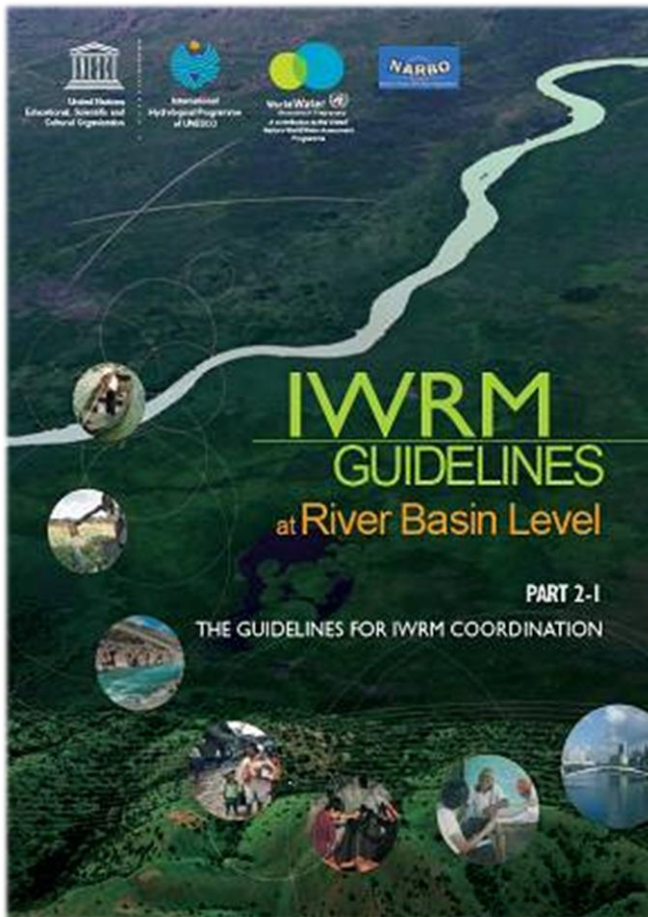




# *Integrated Water Resources Management*

## *NARBO 9th IWRM Training*

*12 May 2014*



### **Kazuaki Yoshida**

Programme Specialist,  
Section for Sustainable Water Resources  
Development and management,  
Division of Water Sciences, Natural Sciences,  
UNESCO



吉

YOSHI



DA

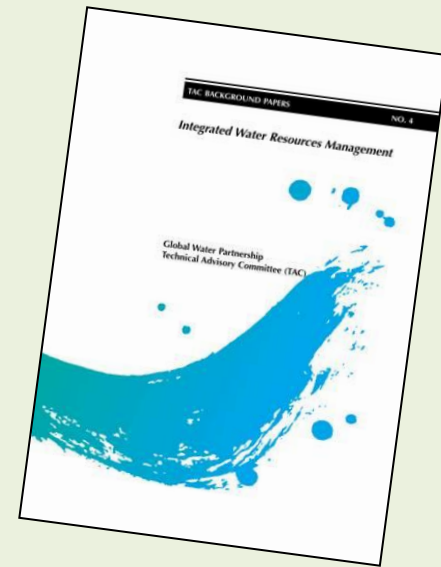
= *Good Rice fields*

# Integrated Water Resource Management

Definition by the Global Water Partnership as

(GWP 2000)

*‘A process which **promotes the coordinated development and the management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems**’*



# Overview of IWRM history in the International Community

5

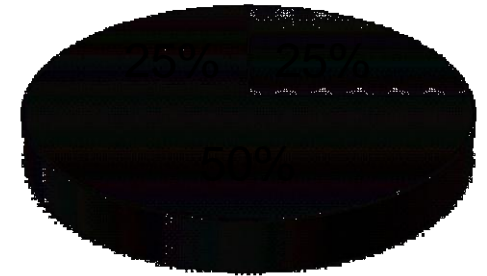
1930s	Initially integrated approach took place ex) Tennessee Valley Authority in USA
1940s	Evolve many forms of integration methods by UN and other int'l Org
1970s	A rise in the global awareness of water
1977	UN conference on Water* at Mar del Plata in Argentina <i>*First international gathering to have major impact on water</i>
1992	International Conference on Water and the Environment at Dublin, Ireland <i>Dublin Principles: Gov. must assess their capacity to implement activities for IWRM</i> <b>Agenda 21</b> in the UN Conference on Environment and Development in Rio, Brazil
2002	Johannesburg Plan of Implementation (World summit on Sustainable Development) <i>"Countries to develop IWRM and Water Efficiency Plans by 2005, with support to developing countries"</i>
2004	<i>NARBO was established and 1<sup>st</sup> IWRM training was implemented</i>
2005	CSD(UN Commission on Sustainable Development ) 13:Decision to accelerate preparation of national IWRM Plans
2006	UNSGAB(UN Secretary-General's Advisory Board on Water & Sanitation) Hashimoto Action Plan <i>"IWRM is a flexible tool for addressing water challenges and optimizing water's contribution to SD"</i>
2008	UNCSD 16: UN-Water Report Road Mapping for Advanced IWRM by UN-Water/ GWP
2009	<i>Launching of the IWRM guidelines</i> by UNESCO IHP (International Hydrological Programme)
2012	Rio +20 UNCSD in Rio, Brazil

# Planning and Implementation of IWRM

Based on the concept of Dublin principles(1992), the target to *‘develop integrated water resources management (IWRM) and water efficiency plans by 2005, through actions at all levels’* was agreed through the Johannesburg Plan of Implementation (JPOI) in 2002 with support to developing countries.

**Progress in 2008  
toward ‘IWRM Target’  
(IWRM planning)\***

**Implementation of IWRM Plans**



- Good progress
- Some progress
- Limited or No

## (International Hydrological Programme)



United Nations  
Educational, Scientific and  
Cultural Organization



- The only intergovernmental programme of the UN
- More than 60 years(1948-) and 195 member states
- Three Pillars
  - I. Hydrological science for policy relevant advice
  - II. Education and capacity building responding to the growing needs of sustainable development
  - III. Water resources assessment and management to achieve environmental sustainability



# Cross-cutting programmes and initiatives

**IFI:** International Flood Initiative



**IDI:** International Drought Initiative

**G-WADI:** Global Network on Water and Development Information in Arid Lands



**ISI:** International Sediment Initiative



**HELP:** Hydrology for the Environment, Life, and Policy



**FRIEND:** Flow Regimes from International Experimental and Network Data

**IWRM:** IWRM Guidelines at river basin level

**GRAPHIC:** Groundwater Resources Assessment under the Pressures of Humanity and C.C

**PC-CP:** Water for Peace: From Potential Conflicts to Cooperation Potential

**UWMP:** Urban Water Management Programme



**WHYMAP:** World Hydrogeological Map



# IWRM implementation in Basin, Sub-basins and Aquifers State of the art review UNESCO IHP-VI(2007-08)

1. **Guidelines for development of institutions for IWRM implementation at BSA level** should be developed.

**Institutional arrangement to facilitate IWRM approach at BSA level are missing.**

*Follow up of the review*

2. **Tools for IWRM** should be documented with respect to the existing and emerging capacity for BSA, in particular for carrying out multi-disciplinary process in IWRM

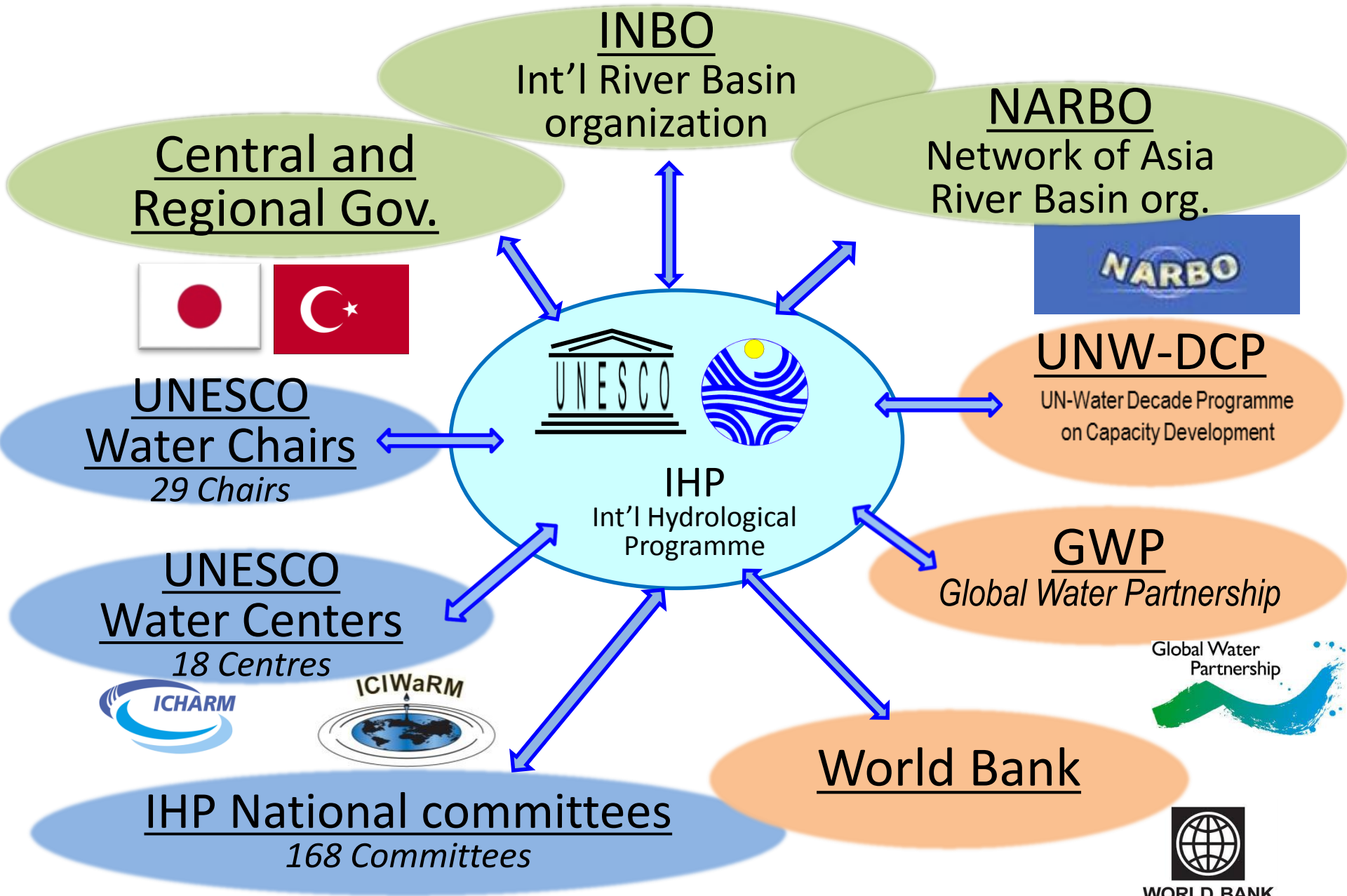
3. Broader recognition that the 'Integrated' approach is feasible and beneficial should be strengthened.

Preparing **guidelines for operational implementation of IWRM, and a series of examples to illustrate the implementation of IWRM at basin level** are recommended.

4. **Case histories** should be adequately documented, collected and disseminated.

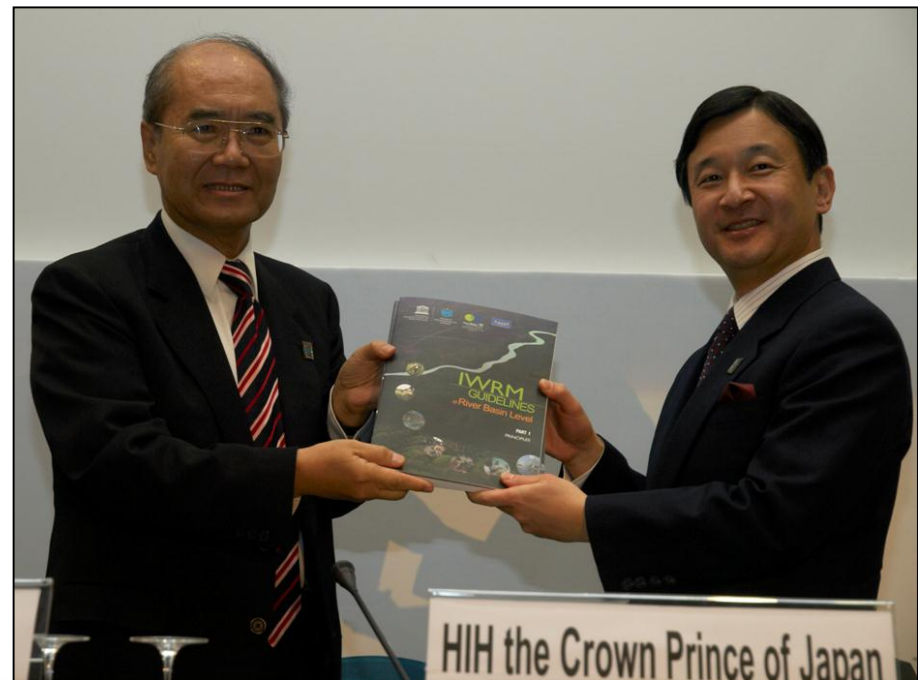
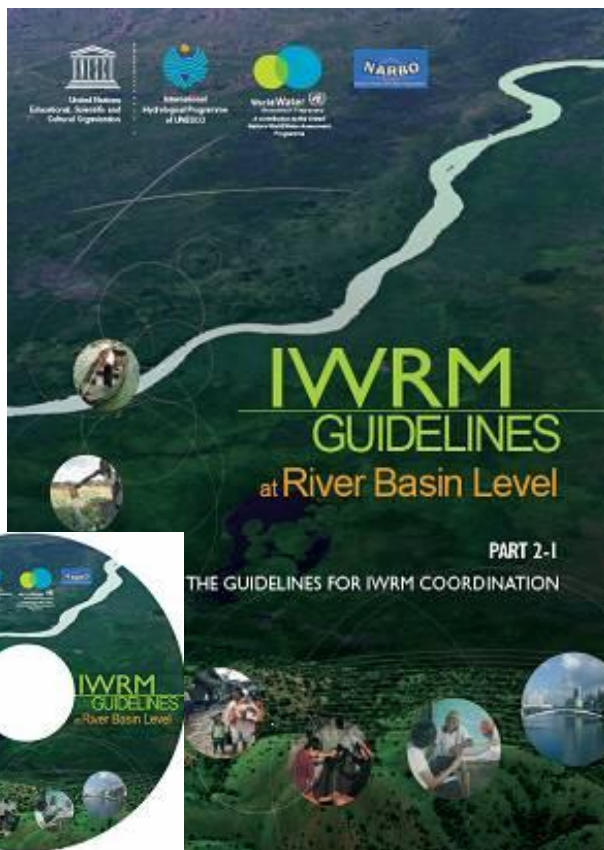


# IWRM Initiative Partner organization



# Launching of IWRM Guidelines at River Basin Level (2009)

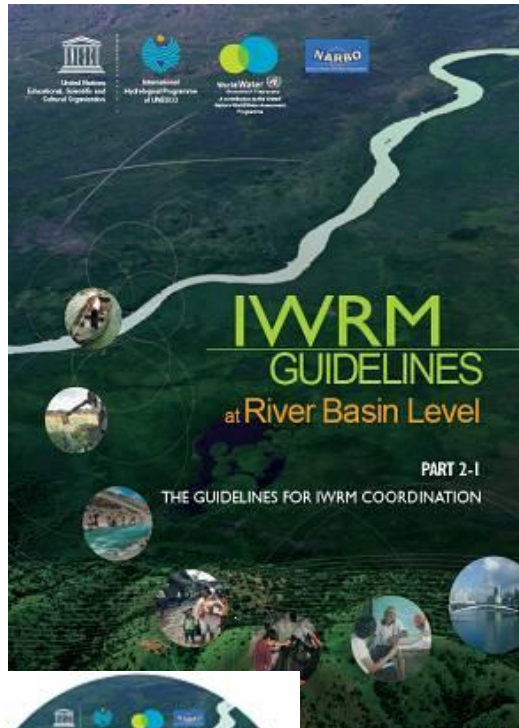
*5<sup>th</sup> World Water Forum on March 16<sup>th</sup>, 2009 in Istanbul*



*The Guidelines were handed over to HHH the Crown Prince of Japan from Mr. Matsuura, Director General of UNESCO*

# Structure of IWRM Guidelines

## Modality of the Guidelines



### Inclusive Partnership

Practitioners, Int. Org, Governments, Donors etc.

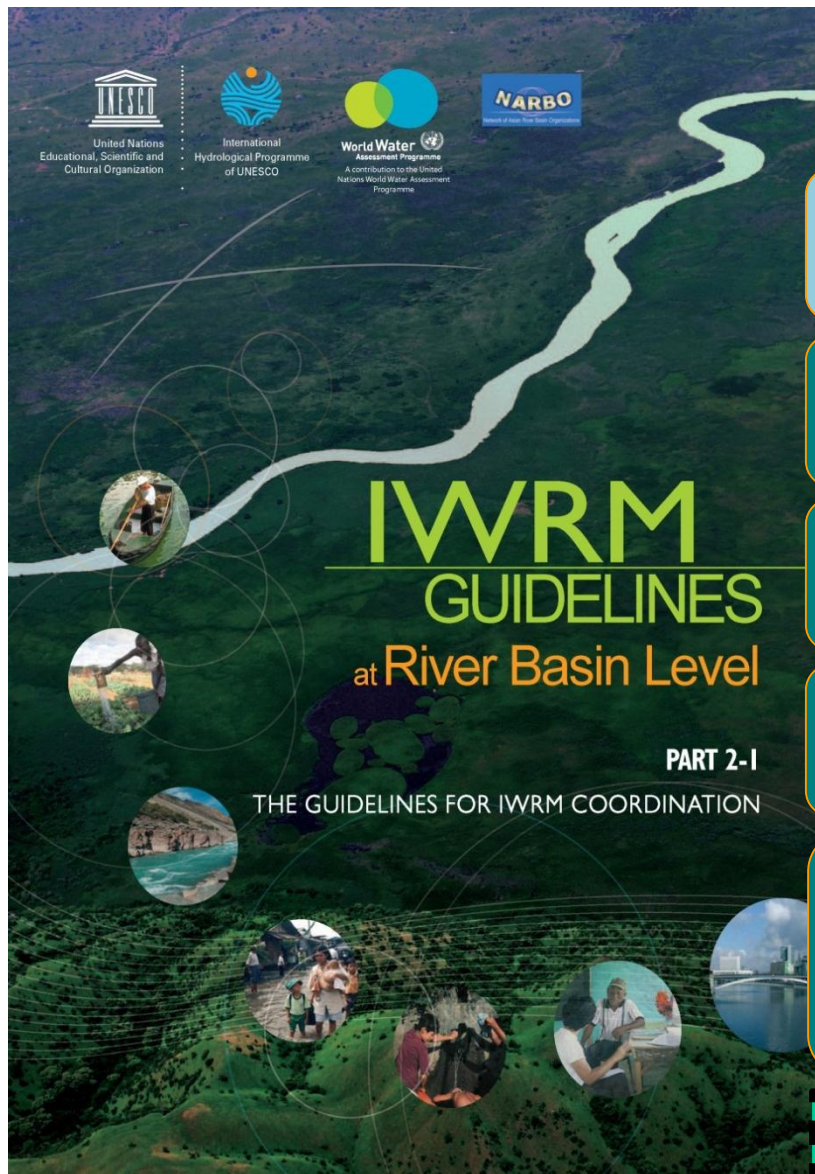
### Knowledge integration

Collected and disseminated comprehensive sources

### Interaction with users

Early interaction with guidelines users for practical value

# Components of the Guidelines



## Part 1 Principles

## Part 2-1 The Guidelines for IWRM Coordination

## Part 2-2 The Guidelines for Flood Management

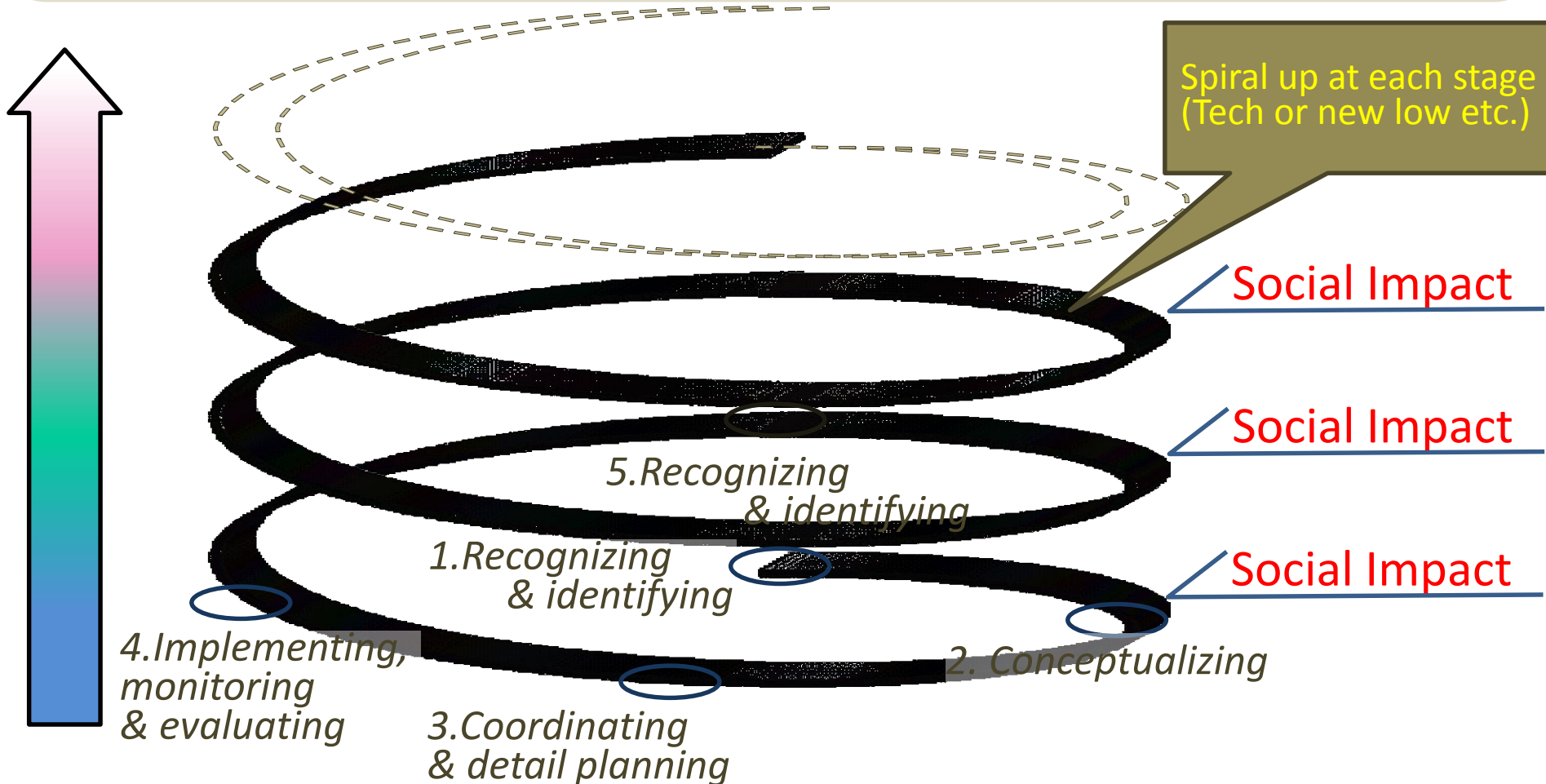
## Part 2-3 Invitation to IWRM for Irrigation Practitioners

## Part 2-4 The guidelines for Managing Environmental Sustainability

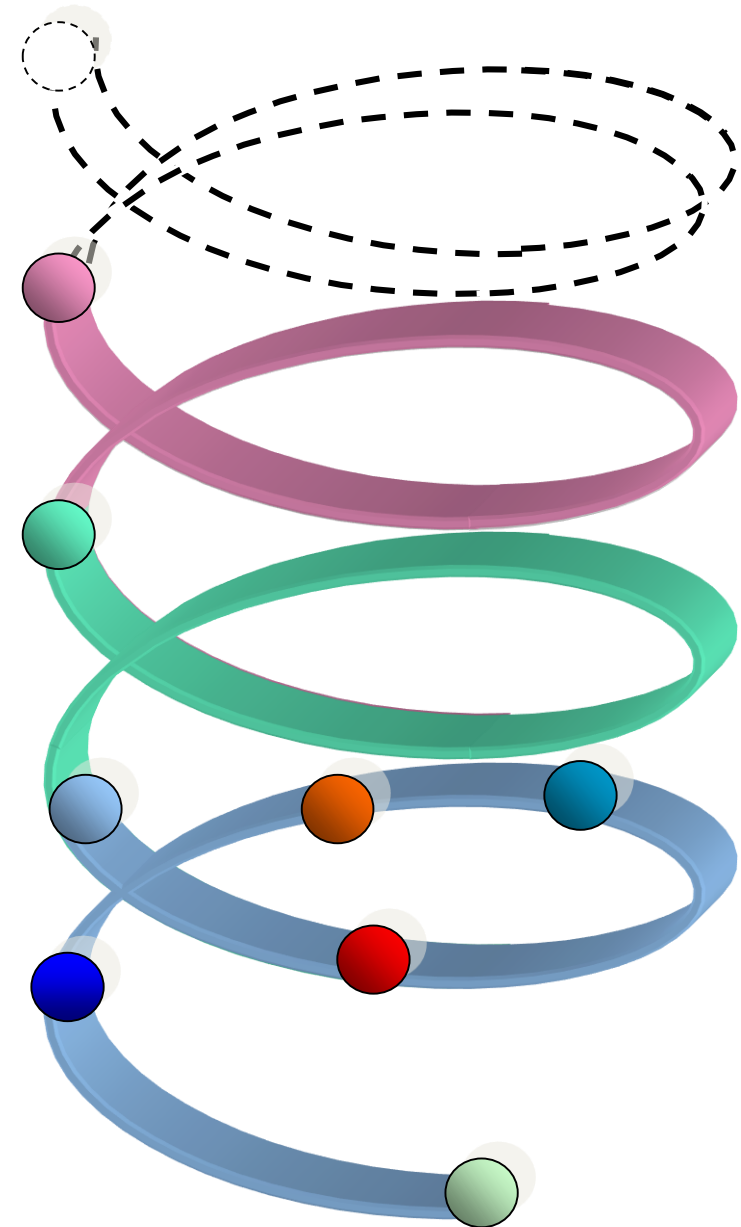
**New Volume  
on Adaptation to Climate Change**

# “Spiral” Model of IWRM

The IWRM **process** at the river basin level is illustrated by a “**spiral**”. New solutions are added at each stage, responding to evolving needs and social, economic and environmental circumstances, through facilitating agreements among basin stakeholders on the necessary trade-offs.

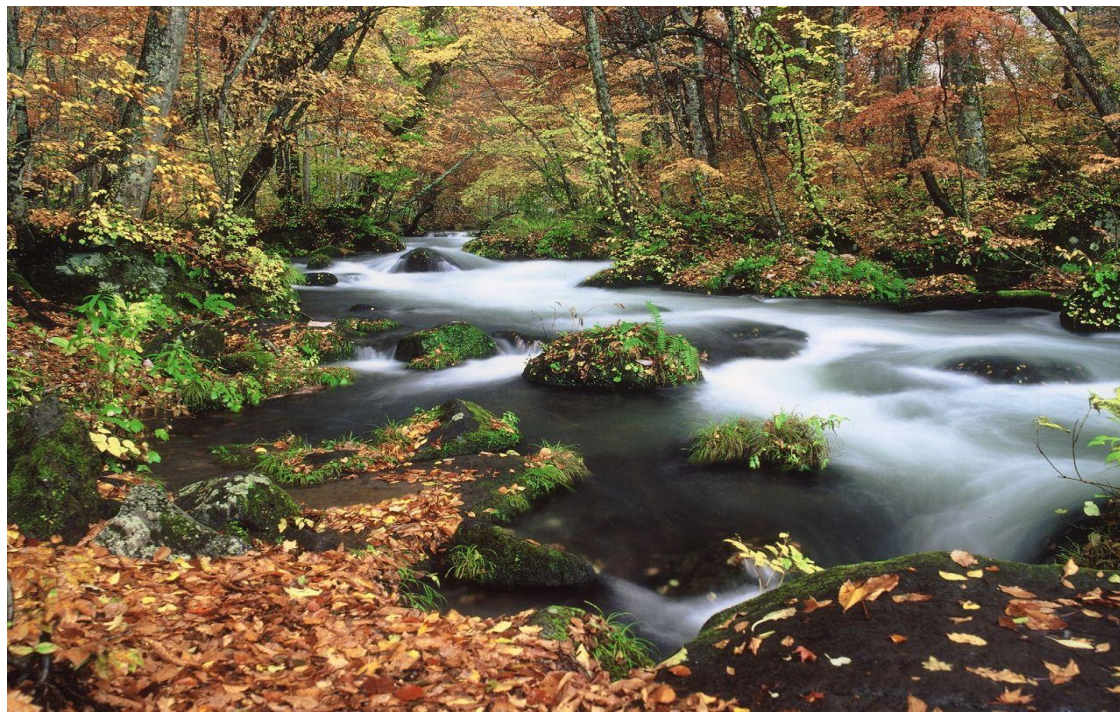


# “Spiral” Model of IWRM

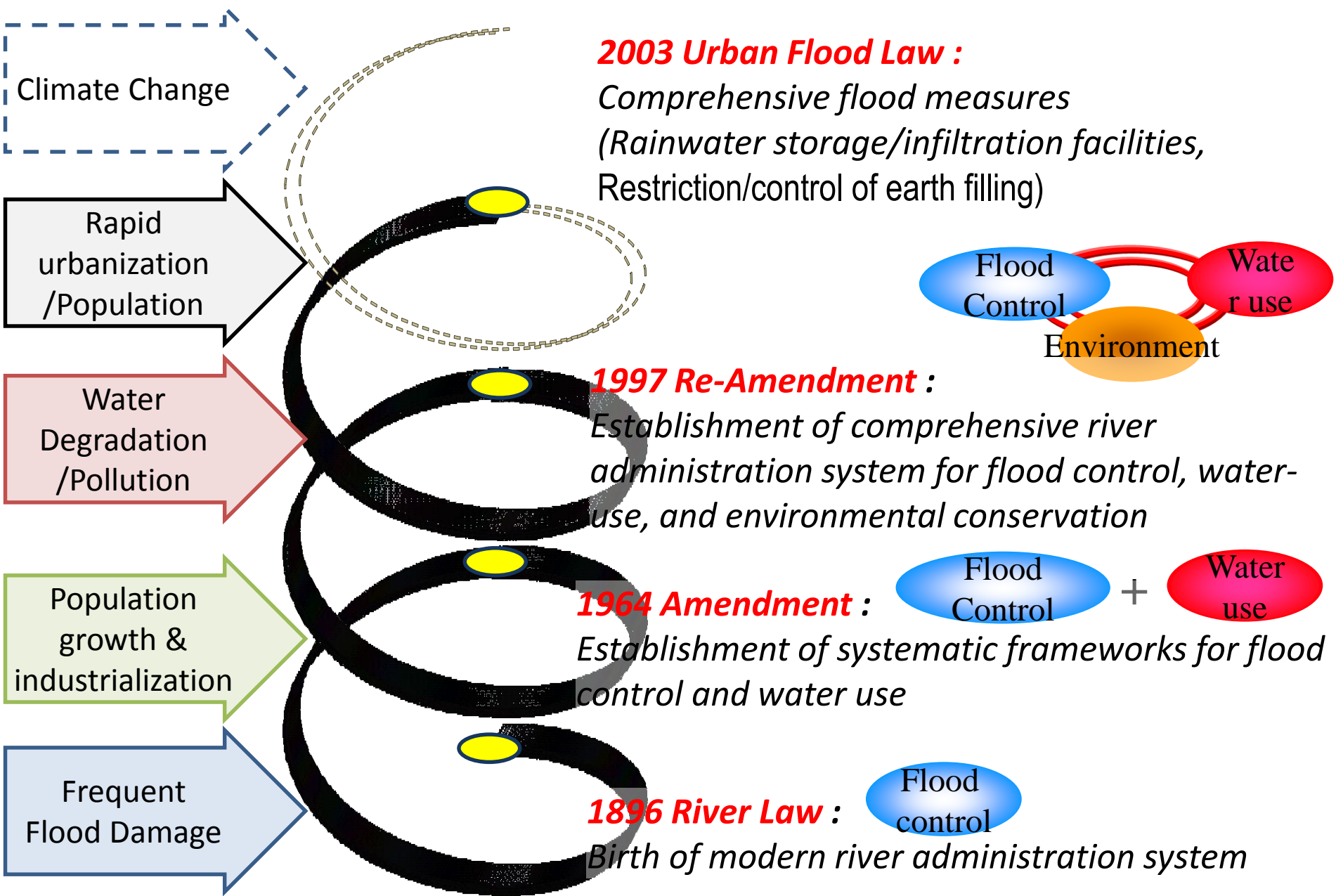


方丈記 - Hōjōki (A.D

1212)  
*The flowing river never stops  
and yet the water never stays  
the same.*



# “Spiral” model of River Law in Japan





# Case study

## Inclusive concept in River Law in Japan

### Article 16-2. (The River Improvement Plan)

River administrators shall establish a plan to improve the river concerned hereinafter referred to as the river improvement plan 16-2-1)) for the section for which river improvement shall be implemented deliberately in accordance with the fundamental river management policy.

3 When river administrators intends to draft a river improvement plan , he shall consider opinions from persons with experience or an academic background when necessary.

4 In connection with the previous paragraph (Paragraph 3), river administrators shall take necessary measures, such as public hearings etc., to reflect the opinion of the people concerned whenever necessary.

5 When river administrators intend to establish a river improvement plan , he shall consider opinions from concerned prefectural governors and mayors in advance as provided in Government Ordinance.

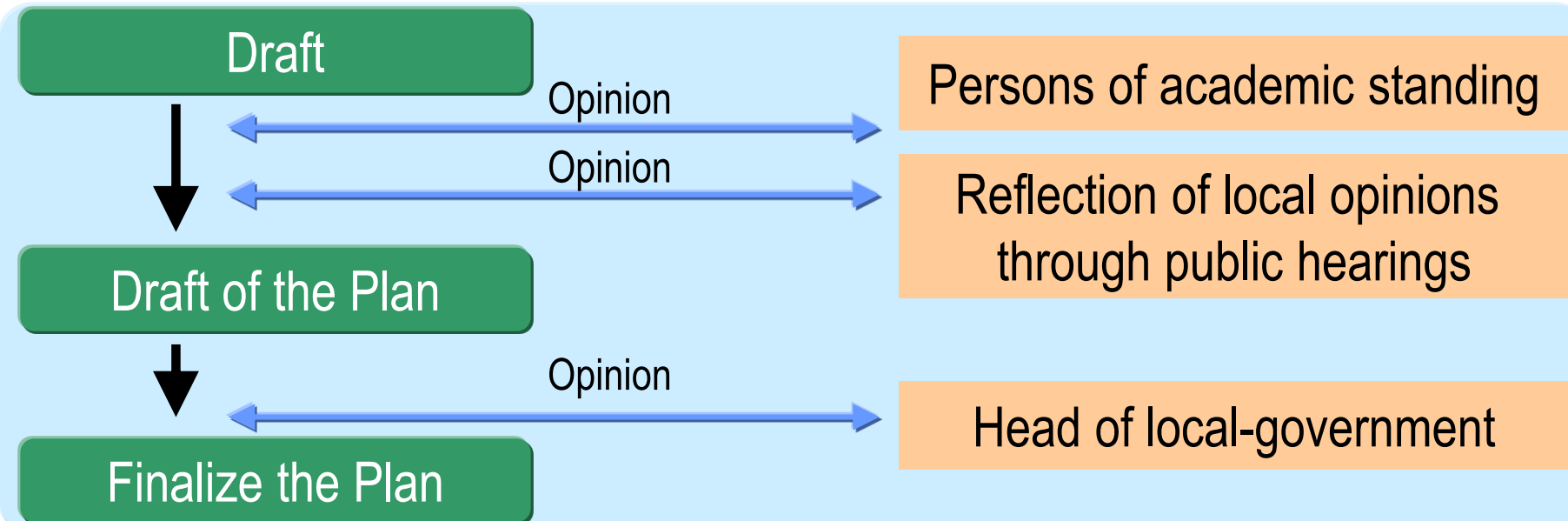
# Flow of the River Improvement Plan

## The I River Improvement Plan

Contents of medium-term concrete improvements determined in line with the Basic River Management Policy (planned period: 20 to 30 years)

### Items decided

- Items concerning goals of the River Management Plan
- Items concerning the execution of improvement of the river



# ***Kakogawa Improvement Plan Committee***<sup>19</sup>

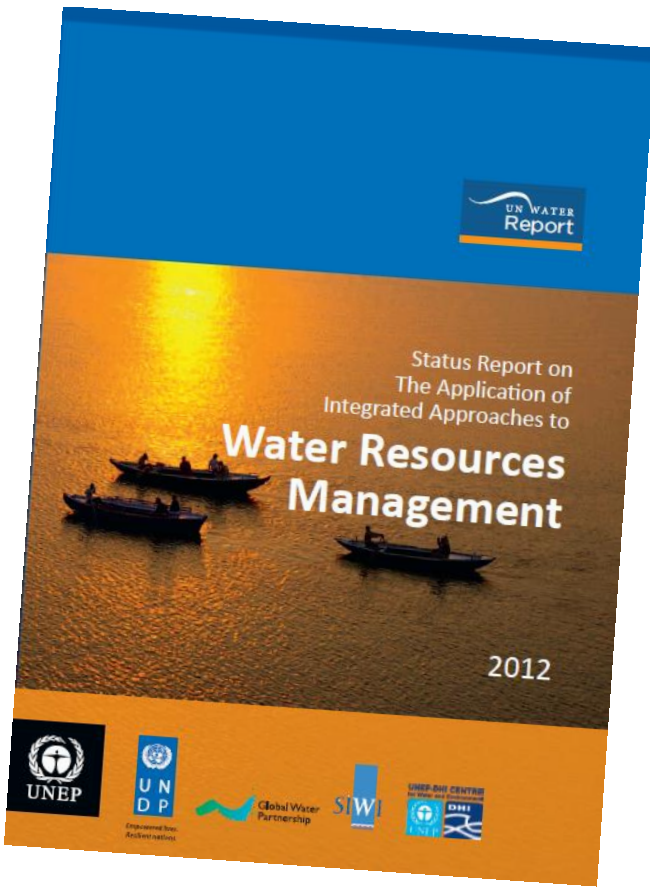
<b>Organization</b>	<b>Professional</b>	<b>Field</b>	<b>Name</b>
Kakogawa Fishermen's Union	Union president	<b>Fisherman</b>	Mr Ikeshima
Hyogo Univ, Economic Department	Professor	<b>Environmental Economics</b>	Mr Ikemoto
Kobe Univ. Agriculture Department	Professor	<b>Agricultural Hydrology</b>	Mr Uchida
Akashi technical college	Professor	<b>River Engineering</b>	Mr Kanda
Kitaharima Industrial department Org.	Director	<b>Local Industry</b>	Mr Saito
Radio Kansai Company	Chief	<b>Local history</b>	Mr Tashita
Kakogawa boat Association	Director	<b>Water front utilization</b>	Mr Tanabe
Fishhook manufacturing association	Secretary	<b>Local Industry</b>	Mr Doi
Hyogo prefectural university	Professor	<b>Environmental Planning</b>	Mr Nakase
NGO Mizube learning project	Head	<b>NGO Local activities</b>	Ms Hatakeyama
Hyogo prefectural university	Professor	<b>Plant ecology</b>	Mr Hattori
NGO River clean ECOTAN bank	Head	<b>NGO Local activities</b>	Mr Harimoto
Himeji aquarium	Curator	<b>Freshwater fish /shell fish</b>	Mr Masuda
Kobe Univ. Engineering Department	Professor	<b>River Engineering</b>	Mr Michioku
Kitaharima Forestry cooperative	Union president	<b>Forestry</b>	Mr Yamaguchi
Miki city Univ. for elderly people	Master	<b>Local history</b>	Mr Yoshida

# IWRM guidelines customization



- **Based on the UNESCO IWRM guidelines and its concepts, Davao city in Philippine customized the guideline in the Davao river basin in close cooperation with UNESCO in 2011.**  
<http://www.rdc.nro11.neda.gov.ph/docs/iwrm.pdf>
- **It incorporates local perspectives for managing water resources and also integrates consideration for climate extremes and environmental sustainability.**
- **It highlights the need for IWRM communication tools**

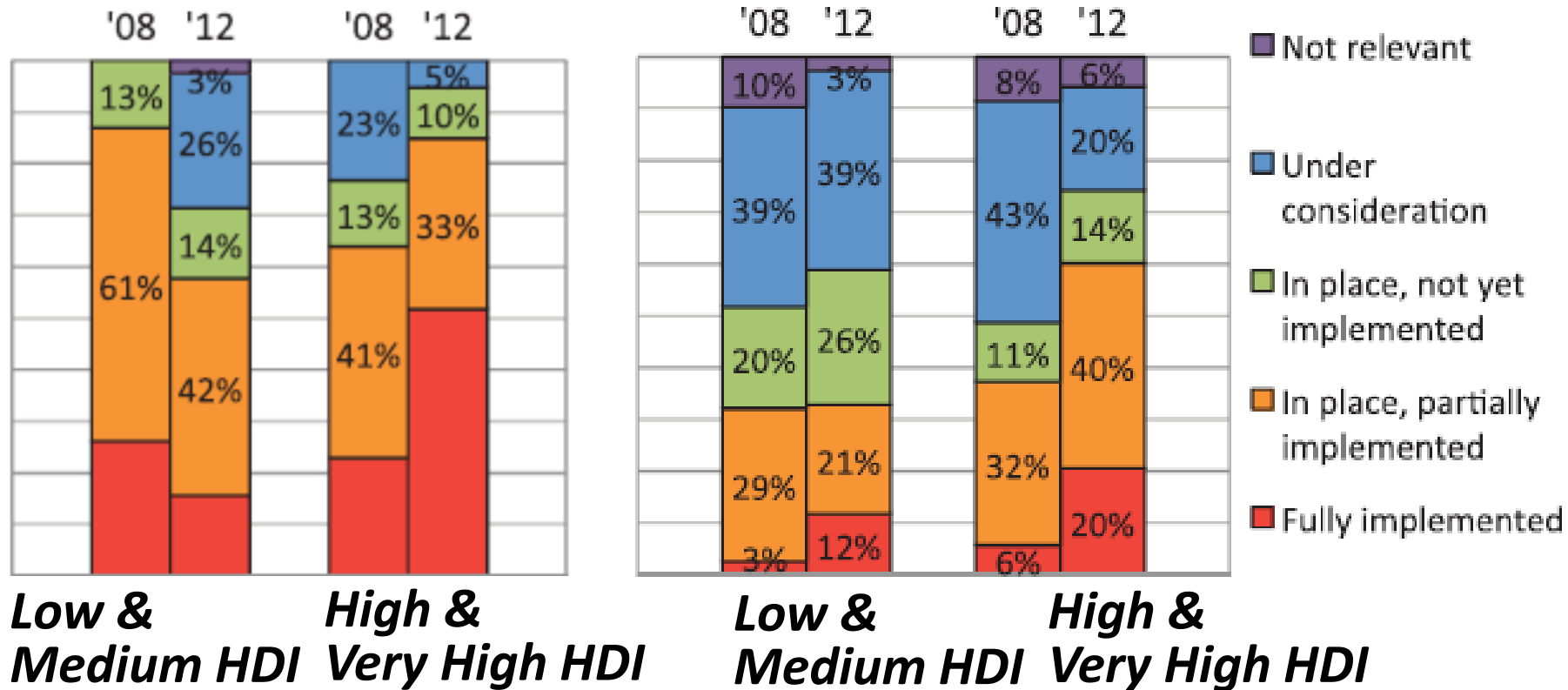
# Current status of Implementation of IWRM



- ***UN-Water, the UN inter-agency coordination mechanism for all fresh water issues and monitors/reports on the state, utilization and management of the world's fresh water resources.***
- ***Starting points of the survey is the Earth Summits Agenda 21 in 1992 and follow up UN-water report in 2008.***
- ***Focusing on the status of the management of water resources in UN member states over 130 countries***

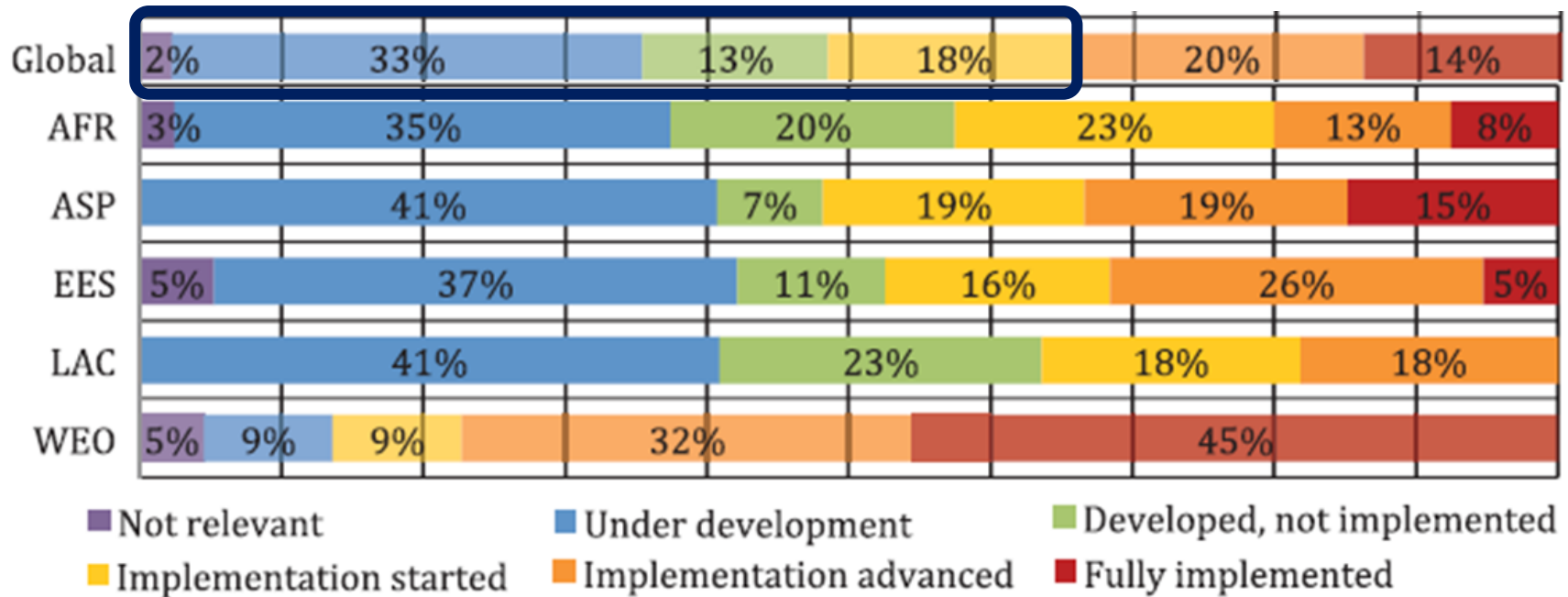


# Progress on implementation of national/federal IWRM plans by HDI group



- **Lower HDI group appear to have stalled or even regressed and Higher HDI group have moved ahead steadily in implementing water laws and IARM plans**

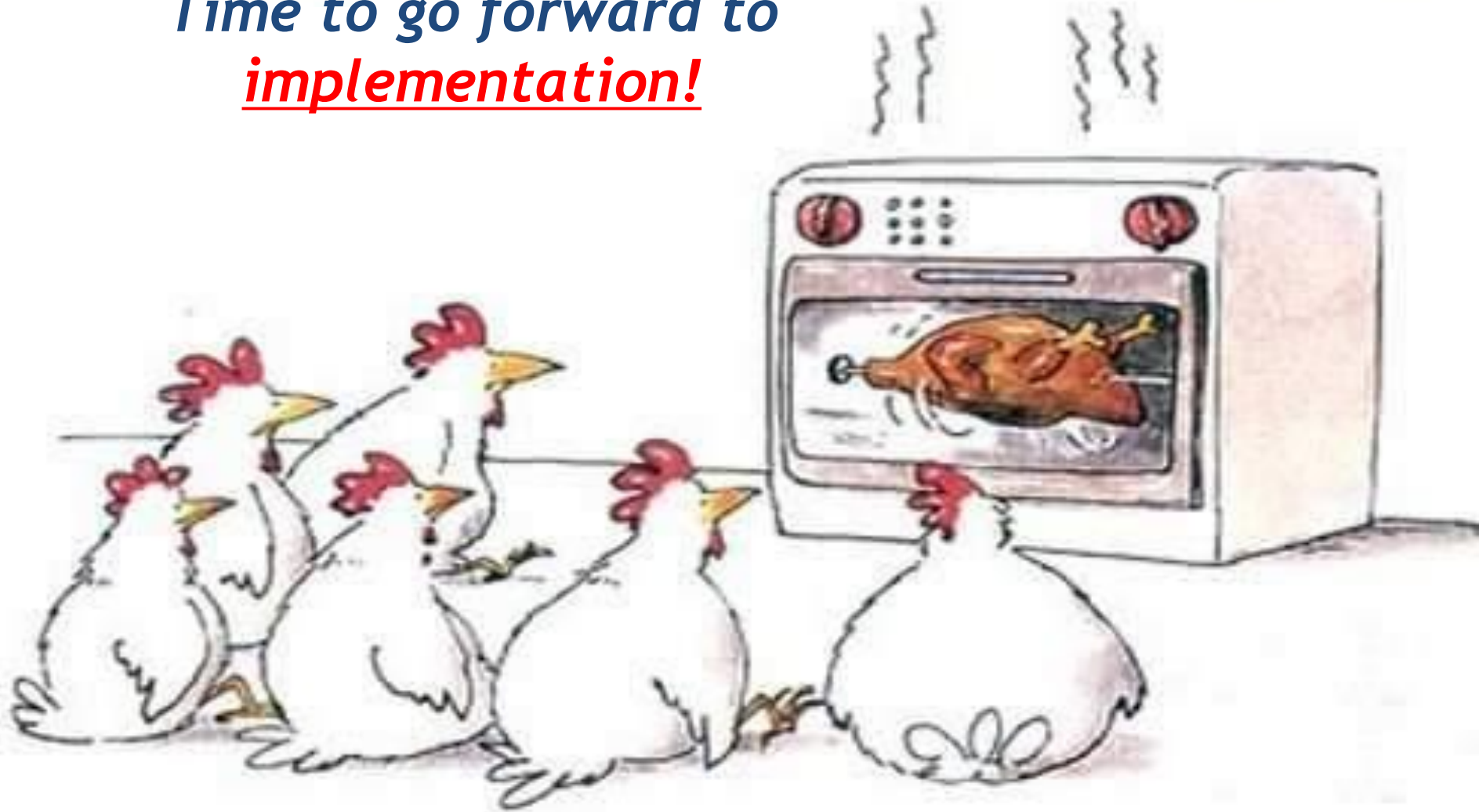
# National/Federal IWRM or equivalent by region



- **65% of countries have developed IWRM plans**
- **However, progress appears to have slowed or even regressed in some countries since in 2008**
- **50-65% of countries are partially or not implementing. Implementation is still challenging.**

***WE NEED TO DO MORE THAN JUST  
STARE AT THE PROBLEM!***

***Time to go forward to  
implementation!***





# History of IHP

## (International Hydrological Programme)

Experimental Basins,  
Categorization of Large Floods,  
World Water Balance

Hydrology and Water Resources Sustainable  
Development in a Changing Environment

International Cooperation  
in Hydrological Sciences

Hydrology and Water Resources  
Development in Vulnerable Environment

Water Interactions:  
Systems at Risk and Social Challenges

Water Dependencies:  
Systems under Stress and Societal Responses

2014

2021

**IHPVIII**

**Water  
Security:**

Responses to Local,  
Regional, and Global  
Challenges

1965

International  
Hydrological  
Decade (IHD)

1975

IHP-I

1981

IHP-II

1984

IHP-III

1990

IHP-IV

1996

IHP-V

2002

IHP-VI

2008

IHP-VII

Water Resource Management

Societal Aspects

Holistic/System-wide



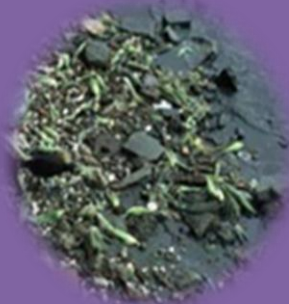
## *Water Security: Responses to local, regional, and global challenges*



**Water Related  
Disasters and  
Hydrological  
Changes**



**Groundwater  
in a Changing  
Environment**



**Addressing  
Water  
Scarcity and  
Quality**



**Water and  
Human  
Settlements  
of the Future**



**Eco-  
hydrology  
Engineering  
Harmony for  
a Sustainable  
World**



**Education,  
Key to Water  
Security**

**Integrated Water  
Resource Management**

**Transboundary or  
Shared Waters**

**Human  
Dimension**

**Governance**

**Global  
Change**









United Nations  
Educational, Scientific and  
Cultural Organization



# UNESCO IHP Network



-  UNESCO HQ
-  UNESCO-IHE Institute
-  UNESCO's Regional and Cluster Offices

-  WWAP (World Water Assessment Programme)
-  Water related Institutes and Centres (18)
-  Water-related Chairs (29)

*Thank you for your attention*

*Further information : [k.yoshida@unesco.org](mailto:k.yoshida@unesco.org)*