



International Hydrological Programme

“Flood Risk Assessment and Management: preparing for the worse events & designing for the better solutions”

International Workshop on Flood Risk Management

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OUTLINE

- **A brief intro: UNESCO-International Hydrological Programme (IHP)**
- **IHP and Flood Risk Assessment**
- **IHP and Flood Risk Management**
- **The UN inter-agency International Flood Initiative (IFI)**
- **Today ICHARM**

International Hydrological Programme (IHP)

The only global intergovernmental scientific programme on water resources of the UN system

- Created in 1975 after the International Hydrological decade
- Member States define needs and plans of phases
- Growing emphasis on management and social aspects from IHP I to IHP VI

Shifting of the Paradigm of IHP from Phase I to VI

- IHP I focused on pure hydrological processes
- IHP developed, expanded and grew by time
- IHP V (1995-2001) took the Theme “**Hydrology and Water Resources under a Vulnerable Environment**”
- Growing emphasis on management and social aspects shaped the IHP VI



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Water Interactions : Systems at Risk and Social Challenges



Phase VI (2002-2007)

**International Hydrological Programme
of UNESCO**

OVERVIEW OF THE SIXTH PHASE OF IHP

Theme 1 Global Changes and Water Resources

- Focal Area 1.1, Global estimation of resources: water supply and water quality (*) (**)
- Focal Area 1.2, Global estimation of water withdrawals and consumption (**)
- Focal Area 1.3, Integrated assessment of water resources in the context of global land-based activities and climate change (*) (**)

Theme 2 Integrated Watershed and Aquifer Dynamics

- Focal Area 2.1, Extreme events in land and water resources management (*)
- Focal Area 2.2, International River Basins and Aquifers(*)
- Focal Area 2.3, Endorheic Basins (*)
- Focal Area 2.4, Methodologies for integrated river basin management (*) (**)

Theme 3 Land Habitat Hydrology

- Focal Area 3.1, Drylands (*) (**)
- Focal Area 3.2, Wetlands (*)
- Focal Area 3.3, Mountains (*) (**)
- Focal Area 3.4, Small islands and coastal zones (*)
- Focal Area 3.5, Urban areas and rural settlements (*)

Theme 4 Water and Society

- Focal Area 4.1, Water, civilization and ethics
- Focal Area 4.2, Value of water
- Focal Area 4.3, Water conflicts - prevention and resolution (**)
- Focal Area 4.4, Human security in water-related disasters and degrading environments (*) (**)
- Focal Area 4.5, Public awareness raising on water interactions (*) (**)

Theme 5 Water Education and Training

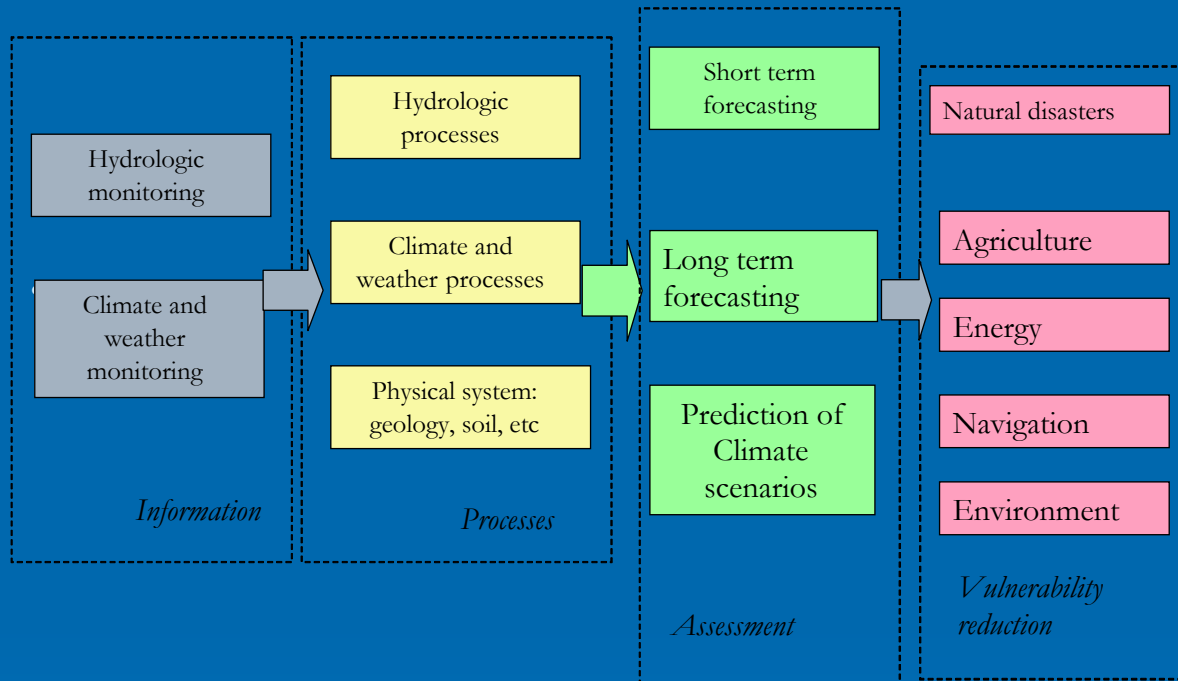
- Focal Area 5.1, Teaching techniques and material development (*) (**)
- Focal Area 5.2, Continuing education and training for selected target groups (*)
- Focal Area 5.3, Crossing the digital divide (*)
- Focal Area 5.4, Institutional development and networking for WET (*)

(*) Indicates connections with FRIEND - Flow Regimes From International Experimental and Network Data

(**) Indicates connections with HELP – Hydrology for the Environment, Life and Policy

Both are cross-cutting programme components of IHP

IHP AND FLOOD RISK ASSESSMENT



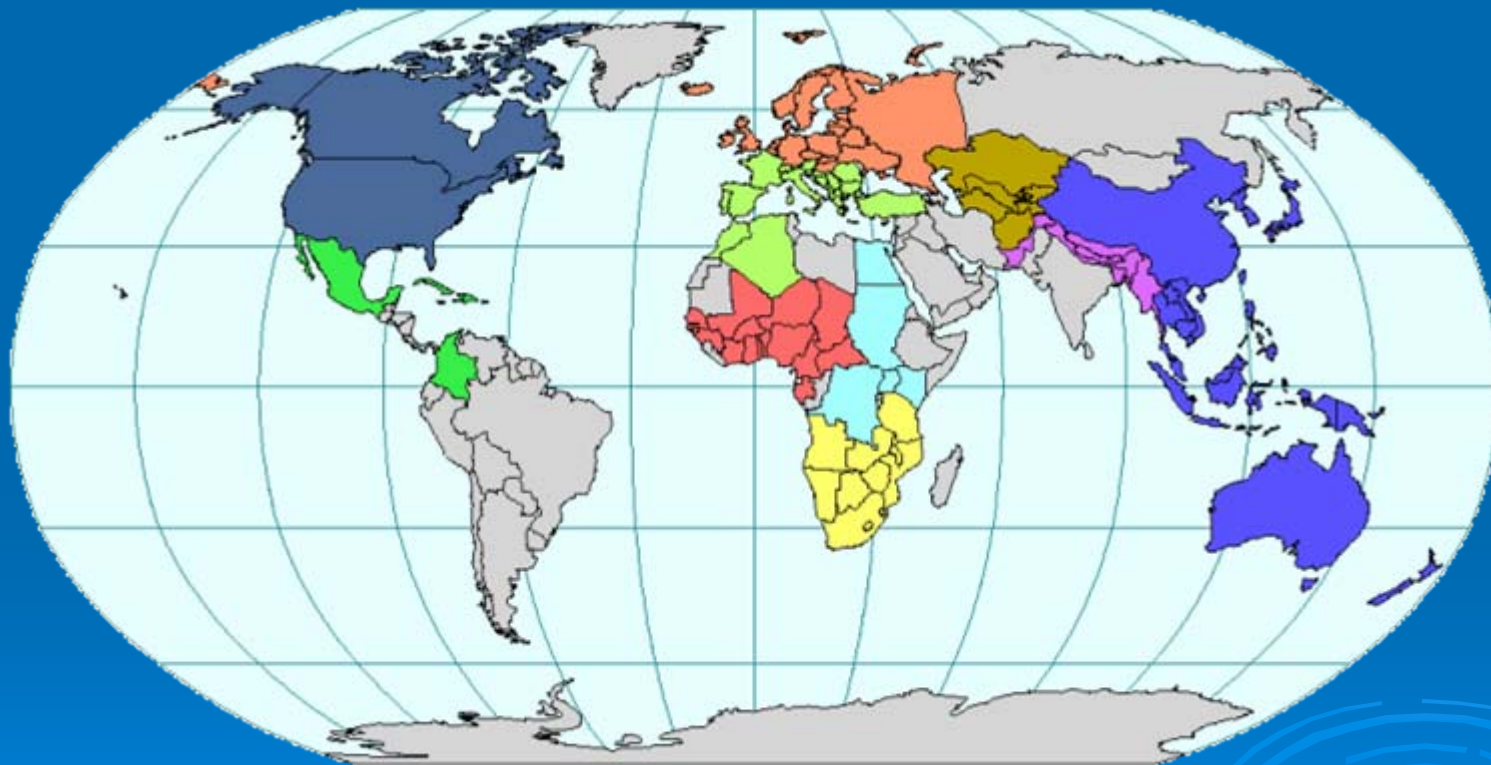
Framework for risk management related to climate change and variability by Carlos E.M. Tucci

- Within IHP the Flow Regimes from International Experimental and Network Data (FRIEND) can contribute relevant data for the flood risk assessment from its eight regional FRIEND projects.
- The scientific aspects of the FRIEND projects include studies in: low flows, floods, variability among regimes, rainfall/runoff modeling, etc.



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Flow Regimes From International Experimental and Network Data (FRIEND) – a global project



Established

N Europe	Asian Pacific
AMHY	HKH
Southern Africa	AOC

Emerging

Nile	Central Asia
AMIGO	N America

IHP AND FLOOD RISK ASSESSMENT & MANAGEMENT

THE PRESSING ISSUES (apart from the climate change)

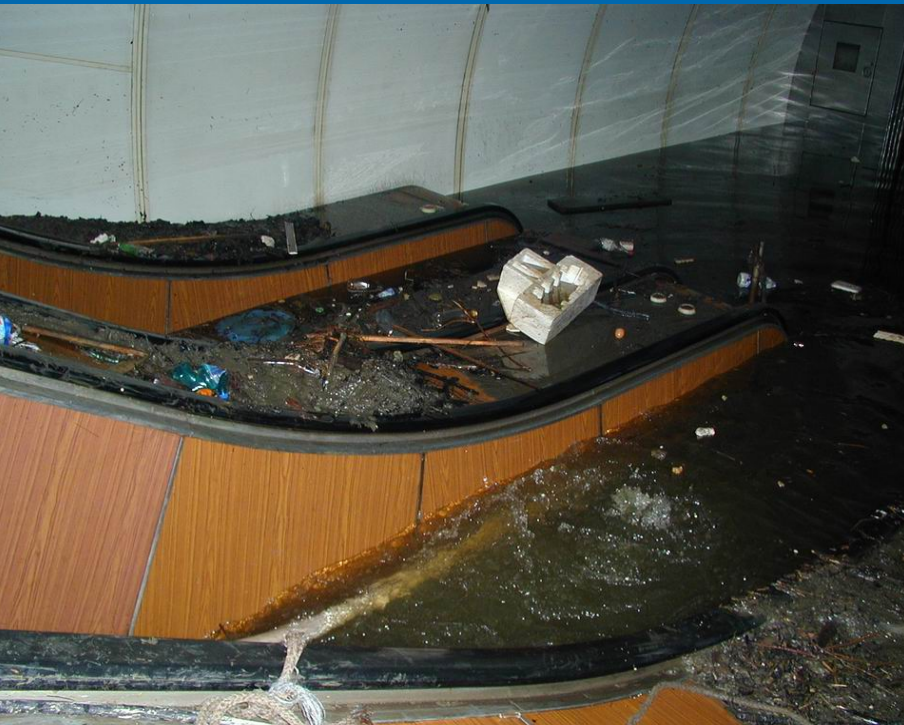
- The number of disasters attributed to flooding is on the rise
- Population is growing / Urban cities are spilling
- The number of people living in flood-prone areas also rises fast due to:
 - more extreme weather system that accompany global climate change
 - rising sea levels
 - continuing deforestation especially in mountain regions
- The number of people who will live and work in flood-prone areas will be doubled as the world's population is projected to 10 billion by 2050 (UNU prediction).

Major floods and droughts worldwide in 2002



There is pressing need to develop advanced risk management on water hazard in order to secure human life and ensure sustainable socio-economic development and poverty alleviation.

The Underground Flooding in Czech Republic, 2002

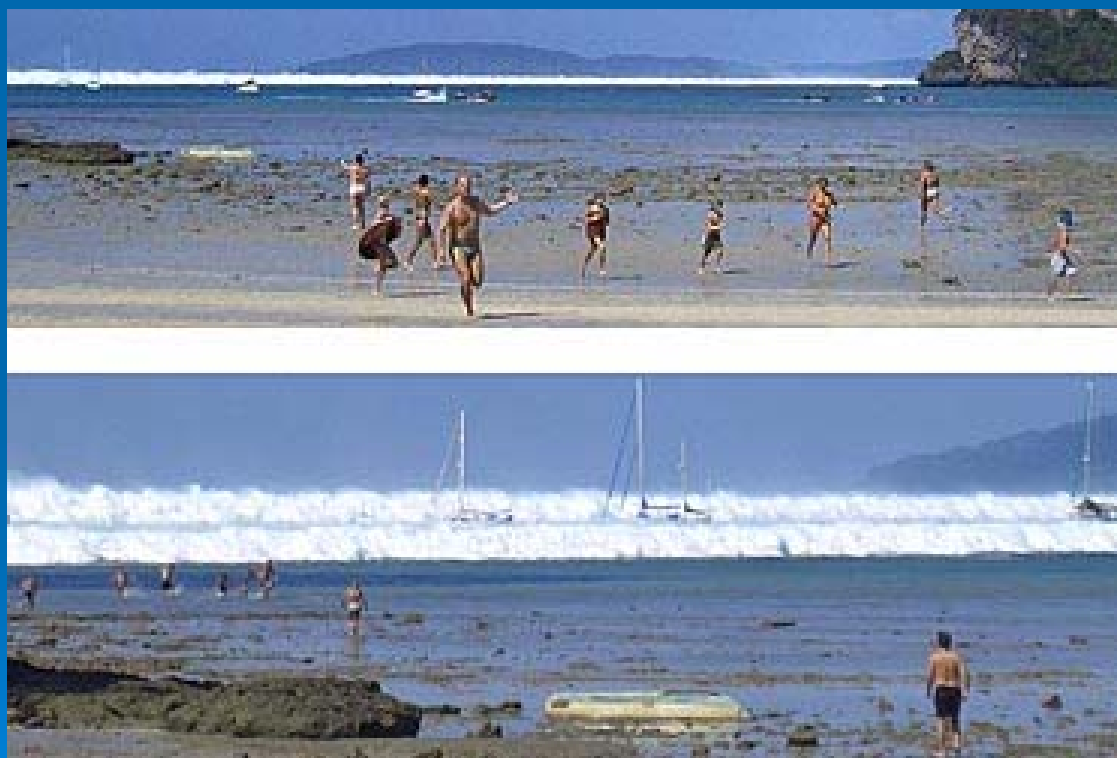




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The Tsunami in December 2004

The first of six waves at Krabi, Thailand





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The Tsunami in December 2004 Phuket, Thailand





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Before the Tsunami in Sri Lanka, August 2004



Source: www.floodnet.net



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The Tsunami in Sri Lanka, December 2004



Source: www.floodnet.net



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The Tsunami in Indonesia, December 2004

The Tsunami that hit Southeast Asia in December 2004 was triggered by two Earthquakes underneath the ocean and killed nearly 300,000 people.



The massive wave wiped out towns and cities and generations in one sweeping moment.



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The Water Related Disasters

More in 2005 . .

- In 2005 Summer: Hurricanes Katrina, Rita and Wilma plus East Coast Flooding in USA
- Yet many others can and will hit else where
- **Sediment disasters: bank erosion, sedimentation, landslide, etc.**

IHP AND FLOOD RISK MANAGEMENT

Before the disaster

- Risk assessment
- Preparedness – education - capacity building - awareness
- Socio-technological solutions - DSS
- Holistic Approach: multi-disciplinary and transboundary, cross-cultural cooperations
- Integrated Flood Management Promotion – it includes: flood plain restoration, spatial planning, wetlands conservation, etc.

During the disaster

- Water Ethics and good governance
- Conflict prevention and mediation

After the disaster

- Emergency support – people participation
- Conflict prevention and mediation

Embracing new technologies and applying PC-CP

New Technologies

- **Space technology**
- **Satellite technology**
- **Remote sensing and modelling**
- **Dutch floating roads**

PC – CP (from Potential Conflict to Cooperative Potential)

- **Highlighting the long term positive impacts of Floods**
- **Promoting the philosophy of LIVING with FLOOD**
- **Conflict prevention and mediation during and after the disaster**

What is PC-CP and Role of PC – CP in Flood Management

- **PC – CP project promotes Water as a Catalyst for Peace through Capacity Building, Research and Technical Assistance**
- **Flood risks are processes that result from a combination of flood hazard and societal vulnerabilities, hazard modification and amplification, vulnerability enhancement due to various social processes and factors**
- **PC – CP can apply its methodology of bringing peace and solidarity not only in the non-emergency time - not only in conflict prevention and mediation during and after the disaster - but also helping people to realise the concept of “ Living with Floods”**
- **Which in turn is bringing understanding, skill, knowledge and confidence (i.e., Peace) to the subjects (and victims) of water related disasters**

The UN inter-agency International Flood Initiative

Mission Statement

The International Flood Initiative promotes an integrated approach to flood management, at the same time, reducing social, environmental and economic risks that result in and from floods and increasing the benefits from floods and the use of flood plains.

UNESCO, WMO, UNU, ISDR

IAHS, IIASA, IAHR

Overall objectives

The overall objective of IFI is to build capacities in countries in order to gain and advocate better understanding and handling of hazards, vulnerabilities and benefits involved with floods by promoting all measures leading to that end by applying the following guiding principles:

- Living with floods
- Equity
- Empowered participation
- Inter-disciplinarity and trans-sectorality
- International and regional cooperation

Specific objectives

- Enhance effectiveness of forecast and people-centred early-warning systems;
- Improve community response to flood hazards;
- Enhance capacity to cope with floods under climate change;
- Develop approaches to public participation that are appropriate for different problem contexts and cultural settings;
- Enhance flood awareness and preparedness with a focus on rural settings;
- Include flood management aspects in school and university education;
- Improve in-service training on all aspects of flood management; and
- Develop financial mechanisms for transferring the risks and sharing the losses from floods.

Specific objectives (Contd.)

- Improve data collection and analysis for flood management;
- Enlarge the knowledge-base in respect to risk and benefits of floods;
- Enhance the benefits of floods;
- Develop and improve institutional frameworks for flood management;
- Develop area-specific adaptation strategies;
- Develop approaches to assess and reduce vulnerability;
- Improve floodplain management in rural and urban areas;
- Optimize a mix of structural and non-structural approaches;
- Improve forecasting and early warning of floods for both rural and urban areas.



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Strategic Activities

- Research and education
- Knowledge and know-how collection and dissemination
- Training and capacity building
- Information dissemination and communication
- Networking and active participation for good governance
- Technical assistance

Where is the Initiative heading?

- The Initiative has been launched at the UN World Conference on Disaster Reduction, Kobe, Japan on 18-22 January 2005
- The International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO --hosted by the Public Works Research Institute (PWRI) in Tsukuba, Japan– will be a global facility acting as secretariat for the Initiative

Today ICHARM

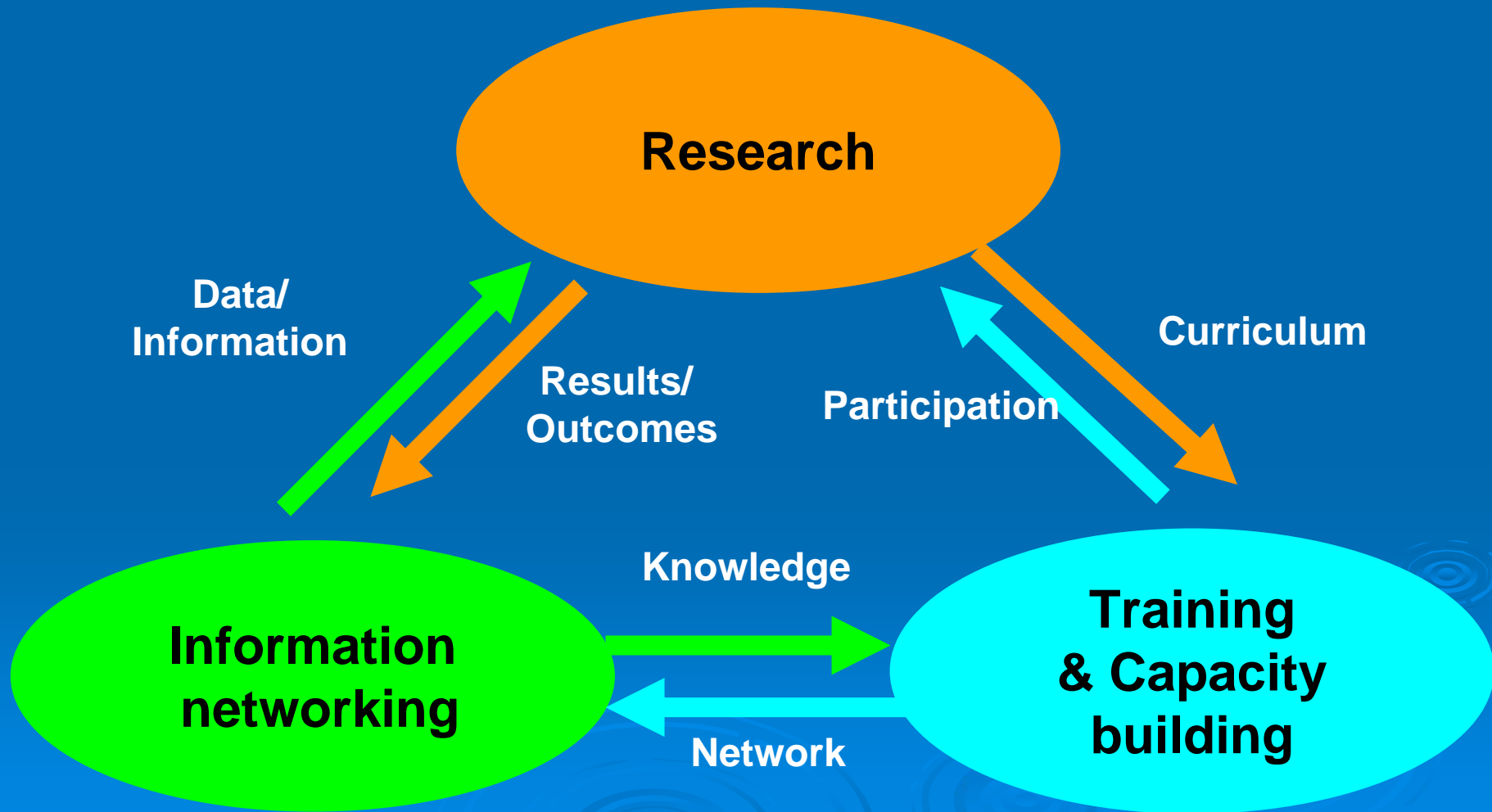
**The International Centre For
Water Hazard and Risk
Management
under the auspices of UNESCO**

(UNESCO-ICHARM)

Framework of UNESCO-ICHARM

- The new Centre is established within PWRI as a global centre under the auspices of UNESCO (Category 2) in 2005
- The new Centre will be collaborating with the UNESCO-IHP networks, relevant UN agencies and other key institutes & organizations of the world
- The new Centre is expected to be a global facility responsible for the International Flood Initiative

Pillar Activities of UNESCO-CHARM





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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**
- **...and others**

- Urban expansion taking place downward → Underground flood risk
- Recent developments → Long term risks are not experienced



Volume of water entered into underground space:

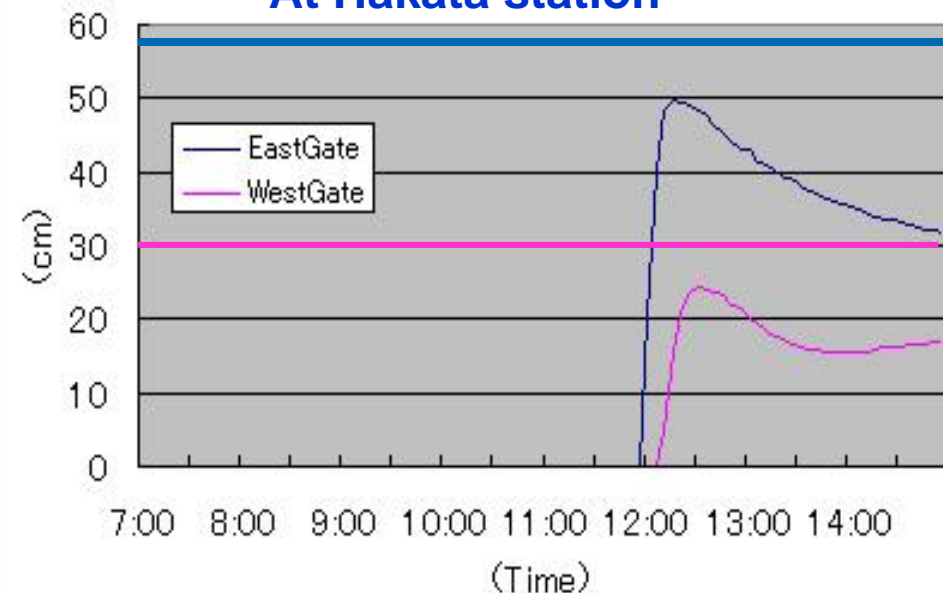
- 2,017 m³ (simulated volume)
- 1,320 m³ (total pumped water station)

Program 2



Fukuoka simulation

At Hakata station

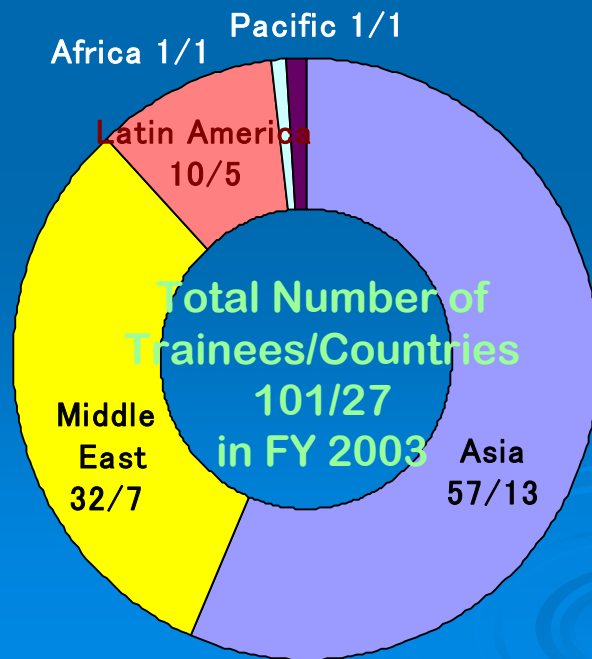


Activities

- Training and Capacity Building -

PWRI's long experience with conducting JICA training courses for over 35 years, including:

- River and dam engineering
- Sabo engineering



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**



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IHP



Thanks you for your attention!

