



WMO

World Meteorological Organization

Working together in weather, climate and water

International Catchment Management Science and Application

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Global Developments in Integrated Flood Management

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What is WMO?

World Meteorological Organization



A United Nations Specialized Agency
Working together in Weather, Climate and Water



The UN system's authoritative voice on the state and behavior of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources

- Based in Geneva, Switzerland
- 191 Member States
- 10 major scientific & technical programmes (Secretariat)
- 8 Technical Commissions advise & guide activities of programmes (Experts)
- 6 Regional Associations involved in implementation
- ~260 staff members



WMO objectives

- **Facilitate worldwide cooperation** in the establishment of observation networks in the field of meteorology and hydrology and their application to the benefit of all;
- Promote the establishment and maintenance of systems for the **rapid exchange of data information** in meteorology, climatology and hydrology;
- Promote **standardization** of observations and ensure the uniform publication of observations and statistics;
- Further the application of meteorology, climatology and hydrology to **development issues** (transportation, water management, agriculture, etc.);
- Promote activities in **operational hydrology** and to further close cooperation between Meteorological and Hydrological Services;
- Encourage **research and training**, and assist in coordinating their international aspects.





WMO Hydrology and Water Resource Programme

Focusing on:

- Assessment of the quantity and quality of water resources
- Mitigation of water-related hazards,
- Maintenance or enhancement of the global environment condition
- Standardization of various aspects of hydrological observations and the organized transfer of technologies for enabling Hydrological Services to provide the required hydrological data and information
- Advice to Members on flood management policy and assists them in their effort to adopt Integrated Water Resources Management (IWRM) with an emphasis on practical applications.





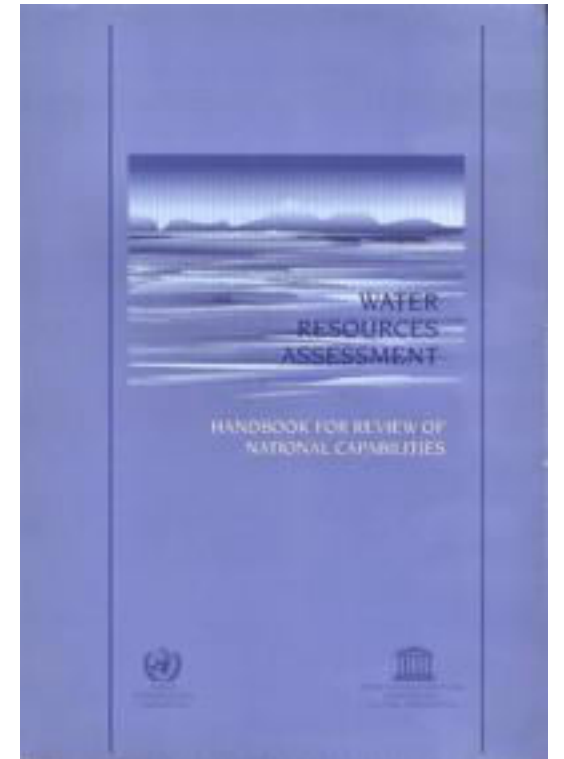
WMO and IWRM

- **Water Resources Assessment**

- **Handbook for Review of National Capabilities** (with UNESCO-IHP)
- **Manual on WRA** (under finalization)

- **Data exchange**

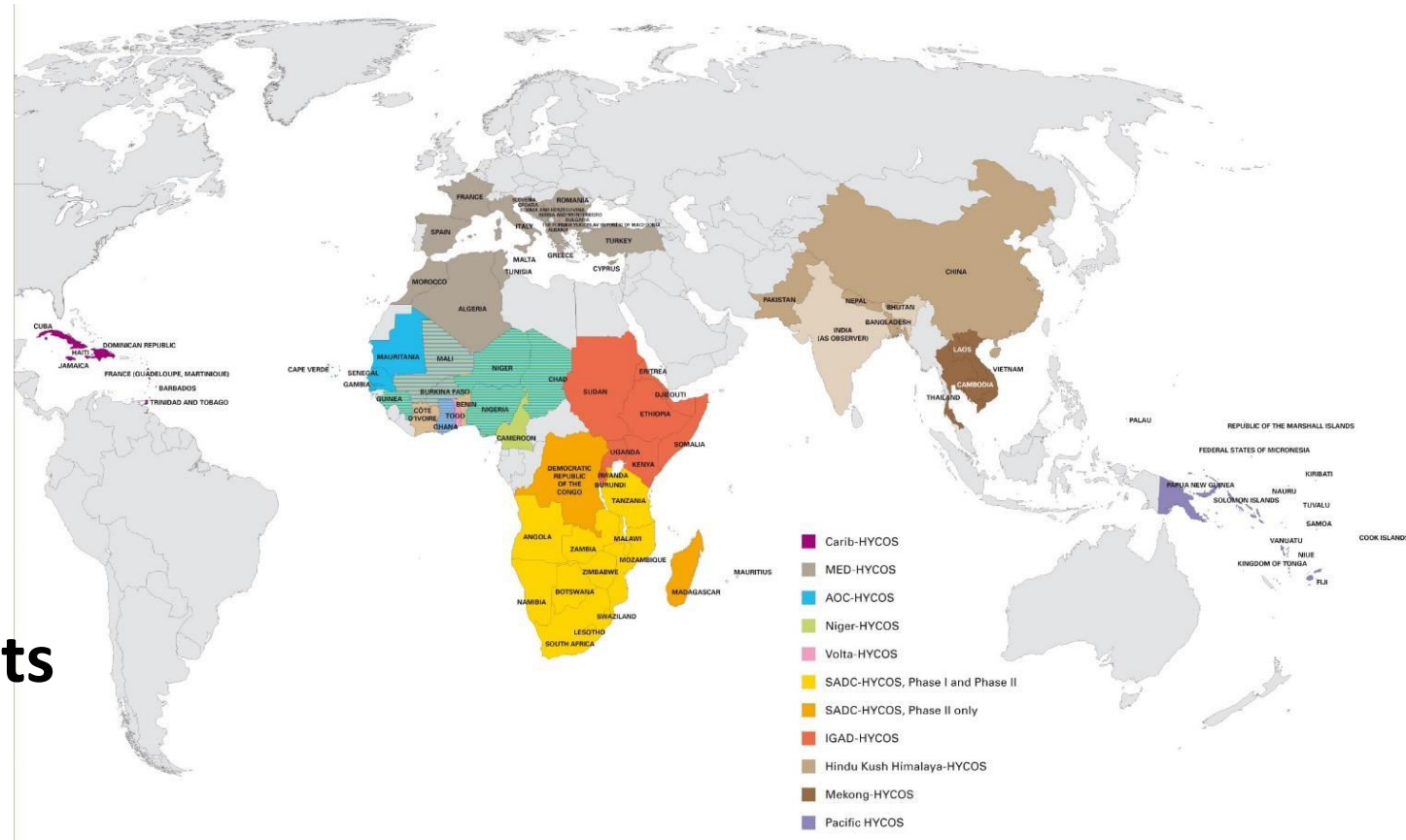
- Resolution 25 (**Hydrological data**)
- Resolution 40 (**Meteorological data**)
- Resolution 8 (draft – **Climatological data**)





WHYCOS World Hydrological Cycle Observing System

- **WMO global framework programme aiming at:**
 - improving the basic observation activities and data management
 - strengthening international cooperation and data exchange
- **Implemented through independent but coordinated basin-wide regional components**





IWRM and extreme events

Joint activities of WMO and GWP:

- Associated Programme on Flood Management (since 2001)
- Integrated Drought Management Programme (since 2013)





Integrated Flood Management: Objectives

- **Maximizing net benefits** (The objective is not to avoid losses at all costs)

$$\left(\begin{array}{c} \textbf{Gain} \\ \text{Derived from the} \\ \text{activities and use} \\ \text{of floodplains} \\ \text{(agriculture, urban} \\ \text{development,} \\ \text{transportation,} \\ \text{recreational use,} \\ \text{etc.)} \end{array} \right) - \left(\begin{array}{c} \textbf{Losses} \\ \text{Direct damages} \\ \text{and mid to long} \\ \text{term impacts on} \\ \text{environment and} \\ \text{socio-economics} \end{array} \right) > 0$$

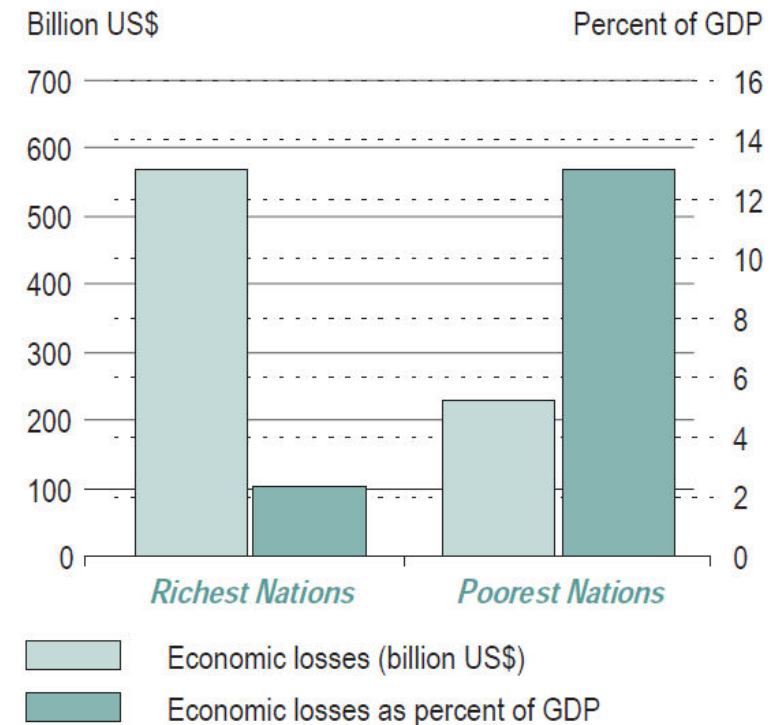
- **Minimizing loss of life**
- Sustainable development (balancing development needs and flood risks)
- Environmental preservation (for ecosystem services & health)



Impact of flood losses on development

Total value and percentage of GDP in richer and poorer countries (1985-1999)

Disaster losses, total and as share of GDP, in the richest and poorest nations, 1985-1999



Source: Adapted from Munich Re, 1999



River Basin as a planning unit

Integration of :

1. Land and Water Management
2. Upstream and Downstream
3. Structural and Non-structural
4. Short-term and Long-term
5. Local and Basin Level Measures
6. Top Down and Bottom Up Decision Making
7. Development Needs with Ecological and Economic Concerns
8. Functional Integration of Institutions and Stakeholders



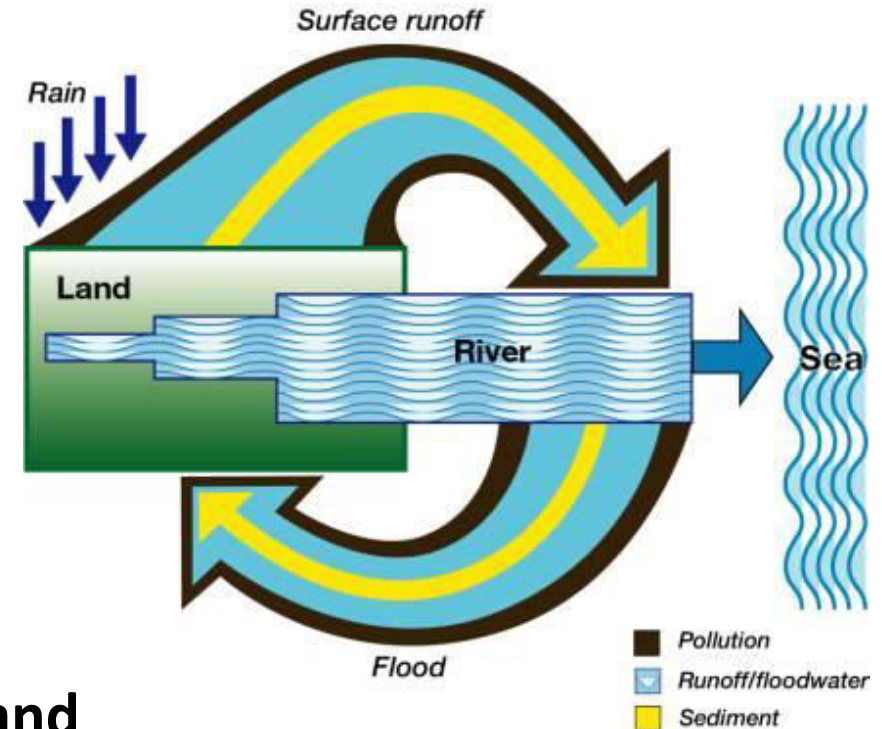


Water cycle to be considered as a whole

Recognition that a river basin is a dynamic system with many interactions/fluxes between land and water bodies

- Flood and drought management
- Effective use of flood waters
- Ground water and surface water interaction in flood plains

Flood Management is not only water management but also strongly linked to land management and pollution control





Towards a sustainable development

– IFM addresses all aspects of Flood Management

- Scientific and Engineering
- Social Aspects
- Environmental Aspects
- Economic Aspects
- Legal and Institutional Aspects

– Adaptive Management

– IFM integrates and mixes strategies

- Structural, Non-structural and Living with Floods
- Short-term and Long-term
- Local and basin level measures

– Balances development needs and environmental concerns

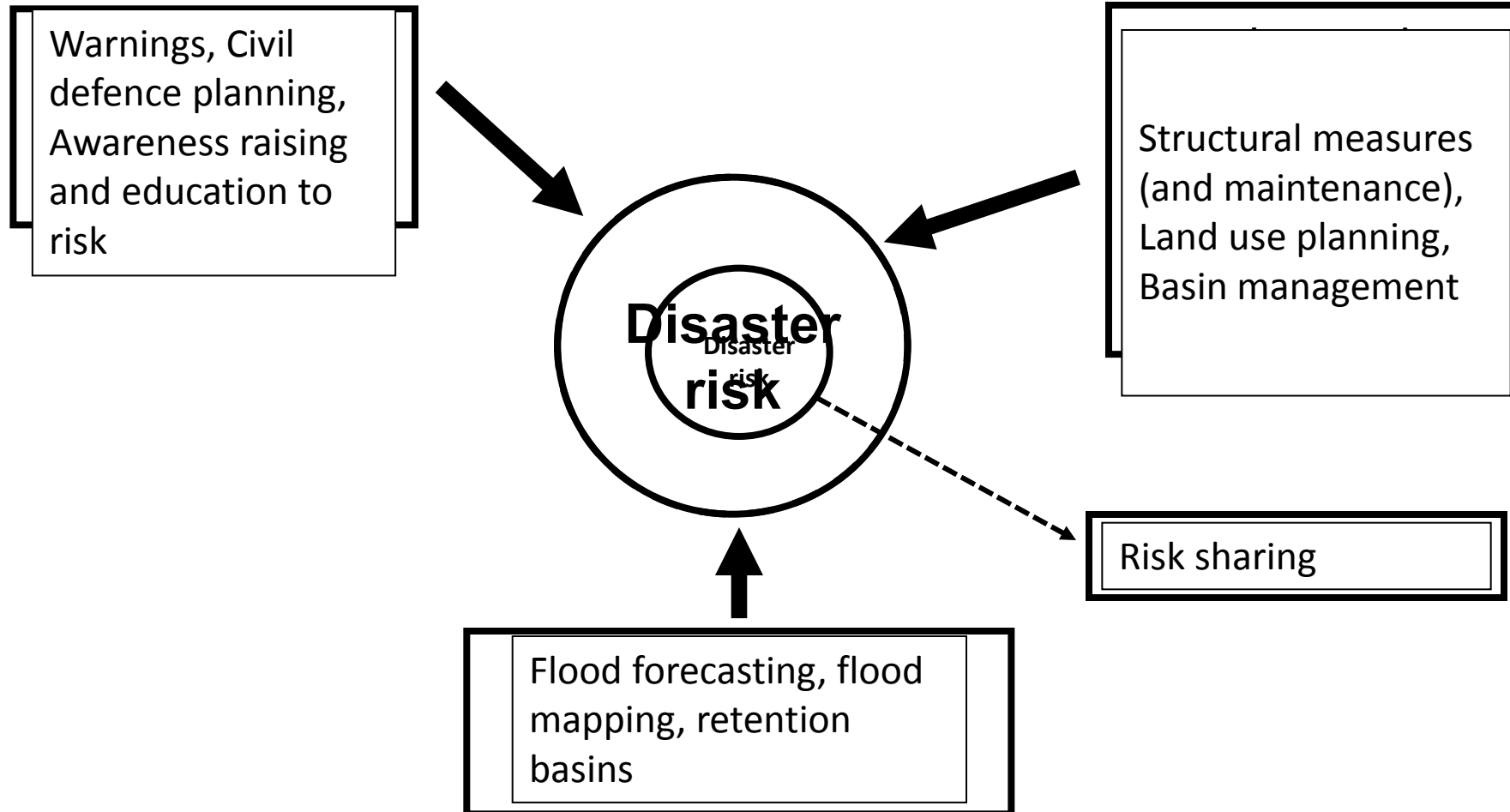
Every flood event is
different



There is no single valid
solution



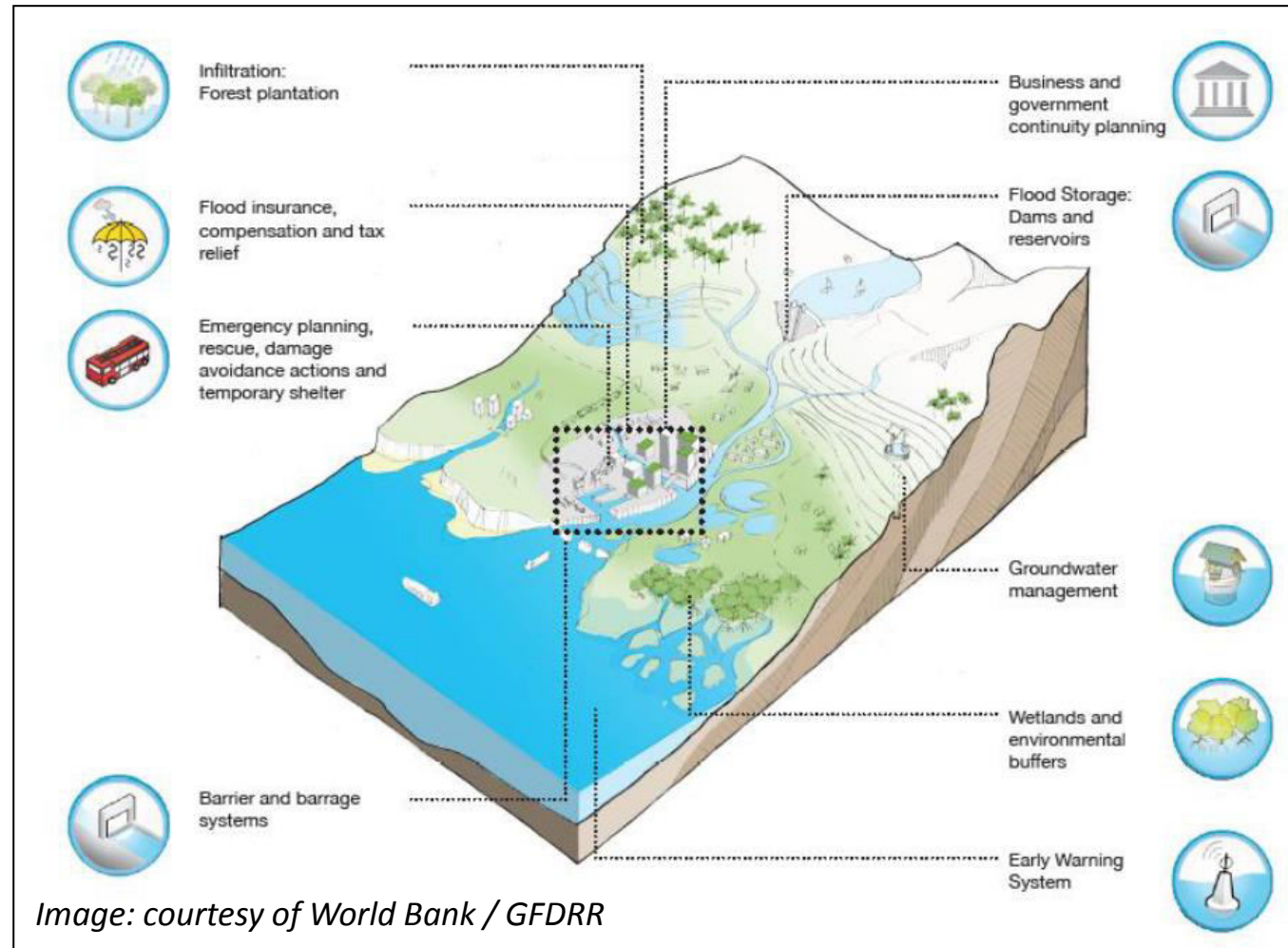
Integrated Flood Management: from theory to practice





Basin Level Flood Management and Transboundary issues

- Support to International River Basins
- Guidance provided through publications
- Implementation of pilot projects at the regional level
- Cooperation with the UNECE Water Convention





Integrated Flood Management HelpDesk



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GET HELP

Rapid Guidance

Training & Capacity Building

Start a Pilot Project

Ask for Reference Material



Tools & Publications

Learning Center

Understanding IFM

Questions and Answers

HELP YOURSELF

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No Disaster Assistance or Flood Emergency Response Functions !!!



For more details:
www.floodmanagement.info



Thank you for your attention