Flood Mitigation and Water Resources Development are the pressing issues in Asia

- Lessons Learned from NARBO's 4 years Activities -

アジアに於いて洪水被害軽減とさらなる水資源開発は喫緊の課題
ーNARBOの4年間の活動からの教訓ー

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NARBO Secretariat

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Introduction

Ministers' Forum on Infrastructure in 2007 in Beijing

- **Make efforts to promote IWRM toward achieving the MDGs**

  - To shoulder responsibility of protect water safety on humanity and promote sustainable use of water

  - Infrastructure development in water sectors are essential

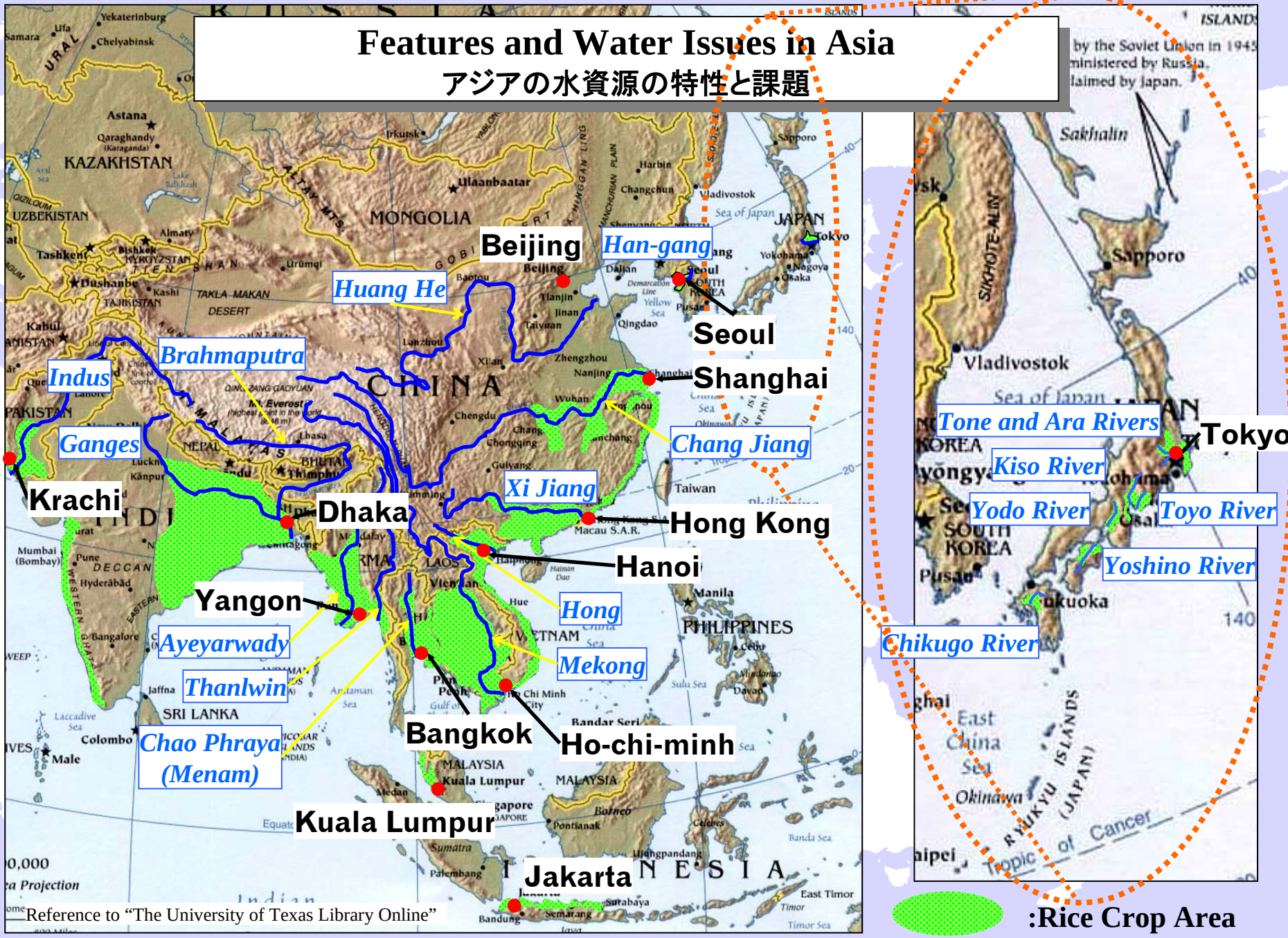
  - To mitigate the damages by floods and droughts, which is an integral part of IWRM. To strengthen comprehensive efforts for water management in both hard and soft elements.

  − IWRM should be promoted depending on geographical and meteorological and economic situations in each country.

Then

- How IWRM should be conceptualized and what is an optimal way to implement IWRM in Asia?

Features and Water Issues in Asia
アジアの水資源の特性と課題



Reference to “The University of Texas Library Online”

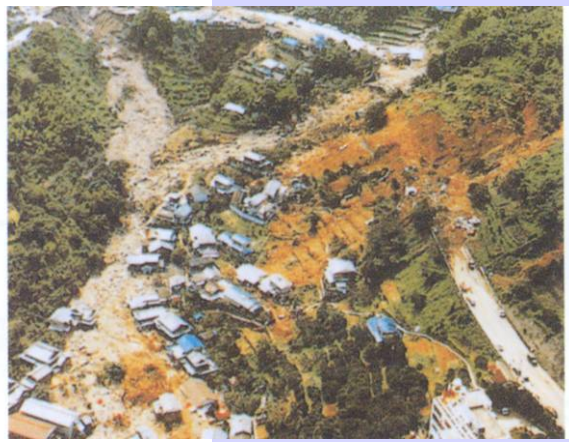
Common condition of monsoon Asia

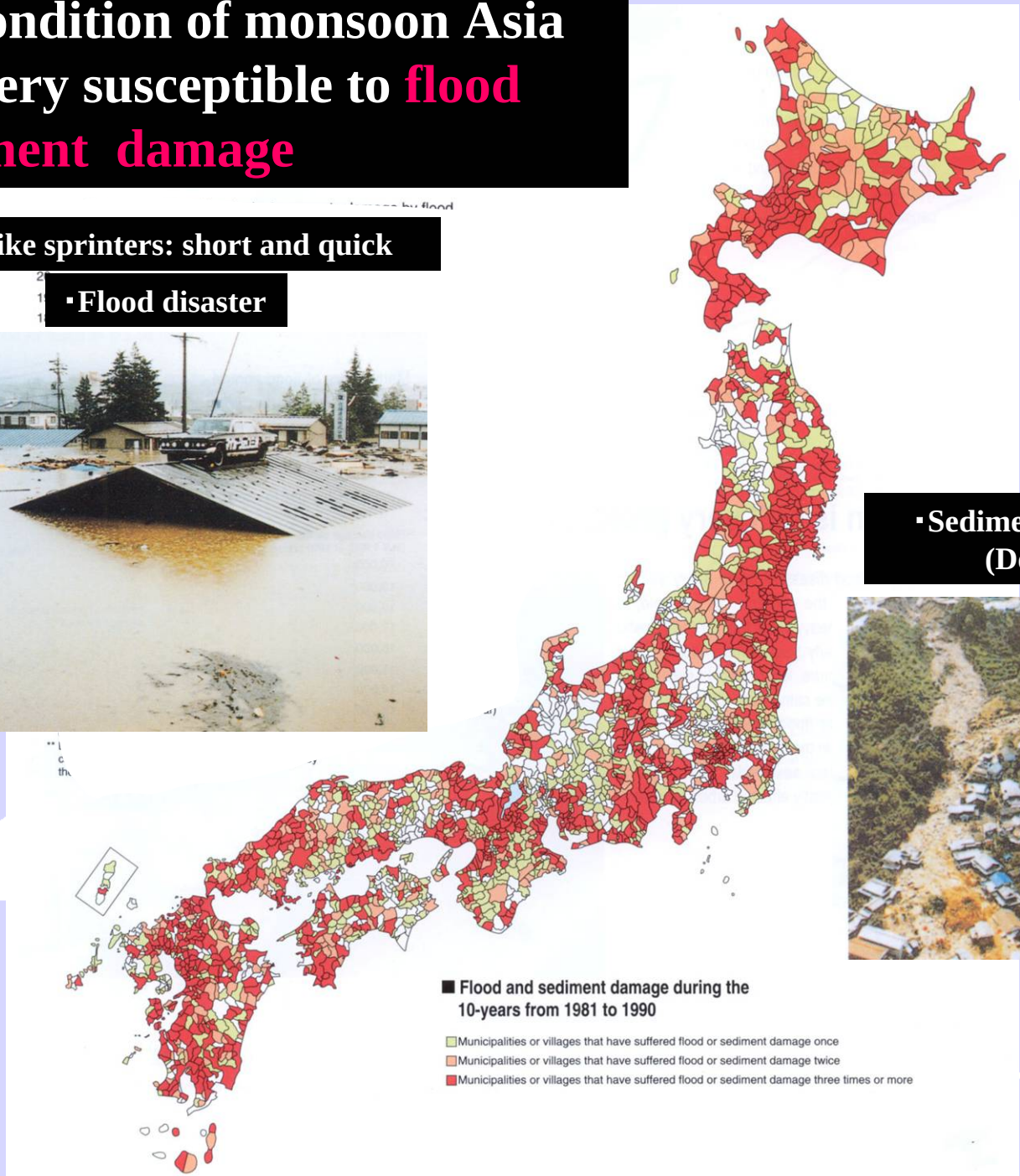
Japan - very susceptible to flood and sediment damage

Flood in Japan act like sprinters: short and quick

・Flood disaster

・Sedimentation disaster (Debris flow)



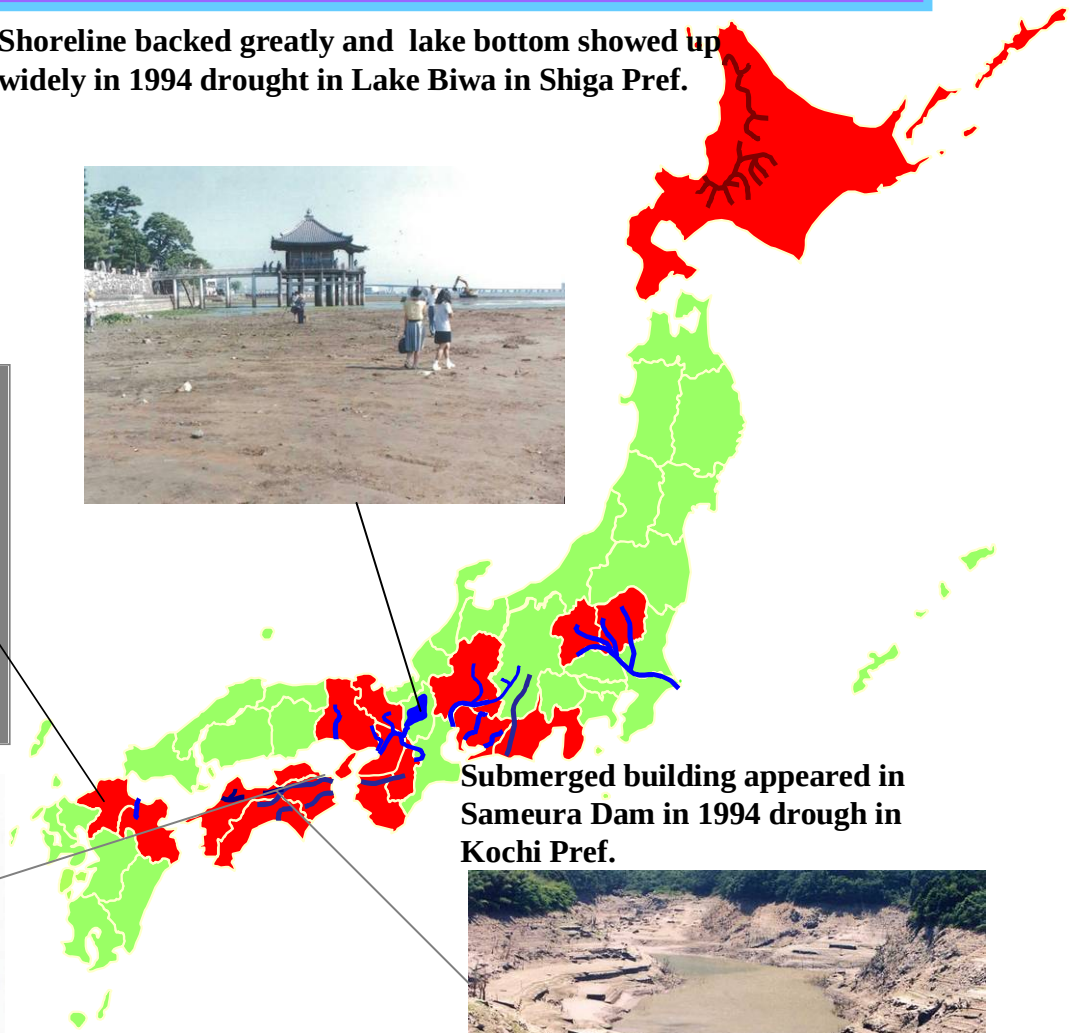


Droughts occur often these days even after many dams completed
-Severe water rationing and inconvenient life-

Areas faced to water rationing in the drought in 2002

Shoreline backed greatly and lake bottom showed up widely in 1994 drought in Lake Biwa in Shiga Pref.

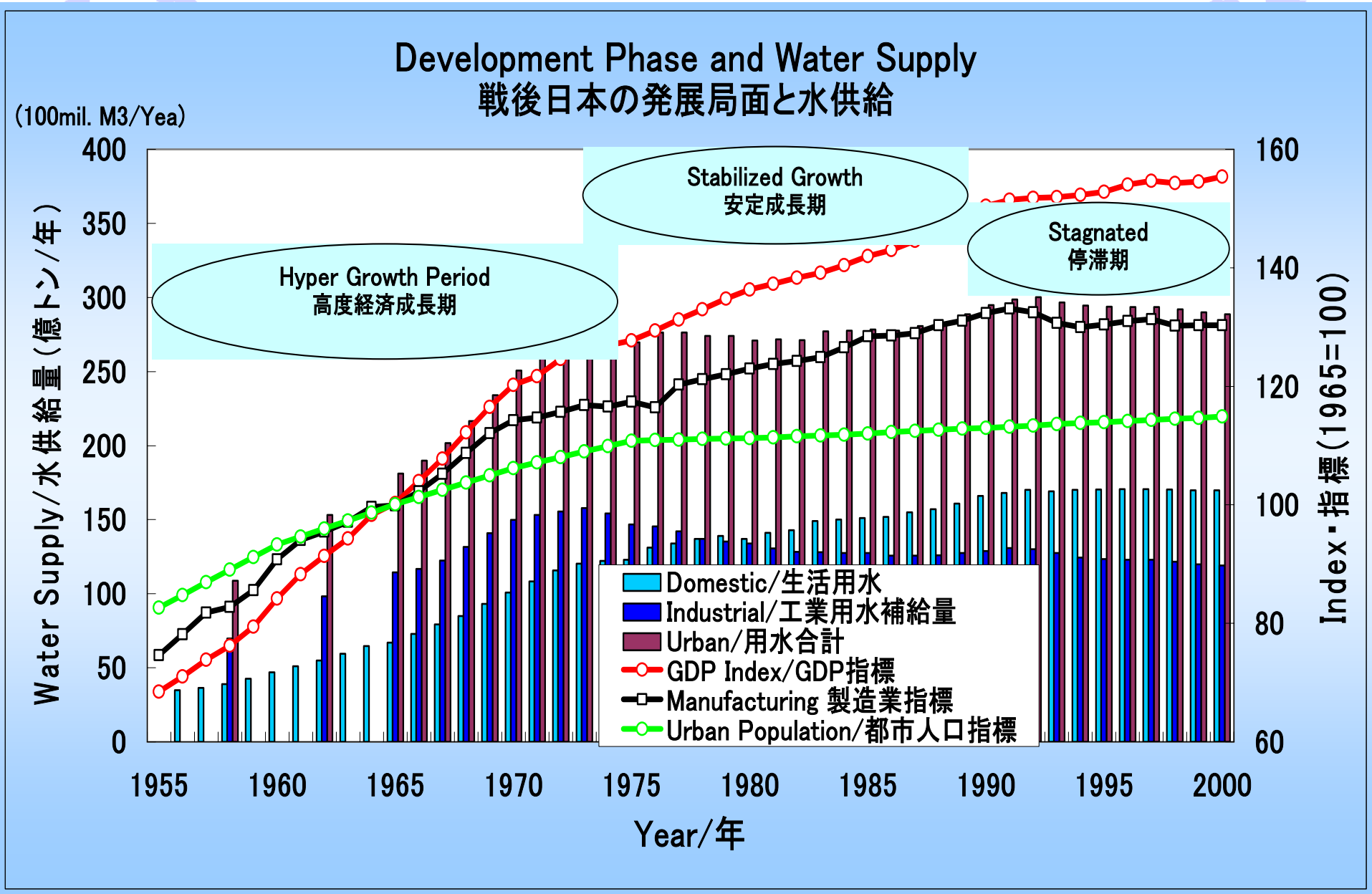
Dried up Terauchi Dam Reservoir in Fukuoka Pref. in 2002 drought



Submerged building appeared in Sameura Dam in 1994 drough in Kochi Pref.

Water supply vehicles in a long line in Kagawa in 1994 drought

Transition of Water Resources Development in Japan
経済発展に伴う水資源開発の経緯



Focal points of Water Resources Management in Asia

Enhancement of comprehensive river basin management

e.g. effective water use, mitigation of flood and drought damage, and mitigation of environmental impact

---- Lack of experience, human resource

---- Eliminating of vertically divided administrative functions

Institutional and Legal Development

----No Basic Water Law or the lack of function,

----No implementing organization responsible for integrated water resources management or lack of the capacity

Water Resources Development

Requirement of new water resources development to meet increased water demand in Asia

----Insufficient water infrastructure facilities

----Inadequacy of O&M. Necessity of strengthening technical and institutional capacity

Priority sectors on Water Resources Management in Asia

- **Structural measures**

Measures against floods and draughts ,
Water resources development = Facility construction
----Mitigation of negative impacts due to the facility construction

Environmental conservancy,

Compensation and revitalization of livelihood of the affected people

----Establishment of O&M Systems and Securing Costs

Non-structural measures

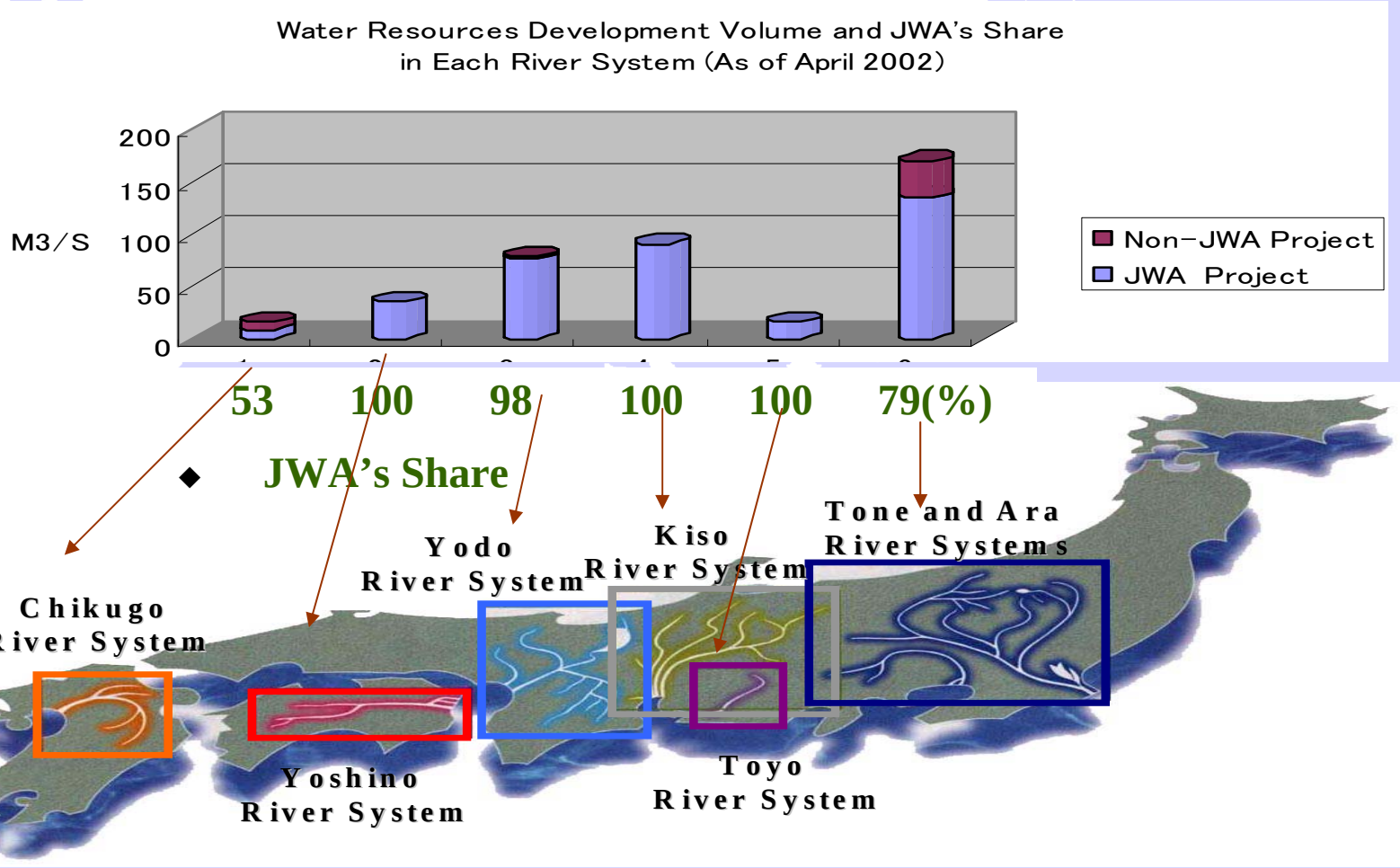
Development of legal and institutional framework

---- Enactment of Water Law and practice water resources management accordingly

----Strengthening of technical and institutional capacity in RBO/water sectors

Lessons learned from Japan's experience (1)

Japan Water Agency is only organization in Japan that implements water resources development and management comprehensively

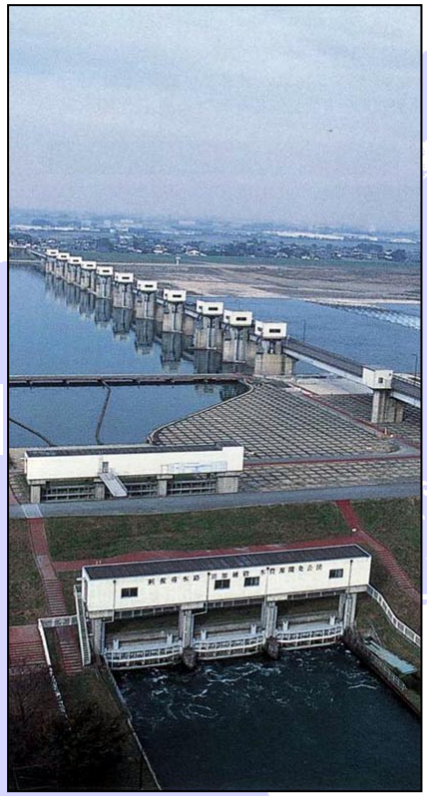


Water resources development volume in Japan and JWA's share in each river system

Lesson Learned from Japan's Experiences (2)

Construction and Management of Water Resources Development Facilities (JWA)

Yagisawa Dam（Arch Concrete Dam）



Tone Barrage

Nagaragawa Estuary Barrage

Lake Biwa Development

Tone Chuo Canal（Saitama Canal)

Lesson Learned from Japan's Experiences (3)

JWA emphasizes consultation with water users in operating water facilities. Also, JWA often contribute to drought conciliation through operating its water facilities, consulting with water users.

Consultation meeting with users

Lesson Learned from Japan's Experiences (4)
- Mitigation of negative impact I

"Development Activities" should commence from the deep recognition of the people adversely affected.

We have a ceremony on the last day of the village.

(The word of Relocated person)

[We believe earnestly that this dam is a peaceful enterprise which protects a region from a disaster and brings grace to many people, and our sacrifice will become eternal as our lifelong pride]

Lesson Learned from Japan's Experiences (5)

- Mitigation of negative impact III

Fish-way

Estuary Barrage

Natural Brook-like Fish-way

Inducing-type Fish-way

Upstream Migration of Fish (Aye)

Lesson Learned from Japan's Experiences (6)

- Conservation of Water Quality

Hypolimnion Aeration (front) and Surface Aeration (back)

Epilimnion Aeration

Reed Colony for Water Purification

Separative Curtain

Outcomes and Goals of NARBO activities
- Constitution of NARBO -

Secretariat / Promoter

Japan Water Agency: JWA, ADB, ADB Institute

NARBO activities for improving regional water resources management
- Position of NARBO and implemention(1) -

- **Information Sharing** ←lack of experience

- **NARBO IWRM Training** ←lack of human resource

  1st: in Thailand, 2nd:in Sri Lanka, 3rd in Korea, 4th:in Sri Lanka

- **NARBO Performance Benchmarking** ←capacity development of RBO

1st: Jasa Tirta II (Indonesia), 2nd: Mahaweli Authority (SriLanka),3rd: Laguna Lake Development Authority (Philippine),4th: Red River Basin Organization (Vietnam)

NARBO activities for improving regional water resources management
- Position of NARBO and Implementation(2) -

- **NARBO Thematic Workshop** ← experience, information

  - On Water Allocation and Water Rights

  1st:in Vietnam, 2nd:in Philippines, 3rd:in Thailand,4th: in Japan, Extra:in Philippines

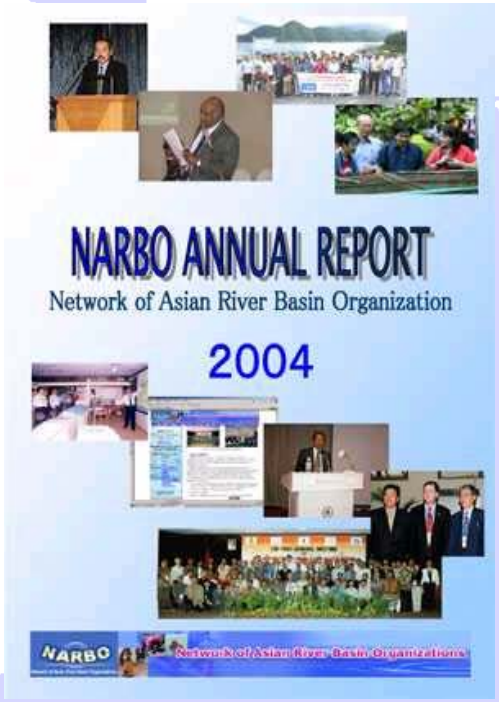
  - On Sustainable Management for Water Resources Infrastructures

  1st: in Vietnam, 2nd:in Bangladesh

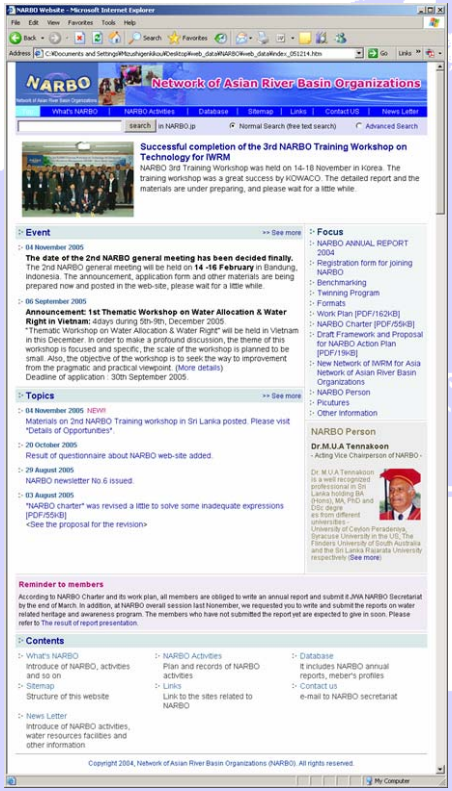
- **NARBO Twinning Program** ←experience,strengthenRBO

NARBO activities for improving regional water resources management
- Position of NARBO and Implementation(3)

Information sharing ←lack of information



NARBO Annual Report



Website

Newsletter

NARBO activities for improving regional water resources manageme
- Position of NARBO and Implementation(4)

IWRM Training ←lack of experience, strengthen RBOs

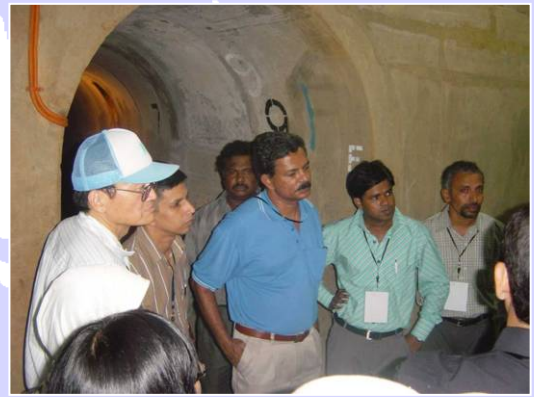
Training programs for capacity development of RBOs in implementing IWRM are held. With an advantage of NARBO network, it is expected to diversify training resources among member organizations.

1st training program in Thailand

Sharing Good Practices and Lessons Learned from Training Resources

2nd training program in Sri Lanka

3rd training program in Korea



4th training program in Sri Lanka

NARBO activities for improving regional water resources management

- Position of NARBO and Implementation(5)

Benchmark ← **strengthen RBOs**

RBO performance evaluation with peer review process

Pilot Benchmark Peer review in Hanoi, Vietnam

NARBO activities for improving regional water resources management

- Position of NARBO and Implementation(6)

Twinning Program ←experience, strengthen RBO

- **Objectives; To support Regional RBOs**
- **Twinning Program 2005**
  - Exchange personnel, - Twinning Program Activity
  [Indonesian NARBO and JWA], [Indonesian NARBO and K-Water]
- **Twinning Program 2006**
  Between Indonesian NARBO and Japan Water Agency

Ref. : The Example of Capacity Development for River Basin Management（Jeneberang RBO by JICA scheme ）

Capacity Development for RBO in practical water resources management

Water Allocation and Distribution

Technical Guideline & Agreement
Manual for calculation and compilation of irrigation Water Absorption Records
Agreement on Water Allocation and Distribution

River Administration

Guideline on interagency Coordination for management for river area

Environmental Work

Monitoring of Water Quality etc.

Target

RBO

Set up of Data Base

O&M of river Infrastructure
O&M of river hydromechanical plant
Management of river administration area
River water use
Hydrology

O/M for Infrastructures

Inspection on damages of River Dike & Revetment,
Guideline for rehabilitation works,
Operation manual for gate, dam
OJT of Capacity Development

Regulation of Stake holder

Agreement on Water Allocation and Distribution
Management of coordination body of stakeholders

Conclusion (1)
Effective IWRM--Region-based approach

- IWRM is vital for sustainable water resources management, which should be tailored to geographical and meteorological conditions in each region.
- Asia has in common-- water-related disasters (floods/landslide) in wet season and water shortage in dry season, flood-prone areas in major cities, requirement for sufficient water for irrigation. (paddy fields)
- Effective water resources development and water efficiency are urgent issues to meet increased water demand along with economic growth
- IWRM is essential for achieving MDGs in eliminating the poverty and improving of access to clean water.

Conclusion (2)
Mitigation of social and environmental impact is also vital

- On the other hand, it is also vital for considerations social and environmental impacts caused by water resources development project. Eg. relocation of affected people, cooperation with reservoir areas, conservation of the environment and water quality.
- In addition to structural measures, non-structural measures is important. Eg. Legal, institutional framework, practical management, technical and institutional capacity of RBO/water sectors.

RBO plays an important role in river basin management.

- IWRM concept based on regional approach and implementation methods are required.

Conclusion (3) - Next Step

- **Next step of NARBO will be:**

- Conceptualizing IRBM and formulation of the implementing guidelines in collaboration with relevant organizations and Governments towards 5th World Water Forum in 2009

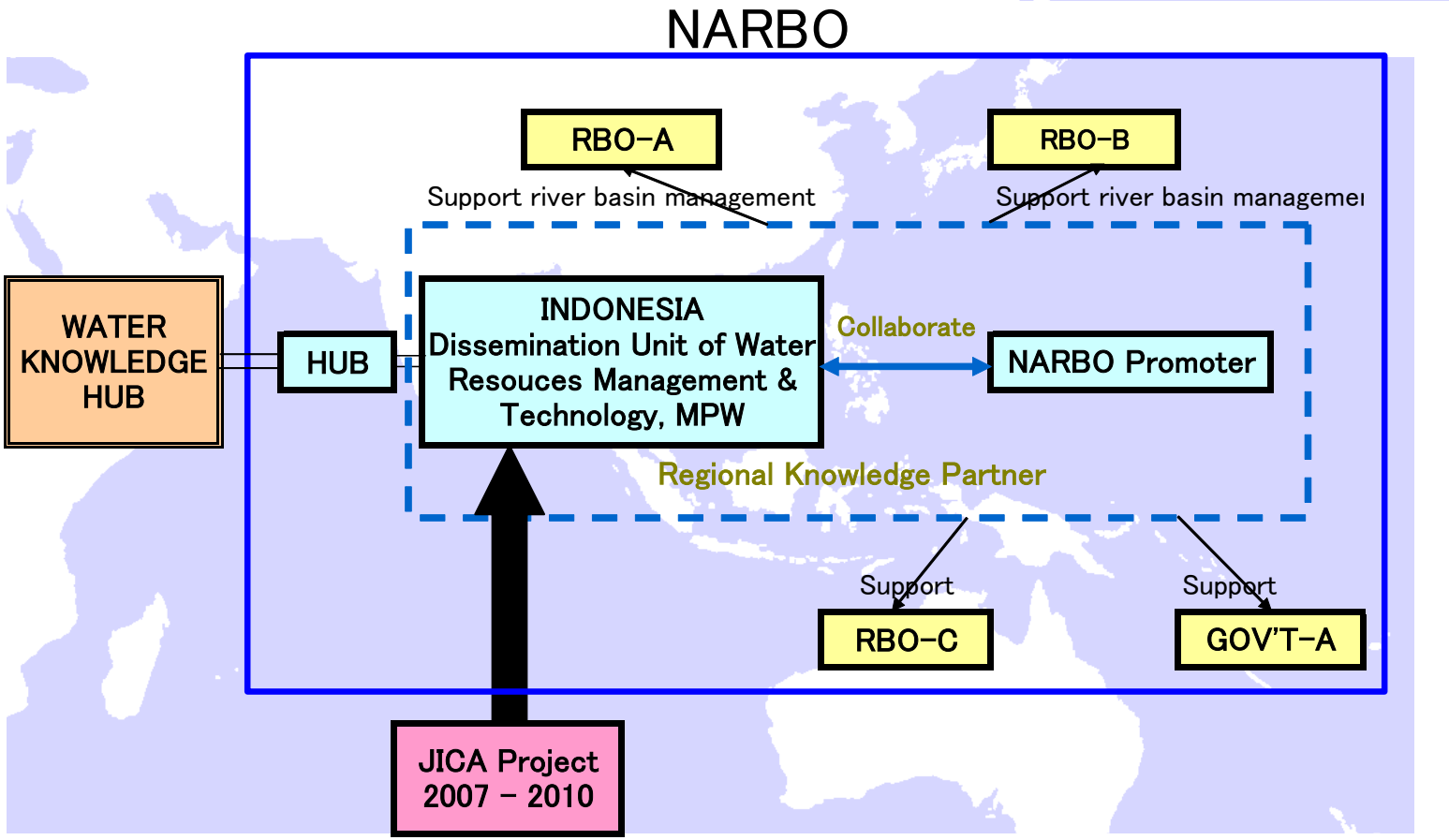
- Contributing to new establishment Water Knowledge Hub in the field of river basin organization and management, in collaboration with the Indonesian Government through NARBO networking and resources.

Indonesia Gov. first to establish the Dissemination Unit of Water Resources Management and Technology via JICA Technical Assistance project, in order to seek desirable IWRM implementation.

We Appreciate All Your Kind Attention

NARBO's Action of Enhancing Regional RBOs

Contribute to enhancement of the "River Basin Management and RBOs" in each region through NARBO Scheme



T.A. for capacity development of DU-WRMT

Features and Water Issues in Asia - Summary I

Features in Asian region

- **Rainy seasons and dry seasons are clear**
- Rivers are short and steep, and cause flooding repeatedly
- **Rice cultivation is main water use in the region in alluvial plains, and mega cities are also located in alluvial plains**
- They also suffer from water drought in dry seasons
- **Need to increase water supply capability to meet the growing water demand**