United Nations
Educational, Scientific and
Cultural Organization

ICHARM
Achievements in 2006-08
and
Commitments to 2008-10

International Center for Water Hazard and Risk Management (ICHARM)

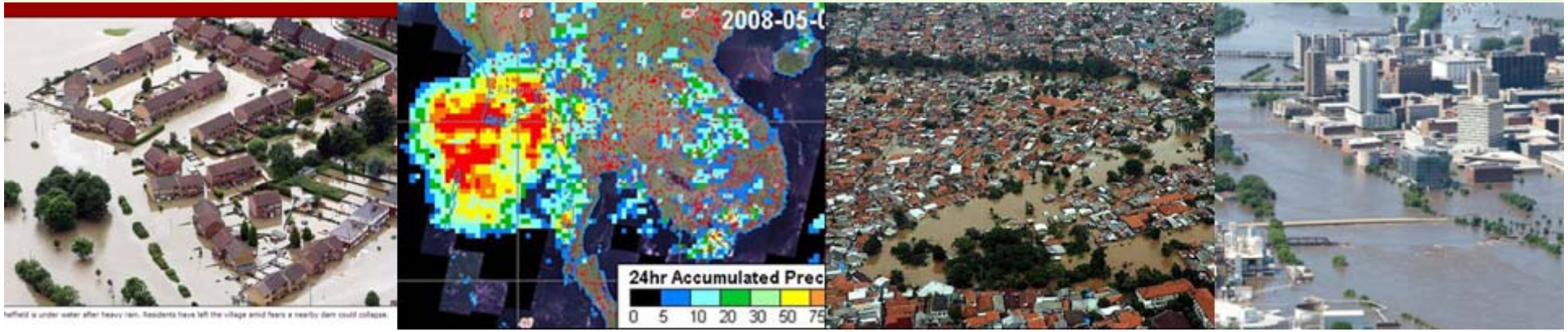
under the auspices of UNESCO

Public Works Research Institute (PWRI)

Tsukuba, Japan

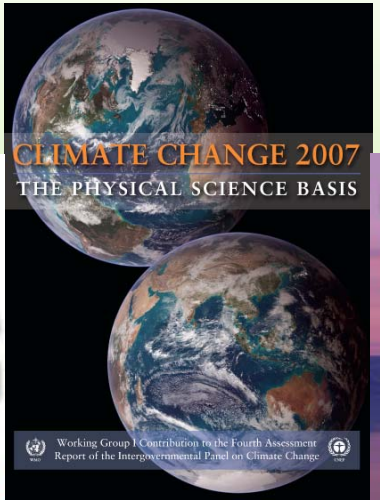
Intensifying Water Disasters

- Tsunami at Solomon Apr ‘06
- UK July ‘07
- Nepal-India-Bangladesh July-Aug ‘07
- Sidr Nov ‘07
- Nargis May ‘08
- China May-June ‘08
- Midwest USA June ‘08
- Mekong Aug ‘08
- Japan June-Aug ‘08
  (59 new records in 1205 stations in hourly precip)
- Australian drought ‘06-



Increasing International Efforts

- IPCC AR4
- G8 Hailigendamm
- G8 Toyako
- COP13
- APWF
- ISFD4
- IFI
- UNSGAB High-level Panel
- New UNESCO Water centers
- ICSU IRDR



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ICHARM in action

- Foundation on 6 March 2006
- Financially supported by PWRI, MLIT, MEXT, JICA, ISDR, ADB, …
- Supported by UNESCO, WMO, GRIPS, JWF, …, many universities, organizations & individuals
- MOU with USACE IWR, IHE, RCUWM
- Master Course teaching associates, ICHARM coordinators
- 29 members (7 international, 21 researchers)

ICHARM members

(2008.7)

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ICHARM Objective

International Centre for Water Hazard and Risk Management

- **To be the global Center of Excellence to provide and assist implementation of the best practicable strategies to localities, nations, regions and the world to manage the risk of water related hazards including floods, droughts, land slides, debris flows and water contamination.**
  - **At the first stage, the priority is flood-related disasters, and assumes**

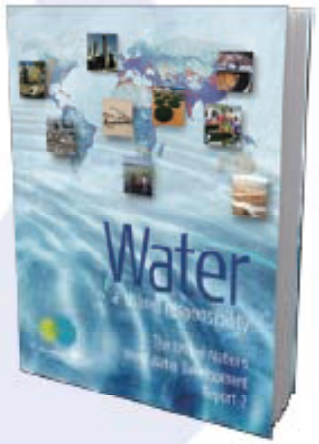
ICHARM Challenge

localism

- *Localism* is a principle that takes into account local diversity of natural, social and cultural conditions, being sensitive to local needs, priorities, development stage, etc., within the context of global and regional experiences and trends.

- In developed countries, the major concerns are
  - the **increasing cost** of protecting urban properties and activities and
  - the consensus building on **individual and public share**.
- In developing countries the major concerns are
  - the huge **loss of human lives** and
  - the **hold back of economic development**

  where the basic problems root in **poverty and governance**.



UN WWDR II (2006)

- Flood risk analyses in diverse localities in developing countries
- Development of flood warning systems that use satellite observations and other advanced technology
- Development of flood hazard mapping procedures able to meet various environmental and social conditions
- Development of community water hazards risk aversion systems with advanced flood warning and flood hazard maps as available means
- Promotion of basic research on hydrological measurement, analysis, and forecast to support ICHARM activities
- Participation in international research programs such as World Water Assessment Programme, International Flood Initiative, Group of Earth Observations and Predictions in Ungaged Basins

Research

Data

Curriculum

Results

Participation

Flood Hazard Mapping Training

Information networking

Knowledge

Network

- Creation of a worldwide and inter-disciplinary network of practitioners, researchers and course graduates in the field of integrated water risk management
- Collecton, analysis and dissemination of information and experiences regarding water-related disasters worldwide
- Timely organization of investigation teams when catastrophic water hazards occur
- Organizing and sponsoring workshops and symposia

Training

- Training courses on practical risk reduction systems incorporating existing social diversities, for public officers and decision makers
- Human resources development for integrated flood risk management in cooperation with universities and related institutes worldwide
- Training courses of flood hazard mapping and river and dam engineering for researchers and engineers
- Providing follow-up activities for course graduates in their home countries

Research (examples 1)

- **High-tech based Early Warning System & Hazard Mapping**
  - (with JAXA, MRI/JMA, IFNet/GFAS/IFAS etc.)
    satellite precipitation, DEM, DHM, inundation simulation, GoogleEarth, FHM
- **Impact assessment of global warming on floods** (MEXT fund for FY 2007-2011)
  - JMA/MRI AGCM (20km mesh) by Earth Simulater
    → interpretation to ground reality on the globe and specific vulnerable regions in 2030 & 2100

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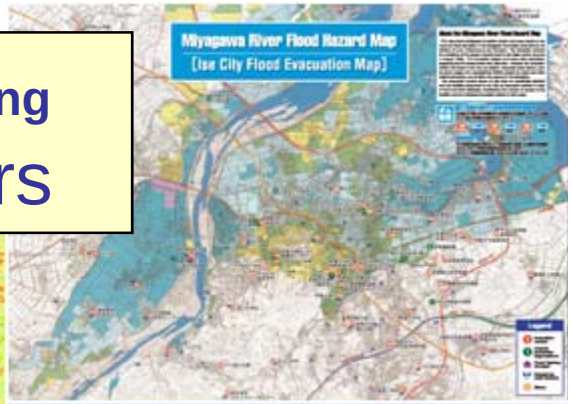
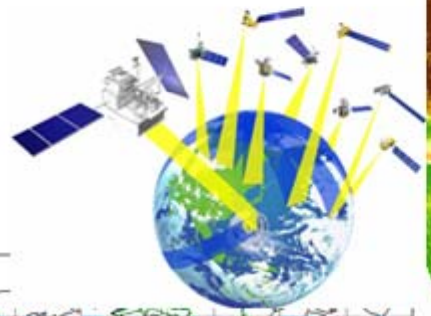
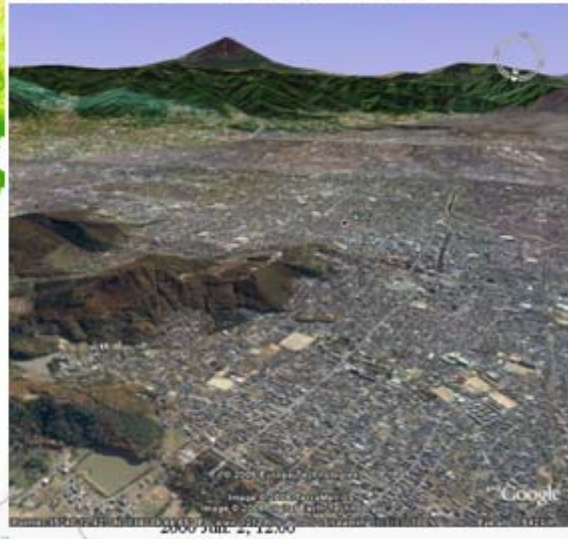
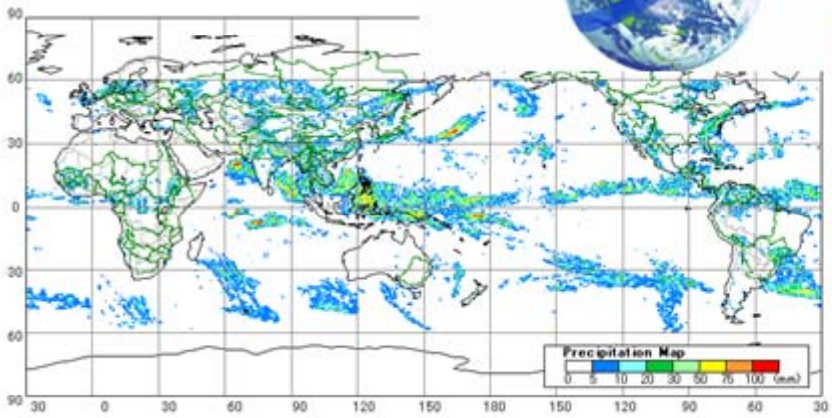
High-tech based Early Warning System & Hazard Mapping

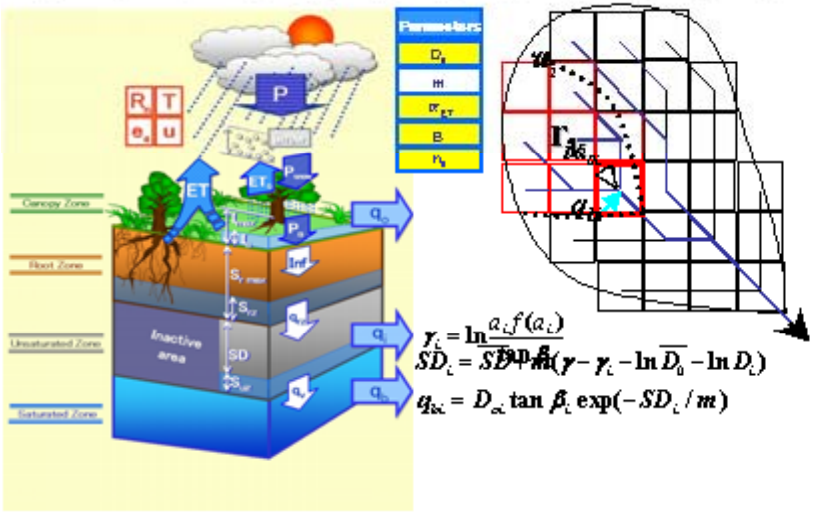
Owned & operated by local practitioners







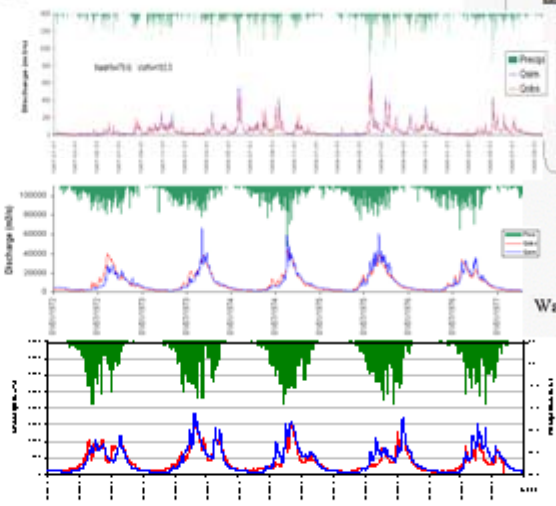


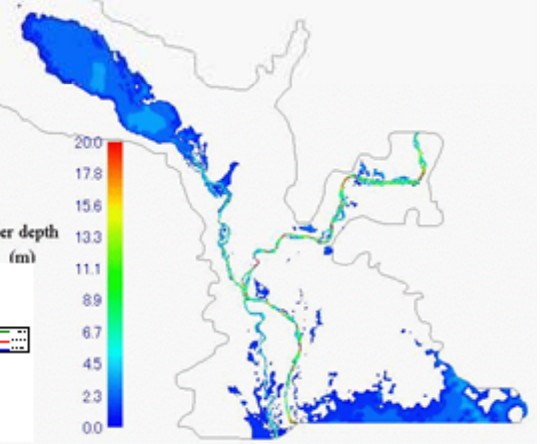


$$\gamma_i = \ln\frac{a_i f(a_i)}{\tan\beta_i}$$

$$SD_i = \overline{SD} + m(\gamma - \gamma_i - \ln\overline{D_0} - \ln D_i)$$

$$q_{bi} = D_\alpha \tan\beta_i \exp(-SD_i/m)$$





Research (examples 2)

- **Local studies**
  - Identification of the real needs of the people in diverse localities) → Diagnosis & Prescription
    - Study on local disasters (BGD, LKA & PHL)
    - Study together with local experts/communities (Nepal)
    - **Disaster (Flood) Preparedness Indices & standards**
- **Policy effective information** ← Analyses of global data sets
  - Global trends of water-related disasters
  - Large Floods Year Book

ISSN 0386-5878
Technical Memorandum of
PWRI No.oooo
ICHARM Publication No. 7

ICHARM Local Study Series No.1

A Feasibility Study on Integrated Community Based Flood Disaster Management of Banke District, Nepal

Phase 1: Baseline Study

Written by: Mahesh Raj Gautam (NDRI)
Rabindra Osti (ICHARM)

September 2008

United Nations
Educational, Scientific and
Cultural Organization

in collaboration with

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

Nepal Development Research Institute (NDRI)

Training (examples)

- **Training courses** in Tsukuba
  - Flood hazard mapping course (2004-, JICA)
  - River and Dam engineering course (1969-, JICA)
  - Comprehensive Tsunami training (2008-, ISDR)
- **Aftercare program** in trainees countries
  - To support FHM implementation (2006-, JICA)
    - KL, 2007; Beijing 2008
- **Master Course on Water-related Risk Management** with National Graduate Institute for Policy Studies (**GRIPS**) (Oct 2007-, JICA)
  - 2007-08: 10 students from BGD, CHN, IND, NPL, JPN
  - 2008-09: 9 students from BGD, CHN, NPL, IDN, THA, ETH

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Objective of the Flood Master Program

- To foster **solution oriented practitioners** with solid theoretical and engineering bases who can serve for planning and implementation of flood management practices within the framework of integrated river basin management at national to local levels.

2007-08 Class (First year graduates)

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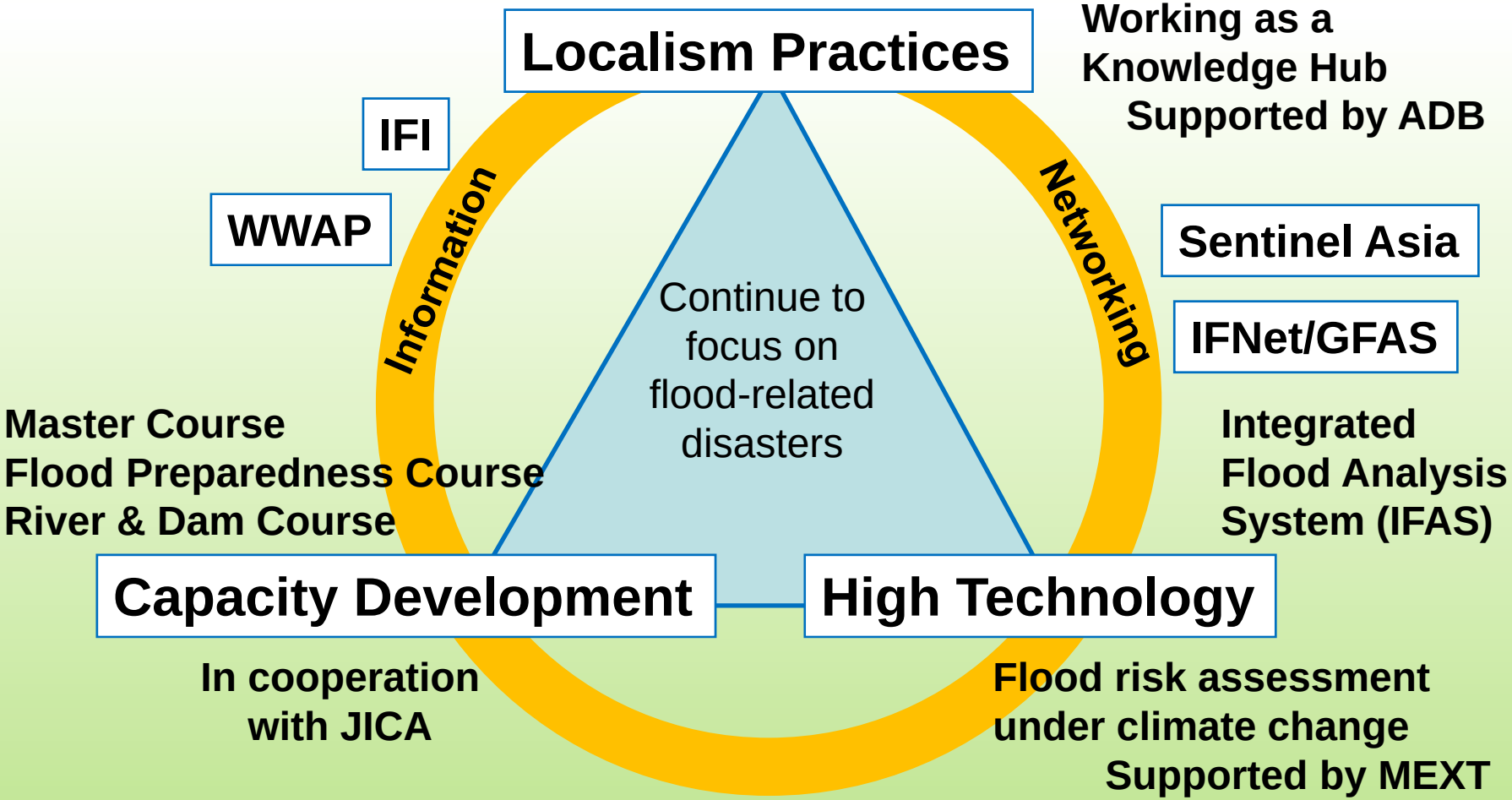
Information Networking (examples)

- ICHARM assumes as:
  - **Secretariat of IFI (International Flood Initiative)** of UNESCO, WMO, ISDR & UNU
  - **Focal point of WWAP** on Risk Management
  - Asia-Pacific **Knowledge Hub on water-related disaster risk reduction**
- Quick Report of Floods
  - 2007 (UK, China), 2008 (USA, POL, MYS, KEN, EGY)
- 10 ICHARM International Symposia/Sessions
- 14 ICHARM R&D seminars

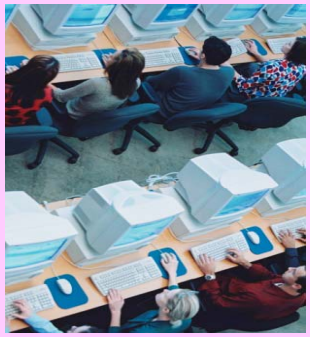
Commitment of ICHARM to the next biennium



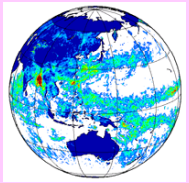
Development of local ownership of flood forecasts

System

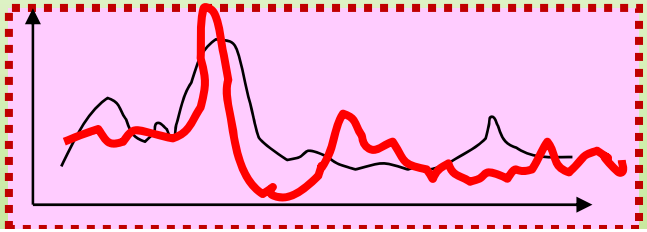
Training

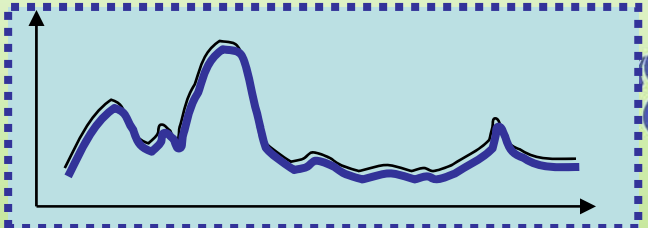


Global Data



Local Data





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Capacity Development

- Improvement of master course program
  - **Curriculum**
    - Policy and institutional module
    - Lecturers/texts exchanges
  - **Textbooks**
  - More students from more countries (more scholarships)
- Capacity development (from individual to organization)
  - Aftercare program
  - **Organization-targeted training program**

Localism Practices
with local partners as a knowledge hub

- Identify real local problems in holistic manner
- Provide best practicable strategies &

  Assist implementation through
  - Local consultation
  - Capacity development
  - High-technology

Disaster Preparedness Indices & Standards as a tool to guide localism practices

Indices to check and monitor &
Standards to guide
for society to come into a continuous positive spiral towards better preparedness against disasters.

The standard is not a list of facilities nor equipments to be installed, but rather a list of **institutional procedure** that any community commit to follow to assure **a positive spiral** operate in its community management system leading to a continuous improvement in disaster preparedness.

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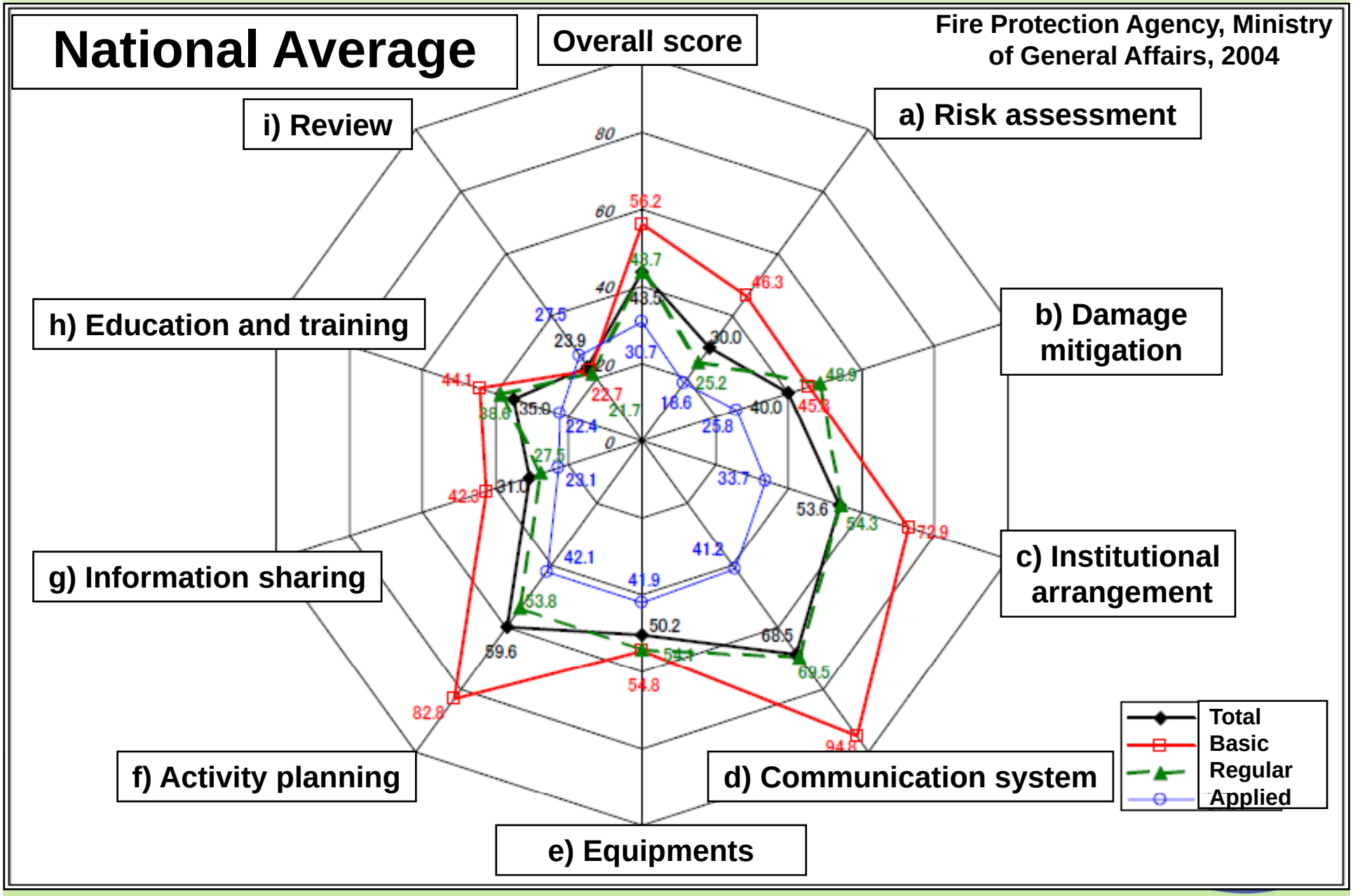
Diagnosis of prefectural disaster preparedness in Japan



Strengthening of partnership

- JICA
  - Capacity Development
    - **Master Course** (one year)
    - FHM/**Flood Preparedness**, River & Dam (short term)
    - Aftercare program
- ADB
  - **Philippines** debris control

  (under planning)
  - Flood forecasting system etc., **Indonesia**
  - Indices development and risk assessment for **Lower Mekong** Basin countries
  - **India and Bangladesh** for flood risk reduction

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Strengthening of partnership

- IHE: Lecturers exchange
- RCUWM: Research on climate change impact
- ICIWaRM: preparedness indices, IRBM
- NDRI, ICIMOD: GLOF
- IRTCES/IWHR:
- ERCE: Eco-hydrology
- HTC, …

- IFI: UNESCO, WMO, ISDR, UNU, …
- NARBO,
- IRBM,
- 5th ICFM (2011)
- ICSU IRDR
- WWF5, ISDR GP,

Localism Practices & Training

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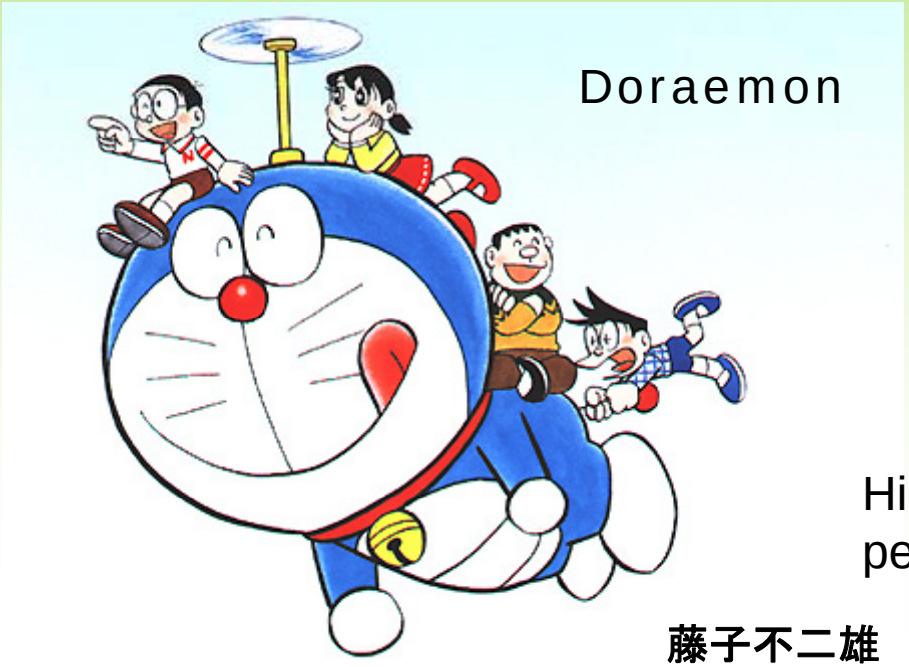
居安思危 Be aware of risk while you are safe
思則有備 Awareness leads you preparedness
有備無患 Preparedness leaves you no worry
Source: Zuo Qiuming "Zuoshi Commentary"
in Confucius ed. "Spring and Autumn", 480BC
Let us work together!
www.icharm.pwri.go.jp
ICHARM
preparedness for floods



Doraemon

High Technology is a great help but can not solve the sustainability issue.
Life style has to change less material dependent.

High technology helps
people to protect themselves

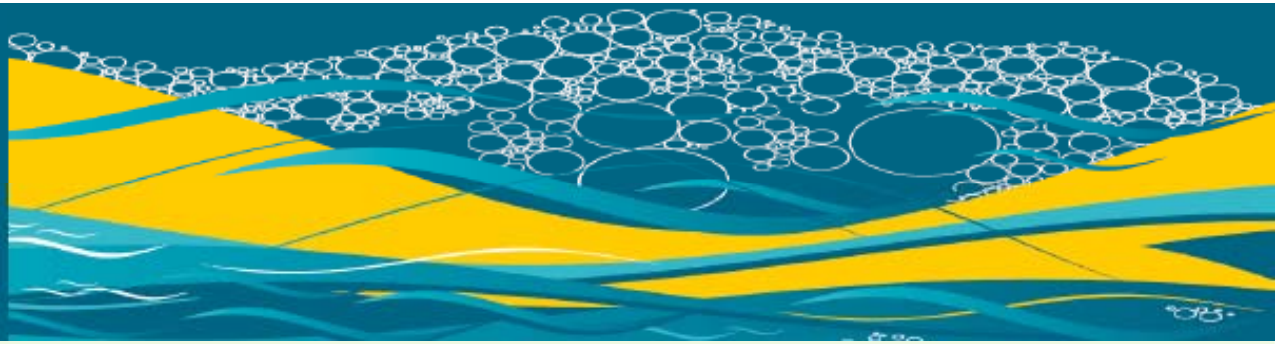
藤子不二雄

Living with nature

Satsuki
&
Mei

宮崎駿

INTERNATIONAL FLOOD INITIATIVE



IFI aims to implement WSSD recommendations - taking into consideration the physical parameters of flooding, its socio-economic conditions and the risk a society is prepared to take in order to achieve its development objectives.

IFI promotes an integrated approach to flood management to take advantage of the benefits of floods and use of flood plains while minimizing the social, environmental and economic risks.

In close collaboration with:

International Hydrological Programme

World Meteorological Organization

International Strategy ISDR for Disaster Reduction

UNITED NATIONS UNIVERSITY

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Kakushin Program of MEXT

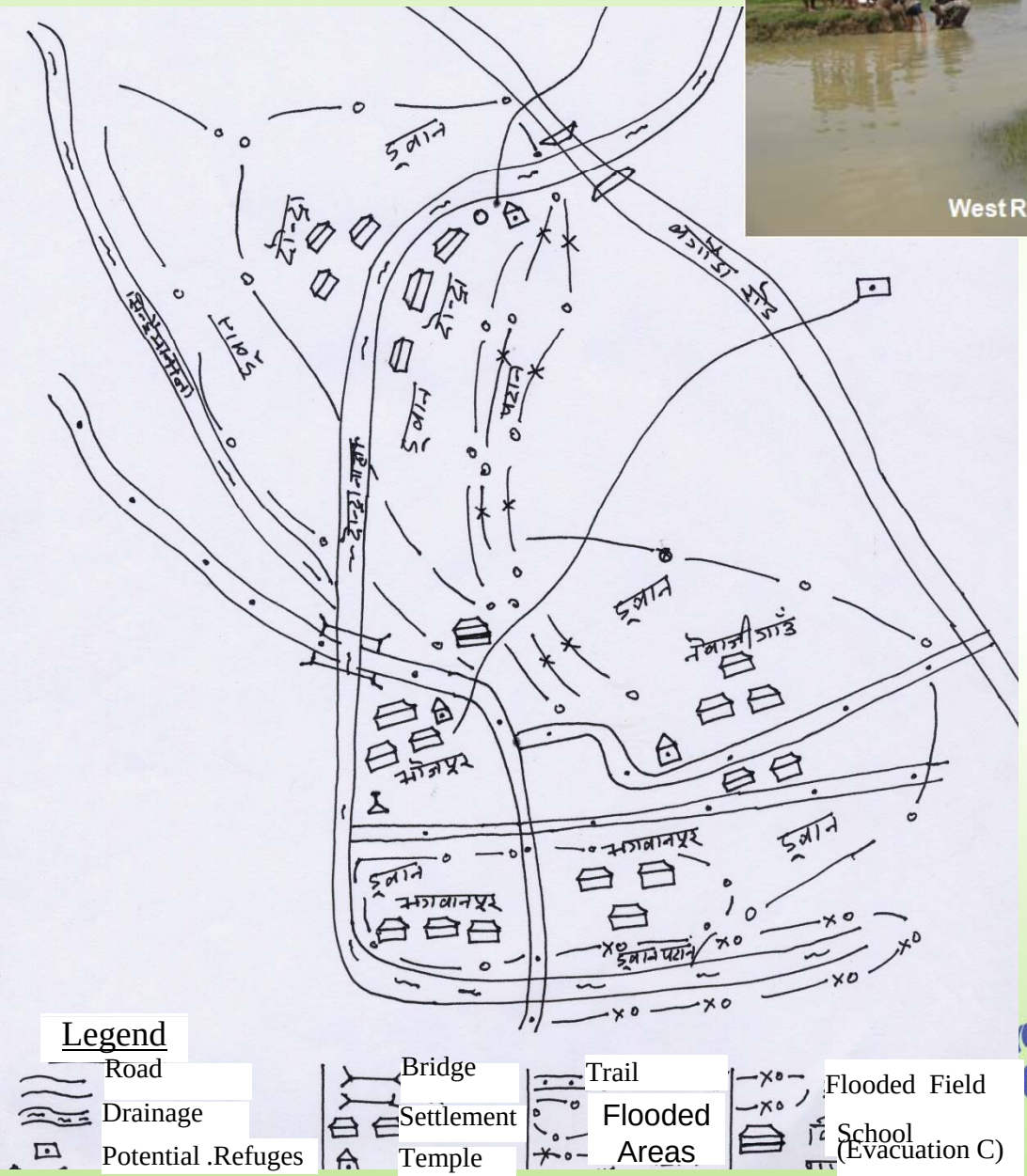
Innovative Program of Climate Change Projection for the 21st Century

- MEXT research program for FY 2007-2011
- "**Assessment of climate-change impacts** on flood risk and its reduction measures on the globe and specific vulnerable regions"
- **MRI/JMA 20km resolution AGCM** climate forecasts for 2030 and 2100 by Earth Simulator

Community based flood hazard mapping


Community Consultation, Banke Nepal


West Rapti, Banke, Nepal



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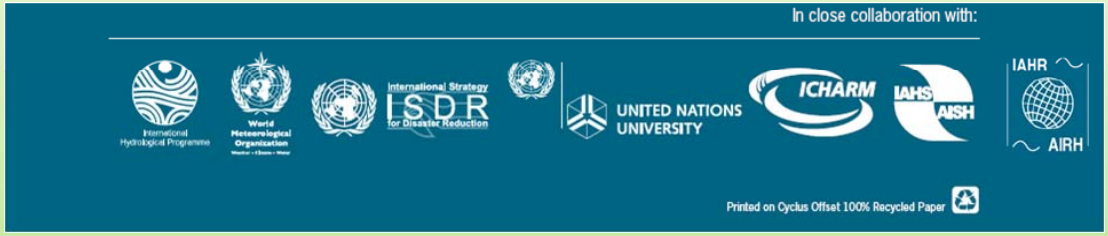
Master Theses (Sep 2008)

"Dam-break flood analyses in mid-down stream of **Han River**"	Mr. Dai, Ming-Long (China)
"Development of flood forecasting model in **Brahmaputra Valley** of India"	Mr. Khanindra Barman (India)
"Flood Hazard Mapping of **Dhaka-Narayanganj-Demra (DND)** project using geo-informatics tools"	Mr. Md. Aminul Islam (Bangladesh)
"Rainfall run off modelling and inundation analysis of **Bagmati River** at Terai Region of Nepal"	Mr. Mitra Baral (Nepal)
"Flood hazard and risk assessment in Mid-Eastern part of **Dhaka**, Bangladesh"	Mr. Muhammad Masood (Bangladesh)
"Flood risk analysis and risk management in **Mengwa Detention Basin**"	Ms. YE, Li-Li (China)
"Establishment of country-based **flood risk index**"	Mr. Yasuo Kannami (Japan)
"The analysis of flood risk awareness at resident level in **Mekong River Basin**"	Mr. Hirohisa Miura (Japan)
"Impact assessment of road construction on the flood inundation in **Dhaka**, Bangladesh"	Mr. Ryota Ojima (Japan)
"A fundamental study on the flows in the open channel network in **Wuxi City**"	Mr. Ji Zhou (China)

ICHARM works in alliance

with many relating organizations and programs

- Working in alliance with
  - UNESCO water centers IHE, USACE, IWHR, HTC, RCUWM, ERCE,
  - WMO, ISDR, UNU, Universities,
  - JICA, ADB, World Bank, UNEP, UNDP,
  - GEOSS, IAHS/PUB, IAHR, APHW, CHES, KWRA,
  - ICSU, IUGG, GeoRisk Comm.,
  - JWF, NARBO, IFNet, etc. etc.



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