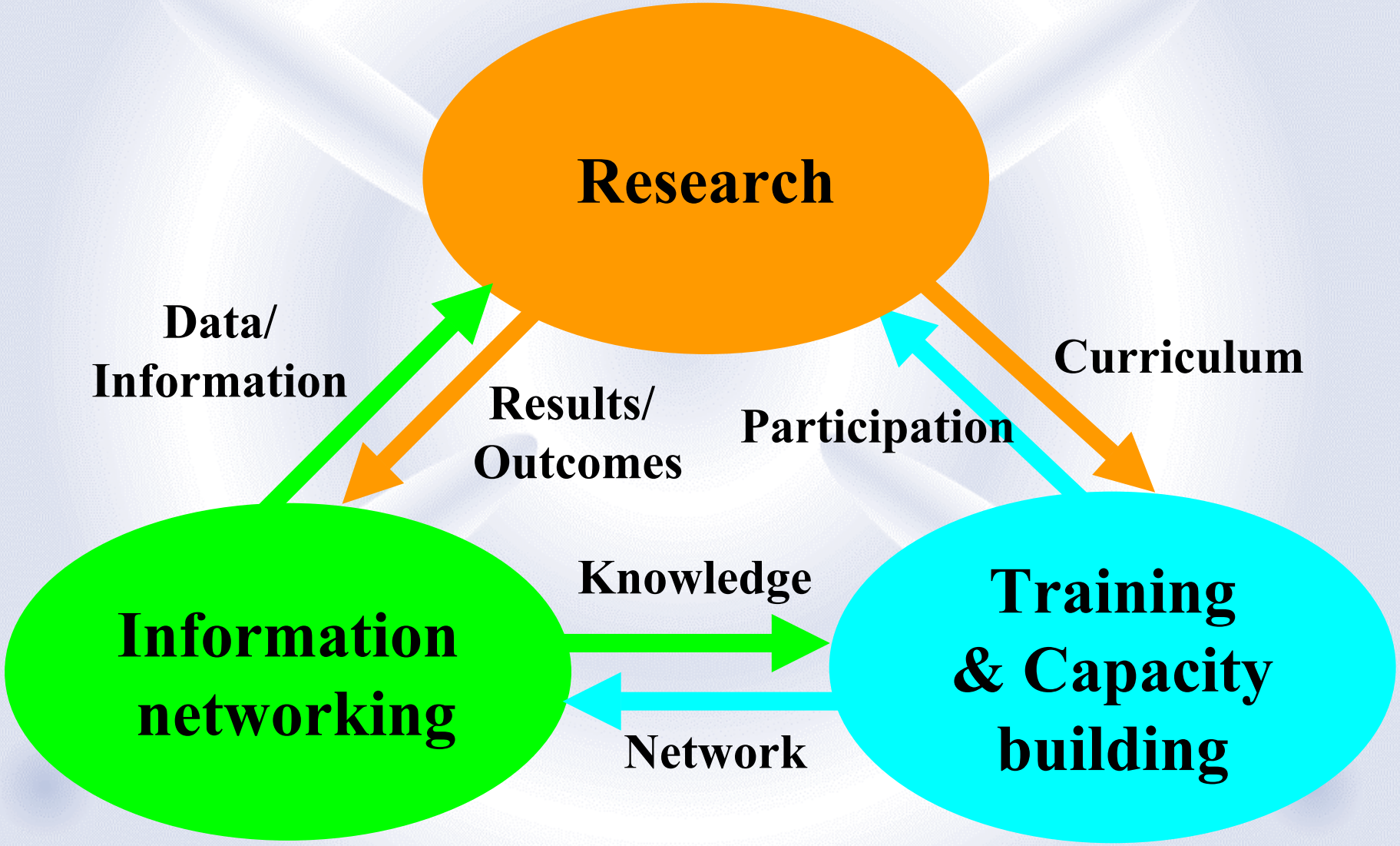
(CHARM)

Framework of CHARM

- Accumulated knowledge and experience trying to overcome water-related disasters
- Global network such as IFNet for internationally sharing valuable information

→ Contribution to prevent or mitigate water-related disasters in the world

Pillar Activities of CHARM



Activities

- Research -

- Contribution to international projects such as WWAP and IFI/P (UNESCO/WMO)
- Hydraulic / hydrological prediction, observation, modeling and analysis
- Risk assessment and risk management technologies for water-related hazards under various socio-economic, geographic and climatic conditions

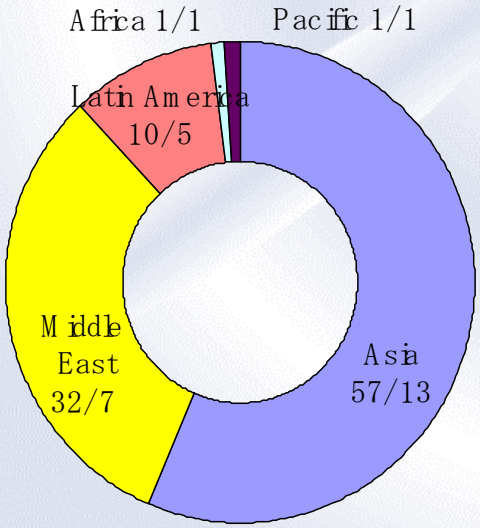
Activities

- Training and Capacity building -

PWRI has long experience in conducting JICA training courses for over 35 years

including

- **River and dam engineering**
- **Sabo engineering**



Total Number of Trainees/Countries
101/27
in FY 2003

Activities

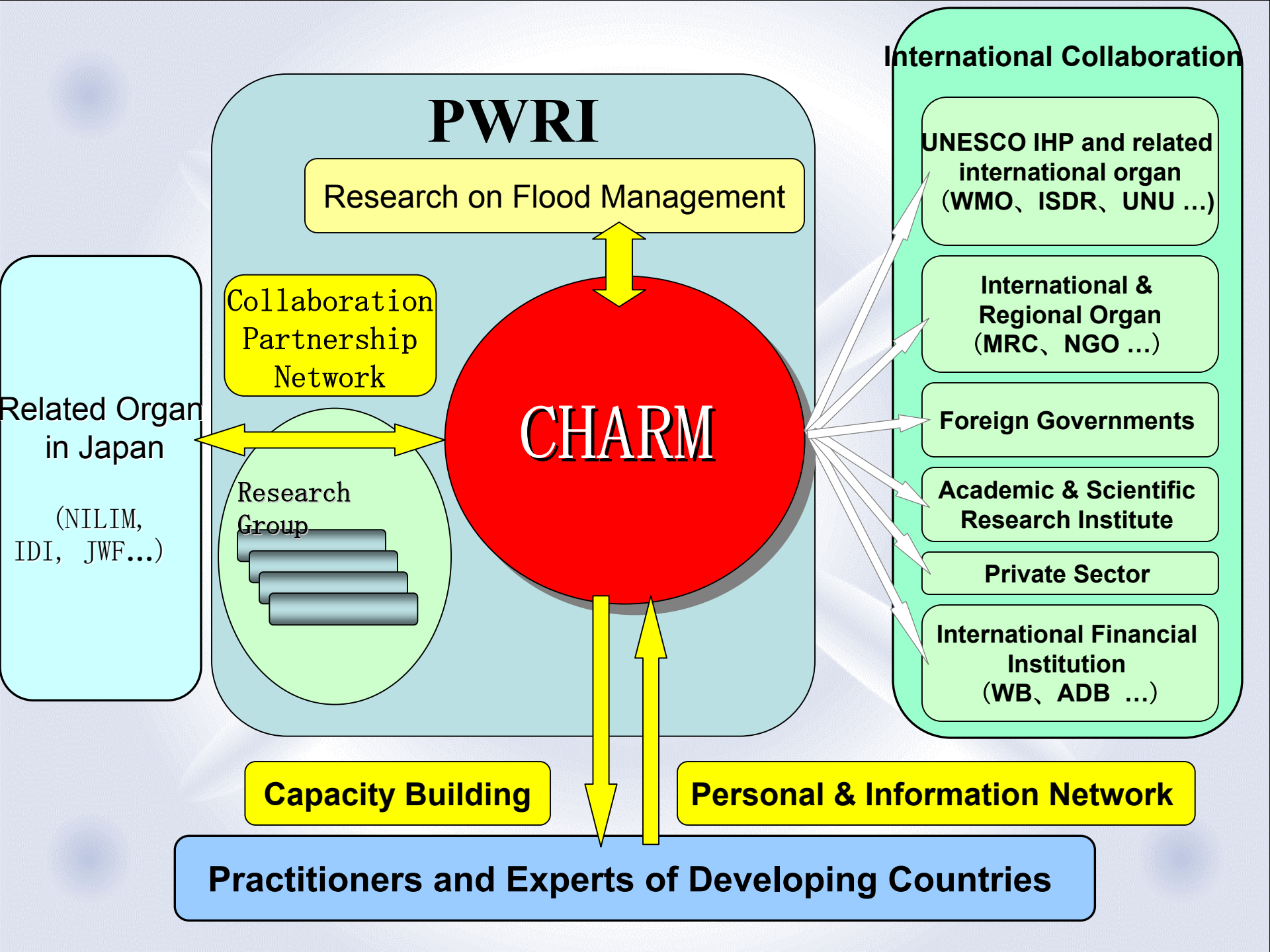
- Information Networking -

Information networking will be synergized with research and training activities

in order to enhance integration and coordination:

Through the information network…

- **Research output will be widely disseminated**
- **Feedback from countries / regions will be reflected in the research projects**
- **Trainees will develop domestic links to their own countries/ regions**
- **Local needs for training items would be clarified**


PWRI
Research on Flood Management
Collaboration Partnership Network
Research Group
CHARM
Related Organ in Japan
(NILIM, IDI, JWF…)
International Collaboration
UNESCO IHP and related international organ (WMO、ISDR、UNU …)
International & Regional Organ (MRC、NGO …)
Foreign Governments
Academic & Scientific Research Institute
Private Sector
International Financial Institution (WB、ADB …)
Capacity Building
Personal & Information Network
Practitioners and Experts of Developing Countries

END

Thank you for your attention

http://www.unesco.pwri.go.jp