Integrated approaches to drought and flood management

The HelpDesk approach and experiences in South-East Asia

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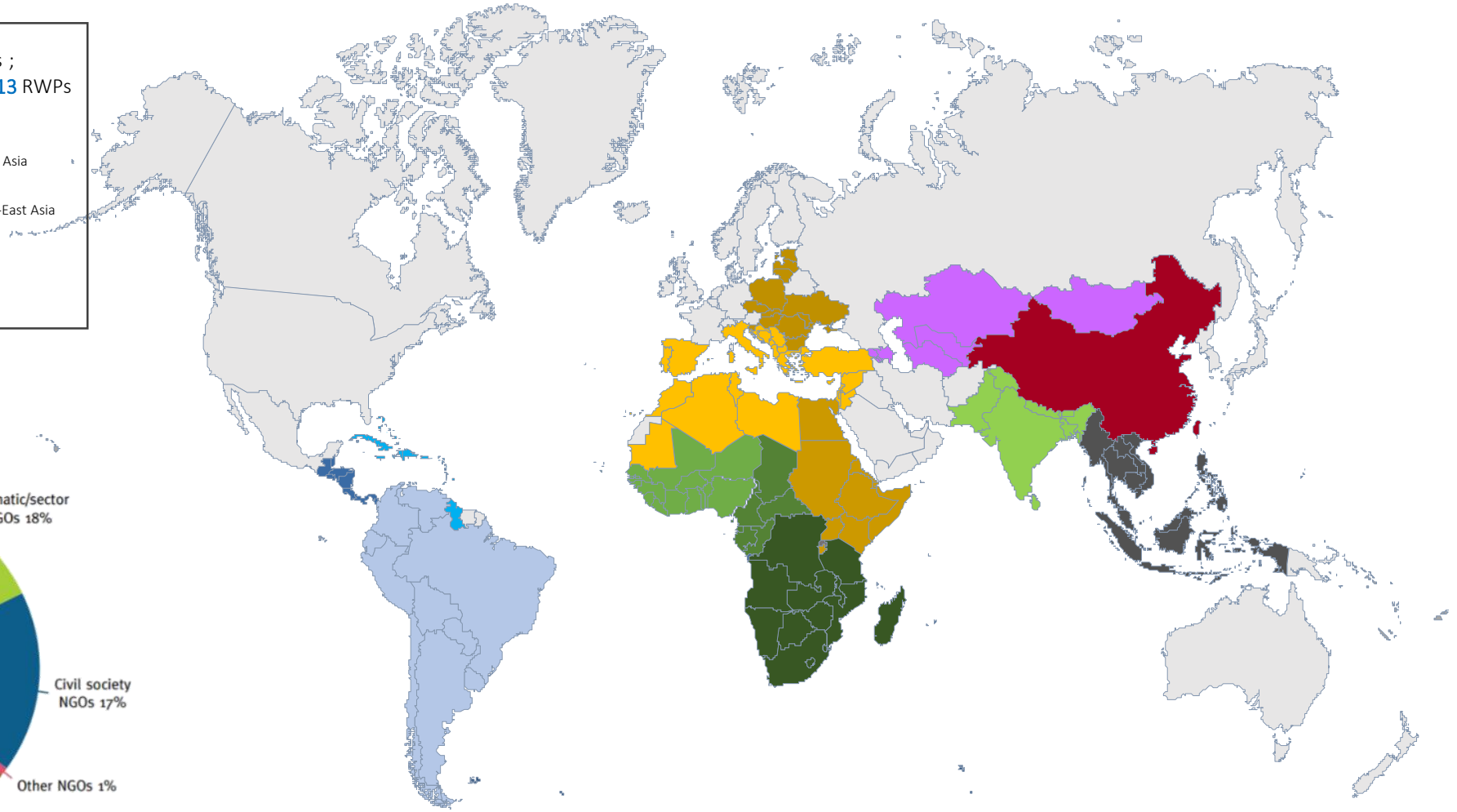
GWP vision is for a water-secure world

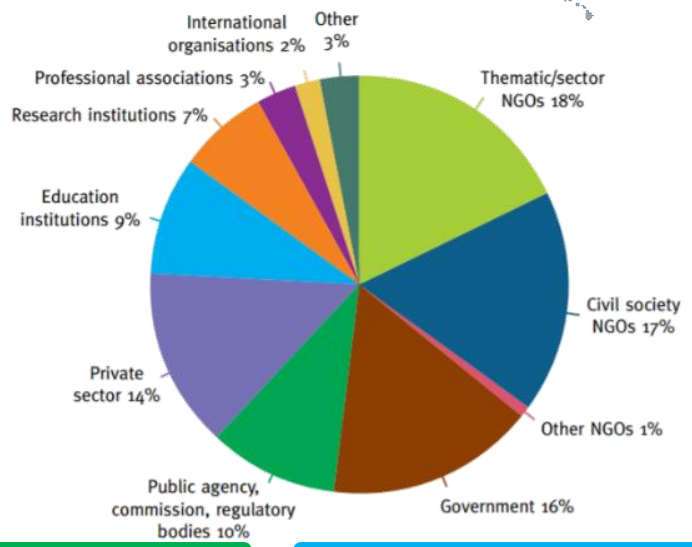
MSP + Knowledge => influence policies, practices & investments for a water secure world

3,000+ partner orgs from 183 countries ;
60 Country Water Partnerships across 13 RWPs

- Central America
- Carribeans
- South America
- West Africa
- Central Africa
- East Africa
- South Africa
- Central & Eastern Europe
- Mediterranean
- Central Asia & Caucasus
- South Asia
- South-East Asia
- China

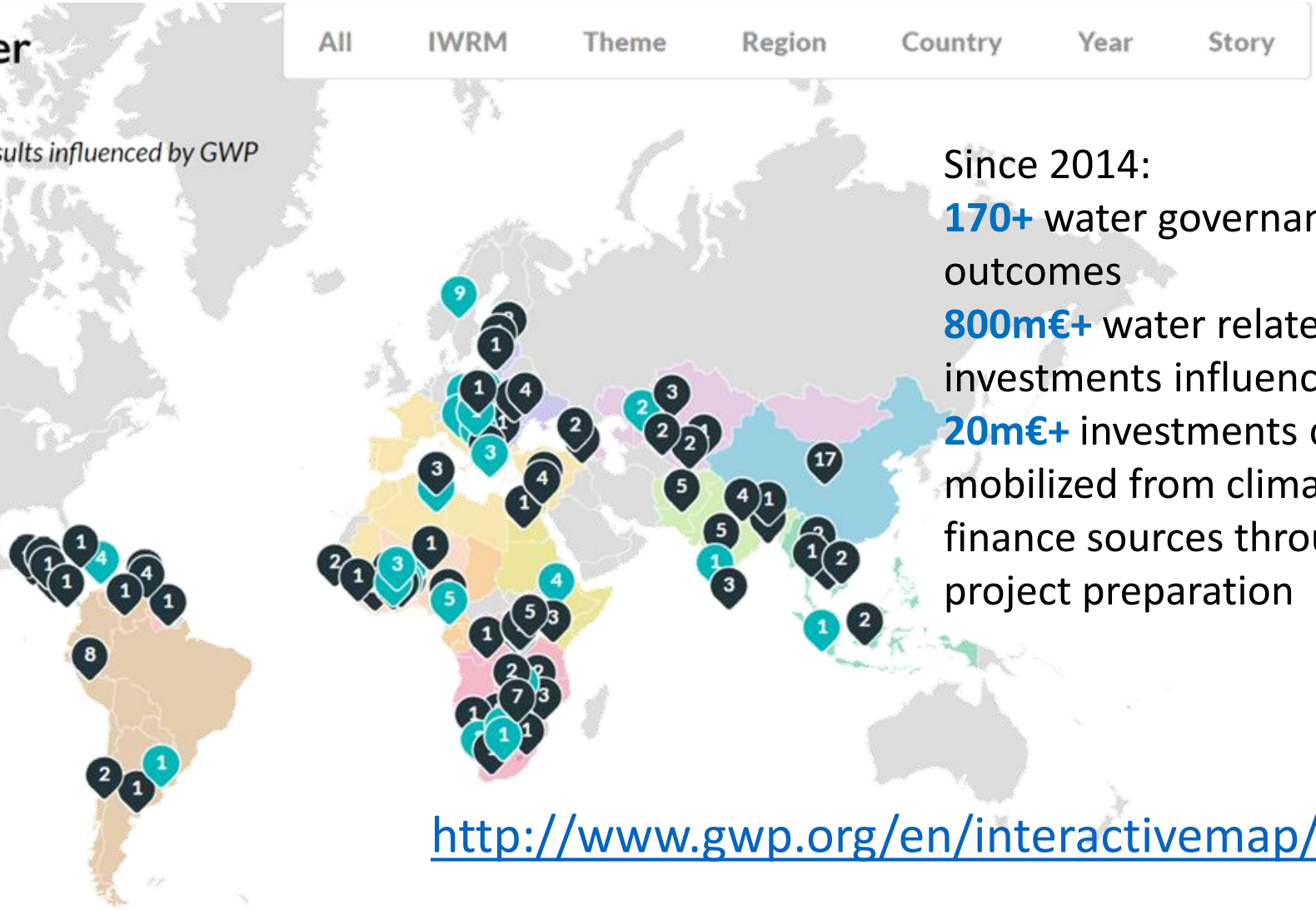


GWP Partners by type



How we do it

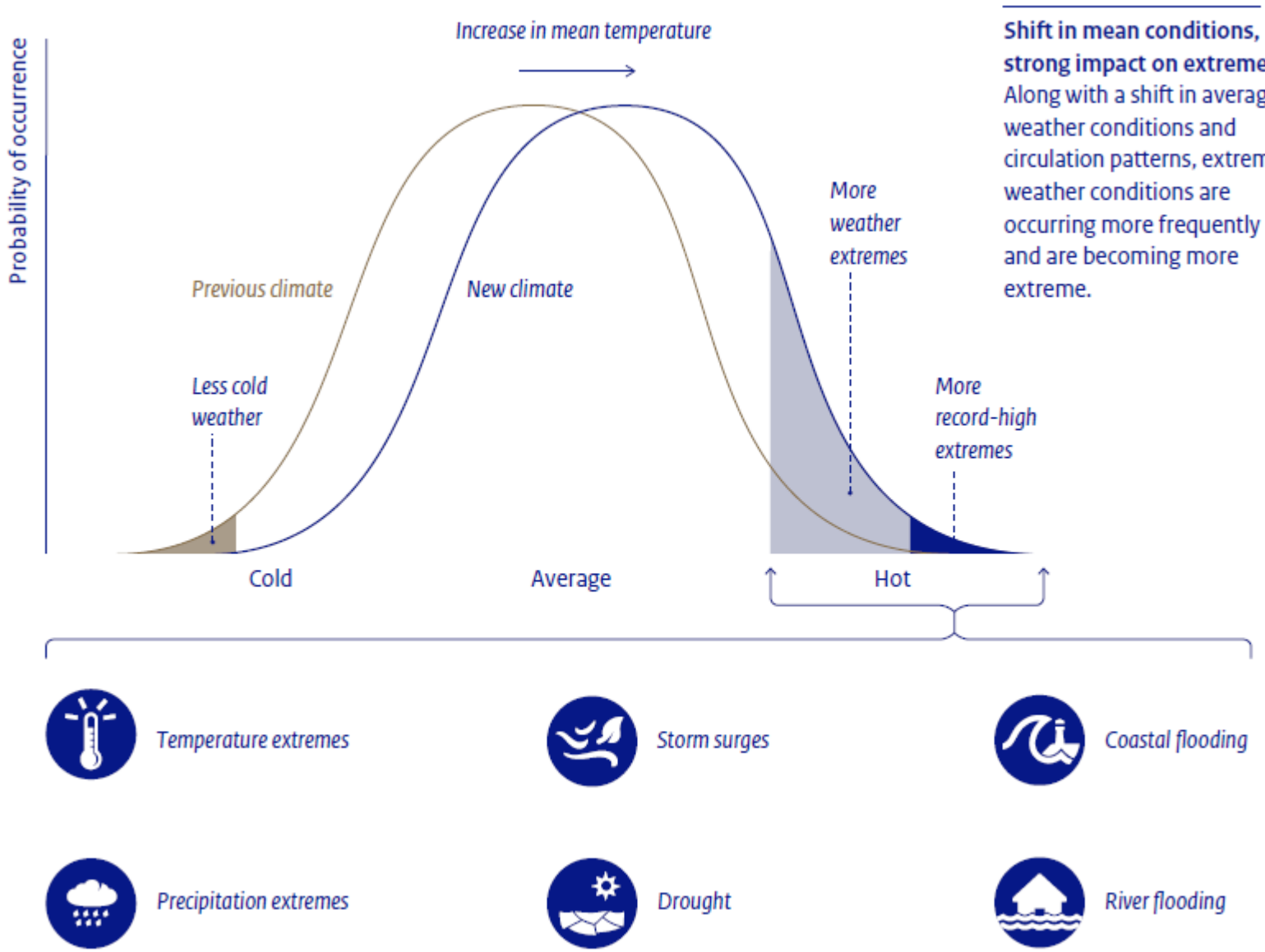
- We advocate
- We build capacity
- We generate Knowledge
- We support country's water related development / climate processes
- We identify and prepare projects for financing
- …



Since 2014:
170+ water governance outcomes
800m€+ water related investments influenced
20m€+ investments directly mobilized from climate finance sources through project preparation

http://www.gwp.org/en/interactivemap/

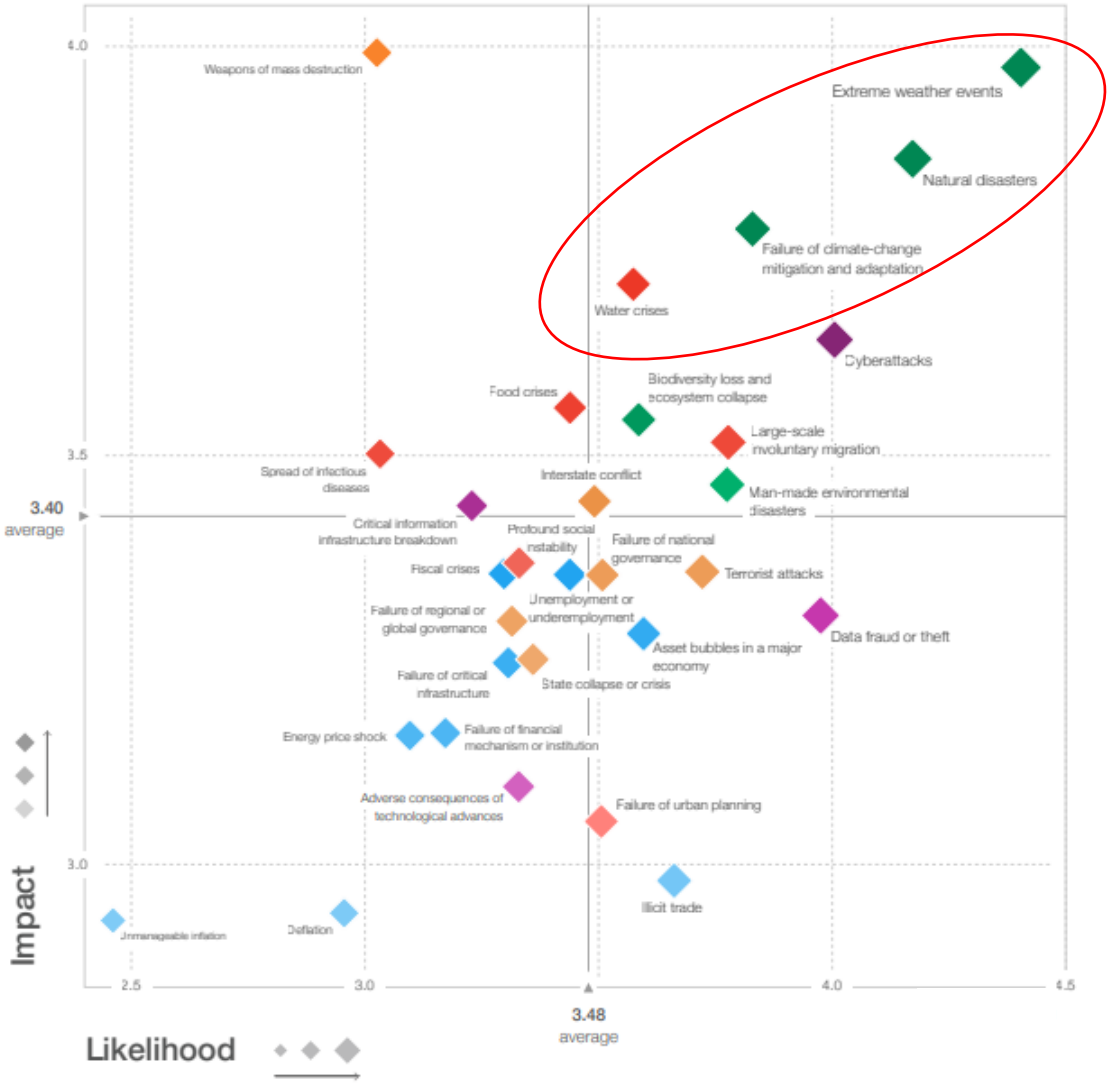
Source: WMO Statement on the State of the Global Climate in 2017



Shift in mean conditions, strong impact on extremes
Along with a shift in average weather conditions and circulation patterns, extreme weather conditions are occurring more frequently and are becoming more extreme.

Source: Ligtvoet W. et al. (2018), The Geography of Future Water Challenges, The Hague: PBL Netherlands Environmental Assessment Agency

The Global Risk Landscape 2018



Extreme Weather events

Natural Disasters

Failure of Climate Change Mitigation and Adaptation

Water Crises

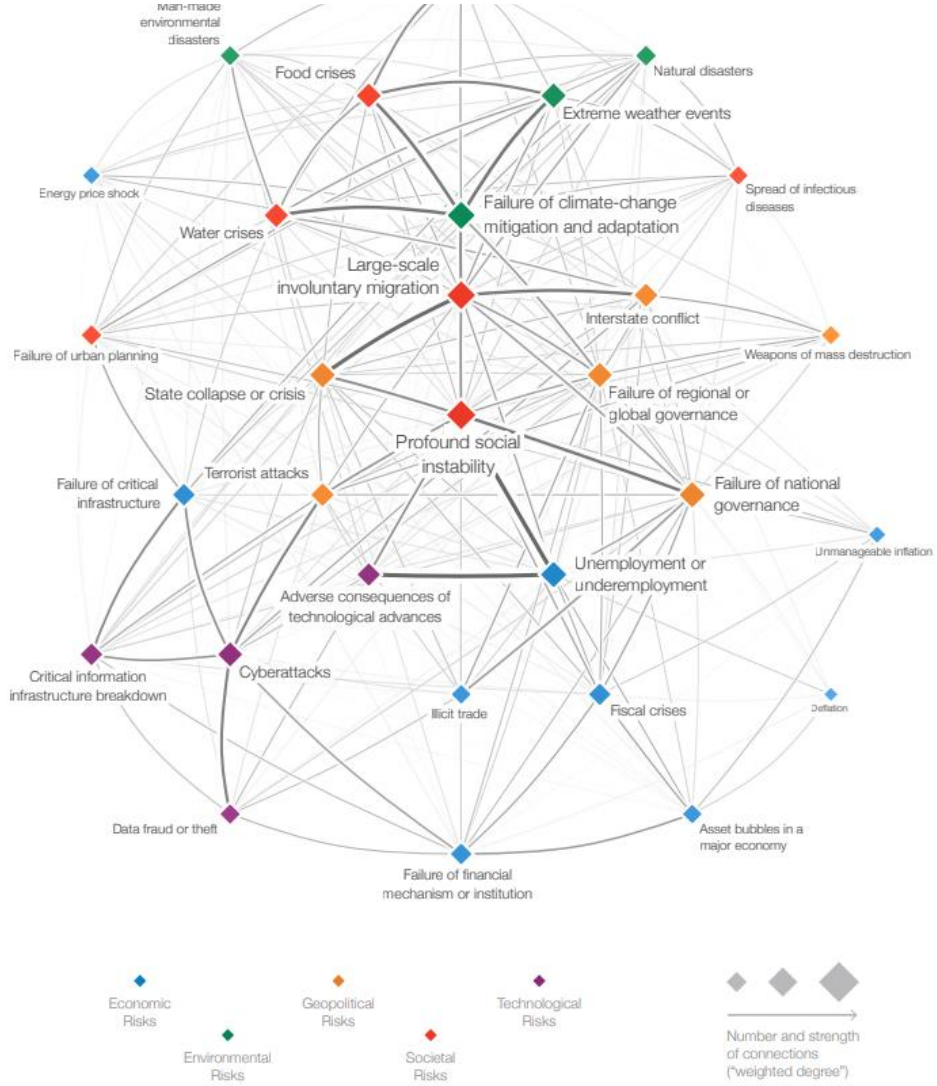
Cyberattacks

Food crises

Biodiversity loss and ecosystem collapse

Large-scale involuntary migration

The Global Risk Interconnections Map 2018



Source: World Economic Forum (2018) The Global Risks Report, 13th Edition

Water in International Agreements

Water Management as enabler

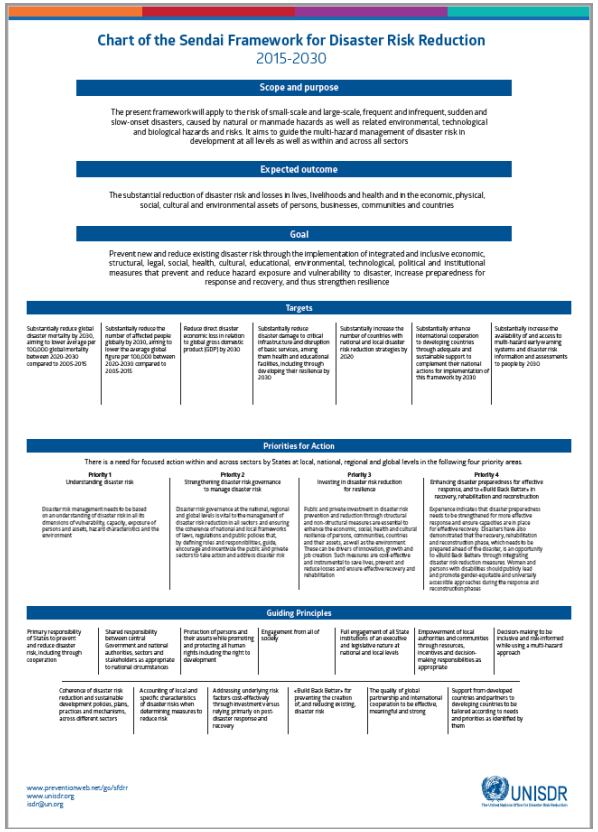


Chart of the Sendai Framework for Disaster Risk Reduction
2015-2030

Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors

Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience

Targets

Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015

Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015

Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030

Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030

Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020

Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030

Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030

Priorities for Action

There is a need for focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas.

Priority 1 Understanding disaster risk

Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment

Priority 2 Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local frameworks of laws, regulations and public policies that, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risk

Priority 3 Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation

Priority 4 Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Experience indicates that disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to «Build Back Better», through integrating disaster risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phase

Guiding Principles

Primary responsibility of States to prevent and reduce disaster risk, including through cooperation

Shared responsibility between central Government and national authorities, sectors and stakeholders as appropriate to national circumstances

Protection of persons and their assets while promoting and protecting all human rights including the right to development

Engagement from all of society

Full engagement of all State institutions of an executive and legislative nature at national and local levels

Empowerment of local authorities and communities through resources, incentives and decision-making responsibilities as appropriate

Decision-making to be inclusive and risk-informed while using a multi-hazard approach

Coherence of disaster risk reduction and sustainable development policies, plans, practices and mechanisms, across different sectors

Accounting of local and specific characteristics of disaster risks when determining measures to reduce risk

Addressing underlying risk factors cost-effectively through investments versus relying primarily on post-disaster response and recovery

«Build Back Better» for preventing the creation of, and reducing existing, disaster risk

The quality of global partnership and international cooperation to be effective, meaningful and strong

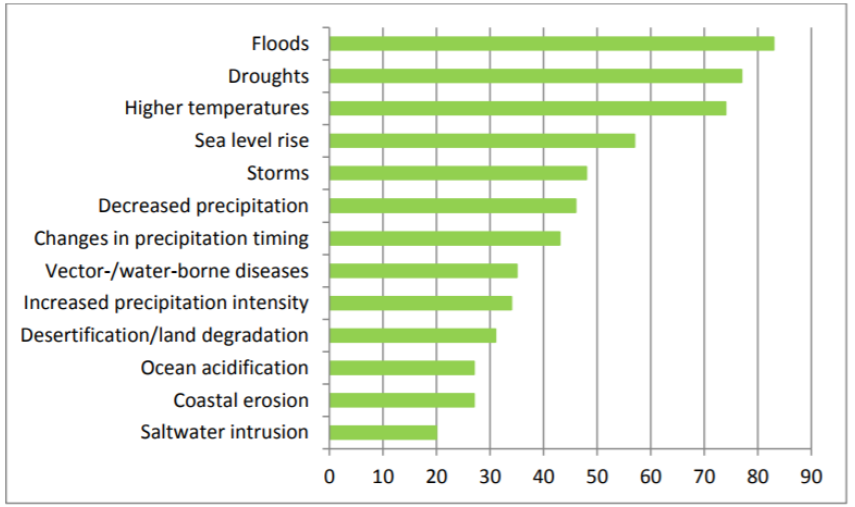
Support from developed countries and partners to developing countries to be tailored according to needs and priorities as identified by them

www.preventionweb.net/go/sfdrr
www.unisdr.org
isdr@un.org

UNISDR

Droughts and Floods in the SDGs

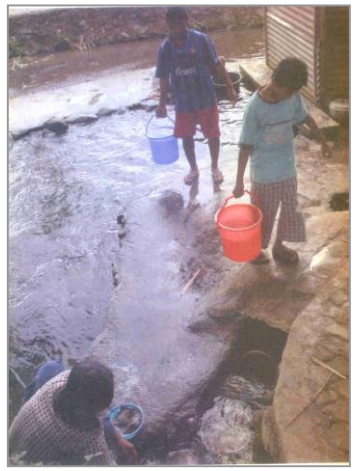
Climatic hazards in NDCs



Number of Parties referring to hazard (Total = 137)

Source: UNFCCC (2016) CP/2016/2

Traditional interventions of Flood Management



- Emphasis on **'Control' rather than 'Management'**
- River **morphological behaviour** is not factored
- Structural measures generally **disturb eco-system** balance and give a **false sense of security** to people
- Rather than mitigating flood risk we largely succeeded in only **shifting** them **spatially & temporarily**
- Planned in isolation from other development issues and on local scales (**local and partial solution**)

- Problem primarily addressed based on engineering solutions (**monodisciplinary**)
- Comprehensive flood management policies are **neglected policy issues**
- Non-structural measures:
  - weak coordination
  - poor communication strategies
  - limited or passive community participation

Paradigm shift required

- From defensive to **pro-active** approaches;
- From Ad-hoc to **Integrated Flood Management**
- Towards a **culture of prevention** by managing flood risk & living with floods;

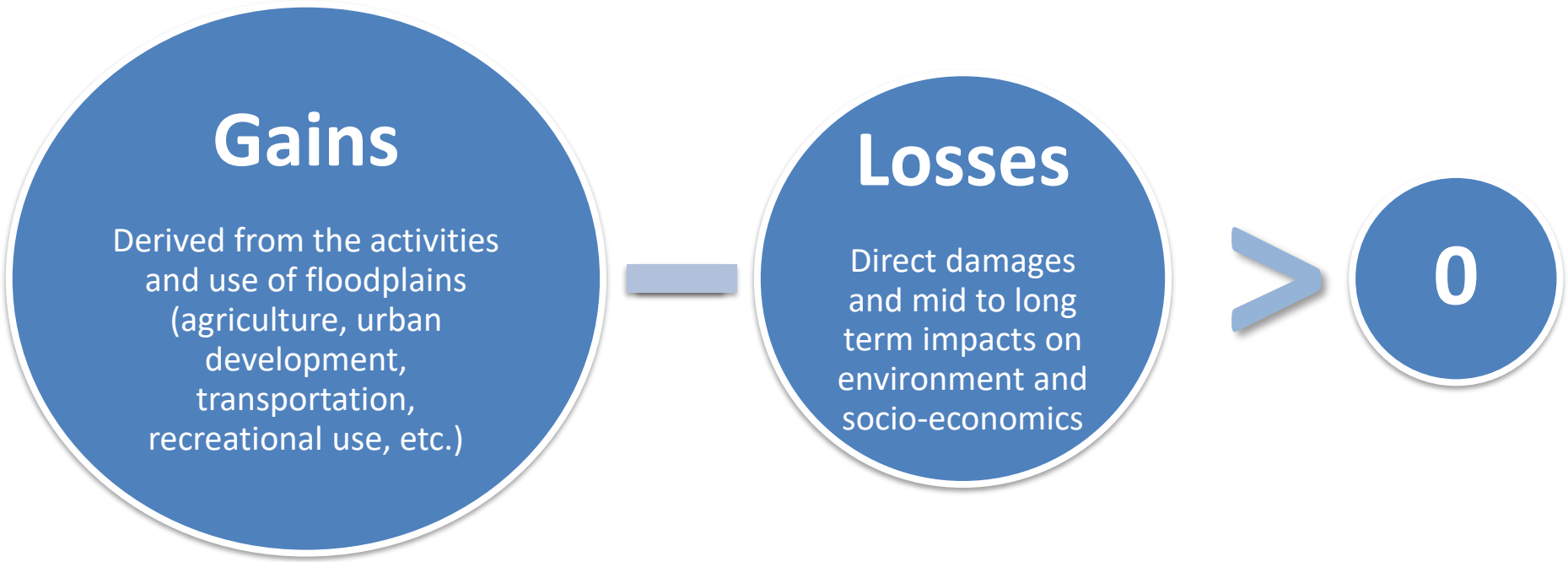
- **Balancing flood risk** and achieving sustainable development needs;
- **Change in decision making processes** to include risk management approaches.

What is Integrated Flood Management ?

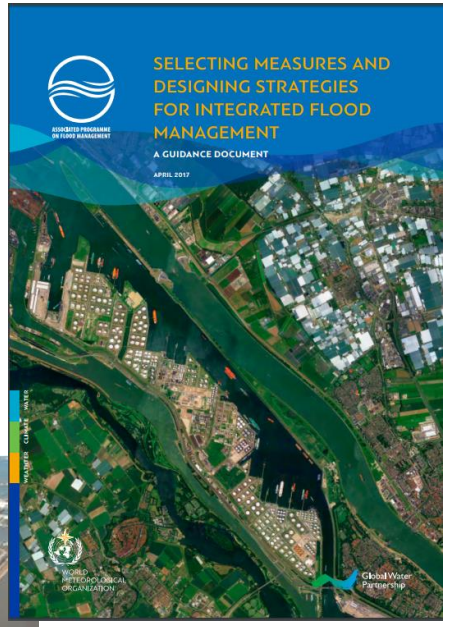
IFM integrates **land use** and **water resources** in a river basin, in accordance with Integrated Water Resources Management, with the objective of **maximizing net benefits** derived from the use of floodplains and **minimizing loss of life** due to flooding. IFM keeps in consideration environmental preservation, balancing development needs with **flood risk** towards **sustainable development**.

For more information on IFM: click here

Maximizing net benefits



Watershed Management
River & Coastal Management



Urban (re)development
Transportation

Land use Planning
Urban Planning

Disaster Management
Poverty Reduction

Risk reduction

Reduction of flood hazard
Wetlands restoration
Green infrastructure

Flood protection
Embankments
Flood barriers

Land use regulation
Setback lines
Building restrictions
Flood proofing

Raising preparedness
Early Warning systems
Evacuation plans
Flood hazard maps

Residual risk mitigation
Emergency response
Insurances / Relief funds
Recovery plans

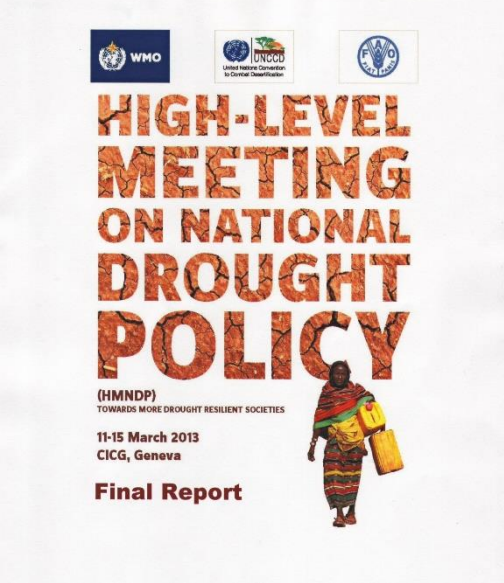
Integrated Flood Risk Management

Source → Pathway → Receptor

End-to-end (E2E) Flood Forecasting and Early Warning Initiative

REAL-TIME DATA COLLECTION	MODELLING & FORECASTING	EARLY WARNING DISSEMINATION	DECISION SUPPORT	RESPONSE TO WARNING
Global Hydrometry Service Facility (GHSF) Meteorological, Climatological and Hydrological (MCH) Database Management System	Flash Flood Guidance System (FFGS) Coastal Inundation Forecasting Demonstration Project (CIFDP) Severe Weather Forecasting Demonstration Project (SWFDP)		Associated Programme on Flood Management (APFM) DEWETRA Platform Preparing for Extreme And Rare events in coastaL regions (PEARL)	

In support of the functions of National Hydrological Services



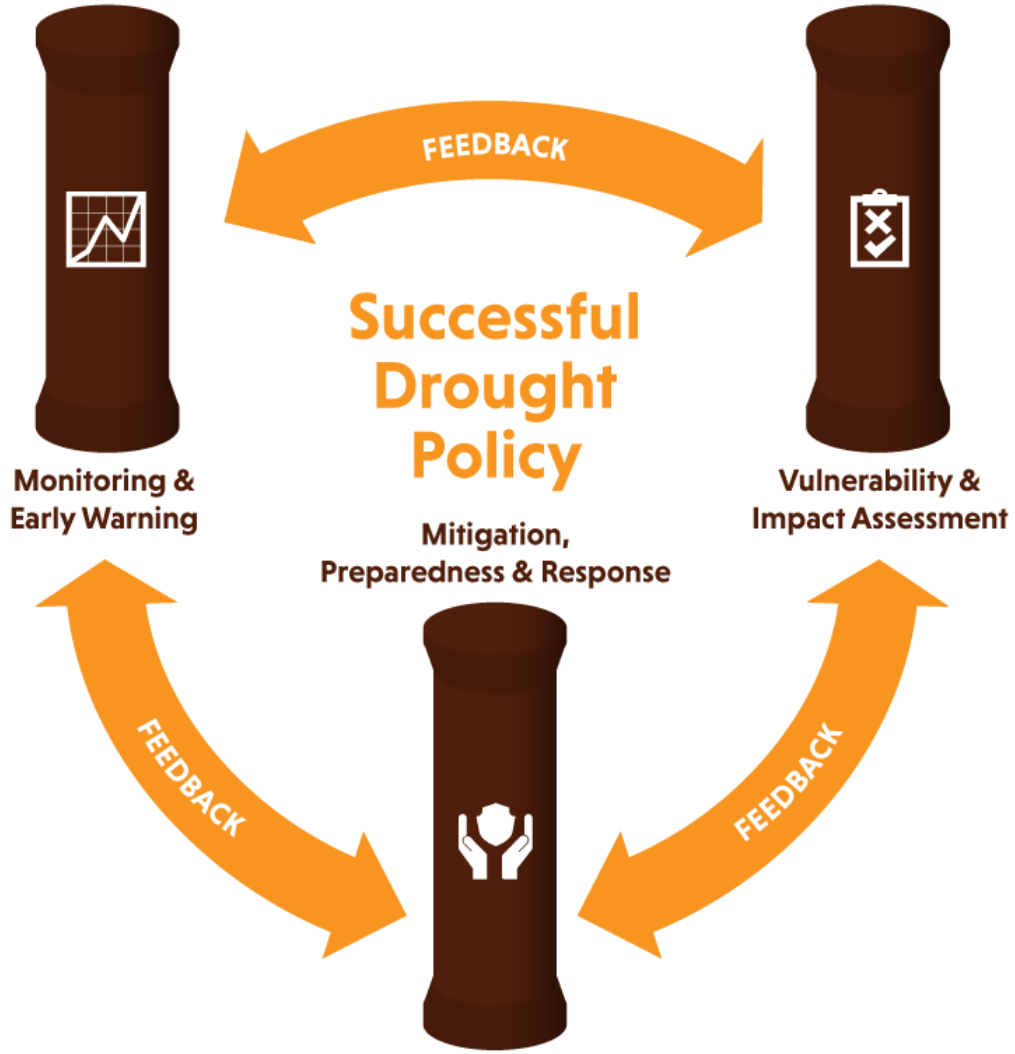
Drought Management

High-Level Meeting on National Drought Policies (HMNDP) 2013 in Geneva, Switzerland

[Excerpt of HMNDP final declaration, emphasis added]

- *Develop **proactive drougth impact mitigation, preventive and planning measures**, risk management, fostering of science, appropriate technology and innovation, public outreach and resource management as key elements of effective national drought policy*
- *Promote **greater collaboration** to enhance the quality of local/national/regional/global observation networks and delivery systems*
- ***Improve public awareness of drought risk and preparedness for drought***
- *Consider, where possible [...]**risk reduction, risk sharing and risk transfer tools in drought management plans***
- ***Link drought management plans to local/national development policies***

Three Pillars of Integrated Drought Management



Managing Water Extremes

WMO/GWP Associated Programme on Flood Management (APFM)
WMO/GWP Integrated Drought Management Programme (IDMP)

- APFM established in 2001
- IDMP established in 2013
- APFM and IDMP provide a technical resource for water management extremes through:
  - Expert Advice (Joint Technical Support Unit of GWP and WMO in Geneva - 6 part-time staff)
  - Guidelines and Tools – closing gaps in knowledge & synthesis of existing knowledge
  - Project Preparation support
  - Capacity Development
  - Over 30 partners in each programme

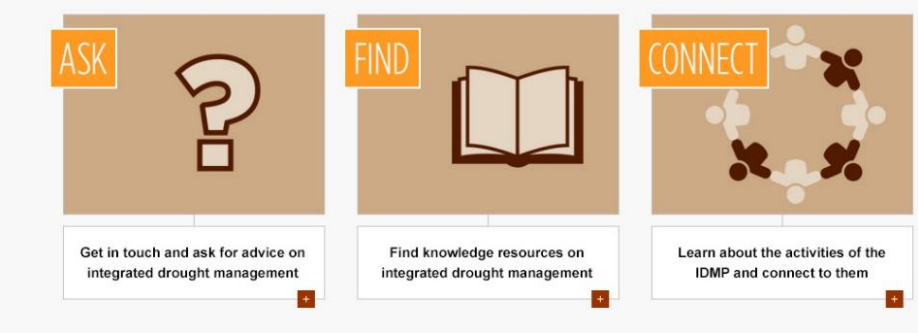
IDMP
Integrated Drought Management Programme

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

World Meteorological Organization
Weather • Climate • Water

Managing Water Extremes

Drought and Flood Management HelpDesks

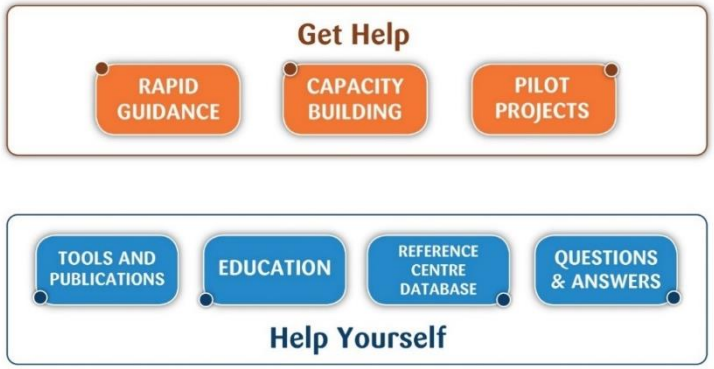


www.droughtmanagement.info

Focus on strengthening three Pillars:

1) Monitoring and Early Warning Systems
2) Vulnerability and Impact Assessment
3) Drought mitigation and preparedness

HelpDesk
For Integrated Flood Management



www.floodmanagement.info

Focus on Project Preparation;

Build up strength on End-to-End Early Warning Systems

Synergies of Partners

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT

IDMP
Integrated Drought Management Programme

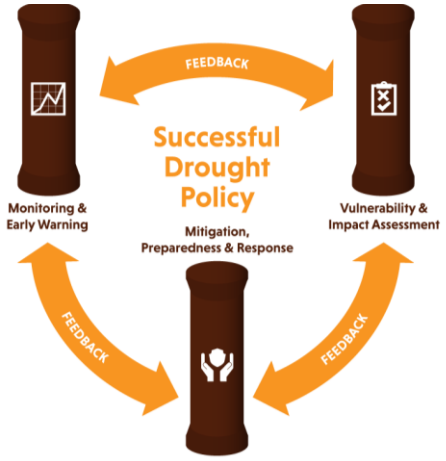
Technical Support Unit by WMO and GWP

Over 30 expert partner organizations in each programme

WORLD METEOROLOGICAL ORGANIZATION

Global Water Partnership

Tools and Resources on the 3 Pillars of IDM



Tools and Examples of Applications on the 3 pillars of Integrated Drought Management

Overview of Drought Management Plans and Policies

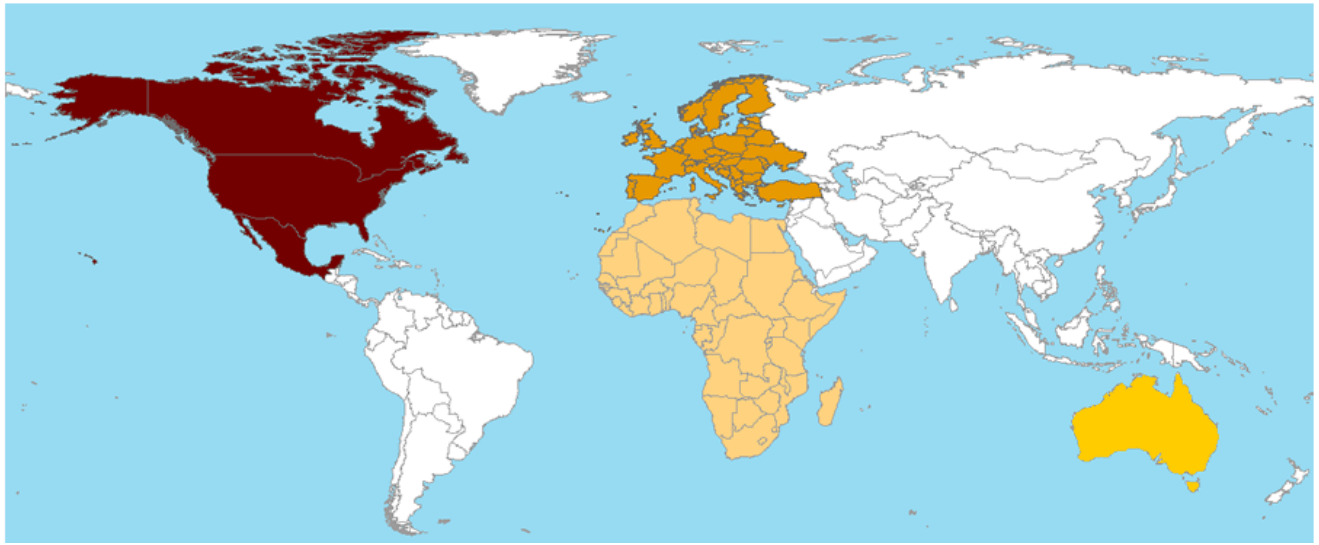
www.droughtmanagement.info/pillars

Global Drought Information System (GDIS)

CURRENT CONDITIONS | INTERACTIVE MAPS | REGIONAL DR

Regional Drought

https://www.drought.gov/gdm/



North America
North American Drought Monitor
NIDIS US Drought Portal

Europe
European Drought Observatory

Africa
IGAD Climate Prediction and Applications Centre (ICPAC)
ICPAC Web Mapping
Princeton's Africa Flood and Drought Monitor

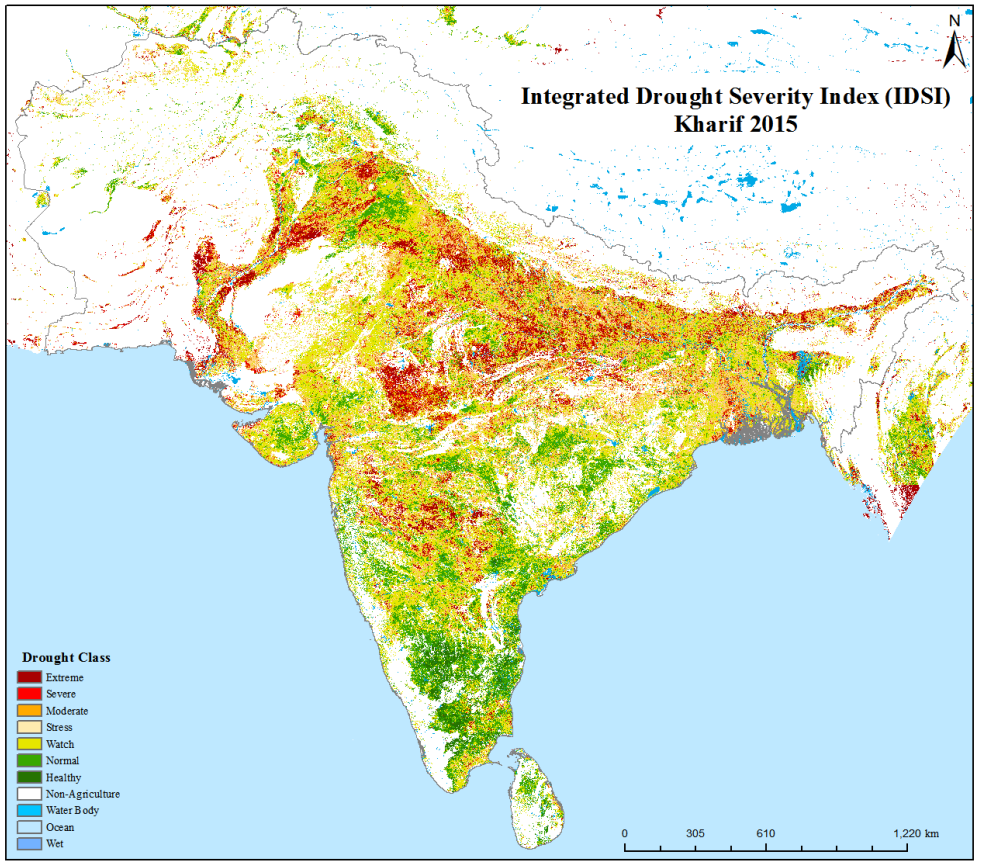
Australia
Australian Government Bureau of Meteorology

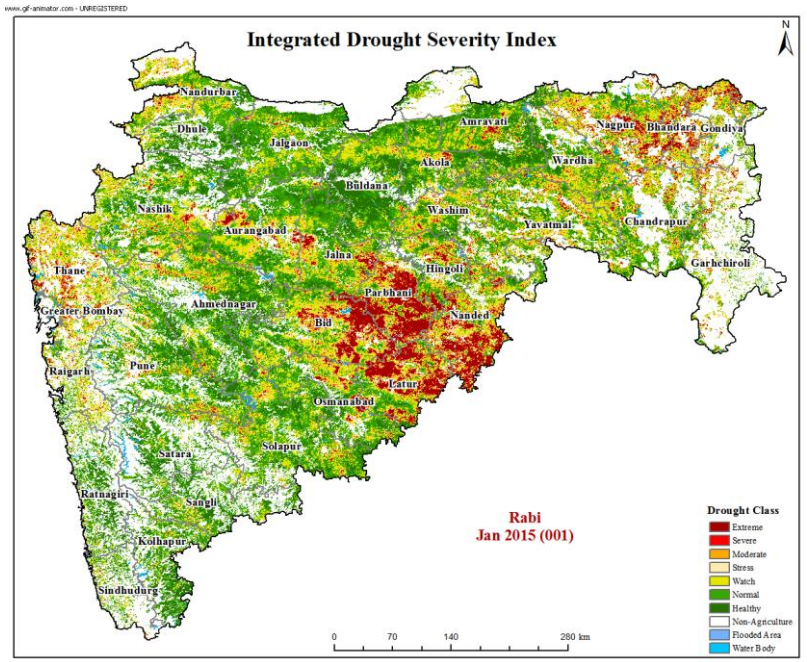
South America
Western South America Regional Climate Center / Centro Internacional para la Investigación del Fenómeno de El Niño (CIIFEN)
Princeton's Latin American Flood and Drought Monitor

Asia
South Asian Drought Monitoring System

South Asia Drought Monitoring System (SADMS)

A collaboration of GWP-WMO-IWMI as part of IDMP





- First of its kind to establish for entire South Asia using multisource remote sensing observations;
- An Integrated Drought Severity Index developed to understand drought frequency and duration
- Historical drought risk mapping and assessment covering South Asian countries (2000 – Current);

→ **Start of Current Phase: Working with national governments to tailor to national decision-making needs**

WORLD METEOROLOGICAL ORGANIZATION

IDMP
Integrated Drought Management Programme

Global Water Partnership

For further information

www.droughtmanagement.info
idmp@wmo.int

www.floodmanagement.info
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Flood Management: Lessons learned and way forward in South-East Asia

Fany Wedahuditama,
Regional Coordinator, GWP South East Asia

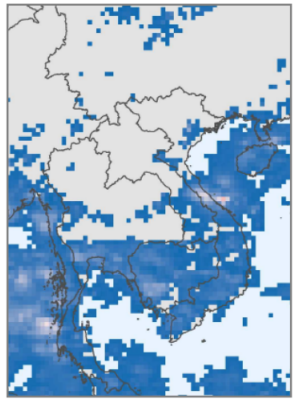
Flood in Southeast Asia

Southeast Asia: Flooding (as of 12 October 2011)

OCHA

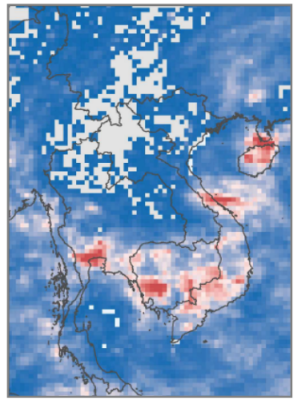
A combination of typhoons and greater than average rainfall has affected more than 8 million people in Southeast Asia.

The map below shows the amount of rain forecasted to fall over the **next 24 hours**. Heavy rain is predictied in the Bangkok area, as well as over southern Vietnam and all of Cambodia



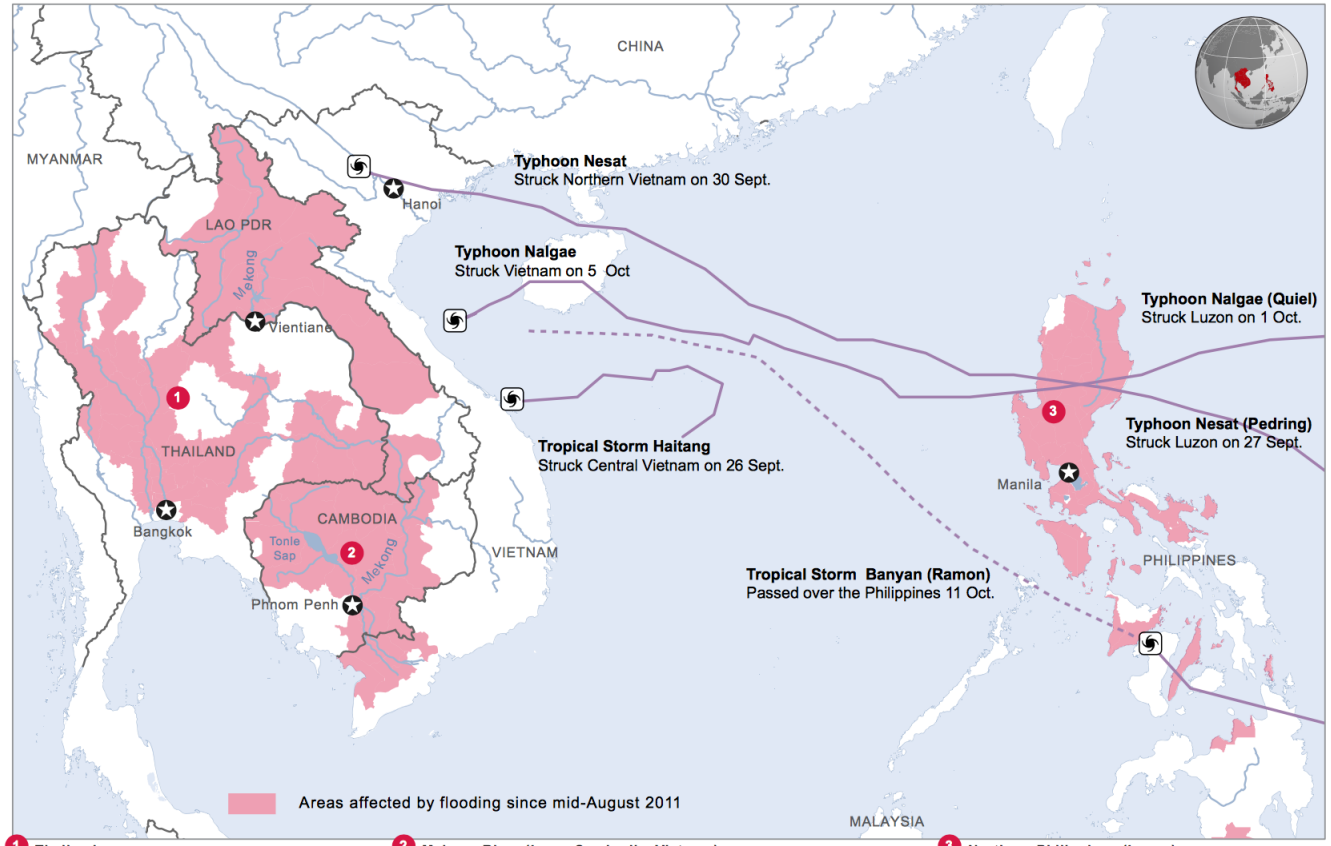
1mm — 254mm

Forecasted rainfall



The map above shows the forecasted accumulated rainfall for the **next 7 days**. Heavy rain is forecasted for areas already affected by floods.

Source: NASA Tropical Rainfall Measuring Mission as of 00hrs 12 October, 2011



1 Thailand

The monsoon rains in Thailand have been heavier than average this year. The recent typhoons have only made the situation worse, causing widespread flooding in North, Northeast and Central parts of Thailand. Since 25 July the Thai Government has reported 269 deaths and 2.3 million affected in 30 provinces. The floods have also damaged rice plantations, farmland, and millions of livestock.

Source: Royal Thai Government

2 Mekong River (Laos, Cambodia, Vietnam)

Greater than average precipitation in the Mekong river basin, made worse by recent typhoons, has led to flooding. In Cambodia the Mekong and Tonle Sap rivers have been overflowing since mid-August, killing 207. 1 million people are affected, with over 100,000 families evacuated to higher ground. In the Mekong Delta in southern Vietnam, seasonal flooding has been far worse than normal resulting in 24 deaths, nearly 58,000 homes damaged, and 250,000 people affected. In Lao PDR the government reports 30 dead, nearly 430,000 affected, and over 64,000ha of farmland destroyed. Heavy rains are predicted to continue for several more weeks.

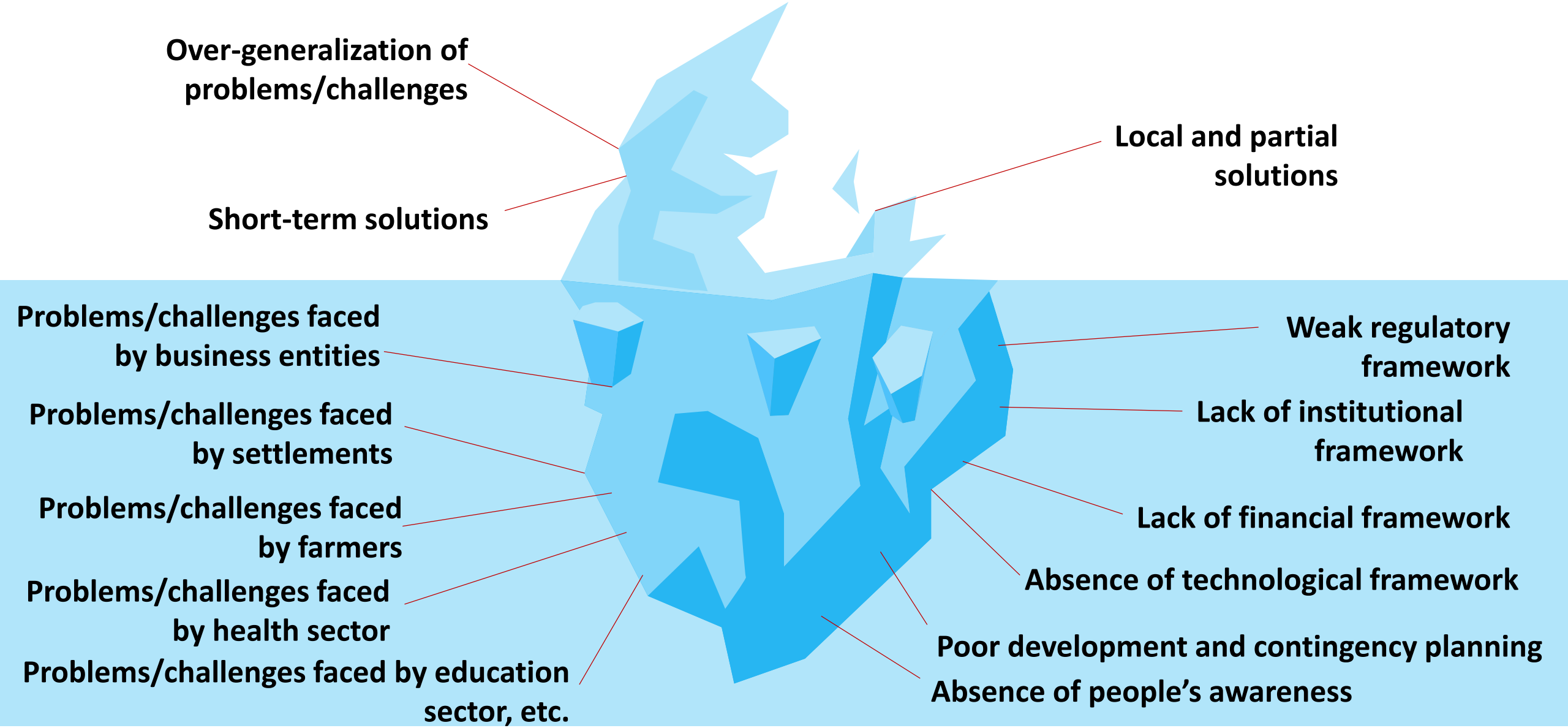
Sources: Cambodian National Commission on Disaster Management, Vietnamese Central Committee for Flood and Storm Control, UN in Vietnam, Government of Lao PDR

3 Northern Philippines (Luzon)

Two consecutive typhoons have caused flooding and landslides in the northern Philippines. In total, 90 people were killed, over 4 million were affected, and nearly 730,000 were displaced or in need of assistance. Tropical storm Banyan passed over the Philippines on 12 Oct. Preliminary reports are 1 death and 1,700 affected in Region VII.

Source: OCHA-Philippines Situation Report 4, 7 Oct, Pacific Disaster Center, Philippines National Disaster Risk Reduction and Management Council

Living with flood: Challenges for whom?



Lessons learned

2 Early warning system

Data collection and sharing, modelling and forecasting, Flash Flood Guidance System (FFGS), Coastal Inundation Forecasting Demonstration Project (CIFDP), Severe Weather Forecasting Demonstration Project (SWFDP).

4 Post flood recovery

Flood counseling, flood compensation scheme, flood insurance scheme, recovery and reconstruction planning and implementation; redevelopment fund, etc.

3 Integrated support and emergency response

Coordinated emergency response, viable evacuation system (medical-shelter-food-clean water-sanitation services, electricity-security-communication), evacuation route, evacuation center, etc.

1 Awareness at all level

Encourage the participation of users, planners and policymakers at all levels; decentralization of decision-making; involvement of representatives of all the upstream and downstream stakeholders

5 Better land use planning and water resources management

One synthesized plan with a certain common field, such as the mapping of flood hazards and risks, to enable the sharing of information between land-use planning and water management authorities; floodplain management plan; storm water management.

A Baseline for better IFM

Credible and neutral multistakeholders platform in supporting sustainable integrated water resources development and management

Vision

Missions

1. Consolidate inputs of existing discussion mechanisms in the respective regions
2. Systematically structure and consolidate the challenges, solutions, good practices, lessons learned and innovations
3. Facilitate joint development and cost & benefit sharing
4. Facilitate joint knowledge production & management

Aim: Populations have access to safe, sufficient and affordable water to meet basic needs for drinking, sanitation and hygiene; to safeguard health and well-being; and to fulfill basic human rights
Relevant topics: Drinking water, Wastewater, Solid waste, Hygiene, Health

Human Well-being Theme

Economic Activities & Development Theme

Aim: Adequate water supplies are available for economic and development activities
Relevant topics: Food and energy production, industry, trade, transport, tourism, etc.

Water-related Hazards Theme

Aim: Populations are resilient to water related hazards, including floods, droughts and pollution.
Relevant topics: Floods, Droughts, Robs, (tidal flood), land subsidence

Main Products

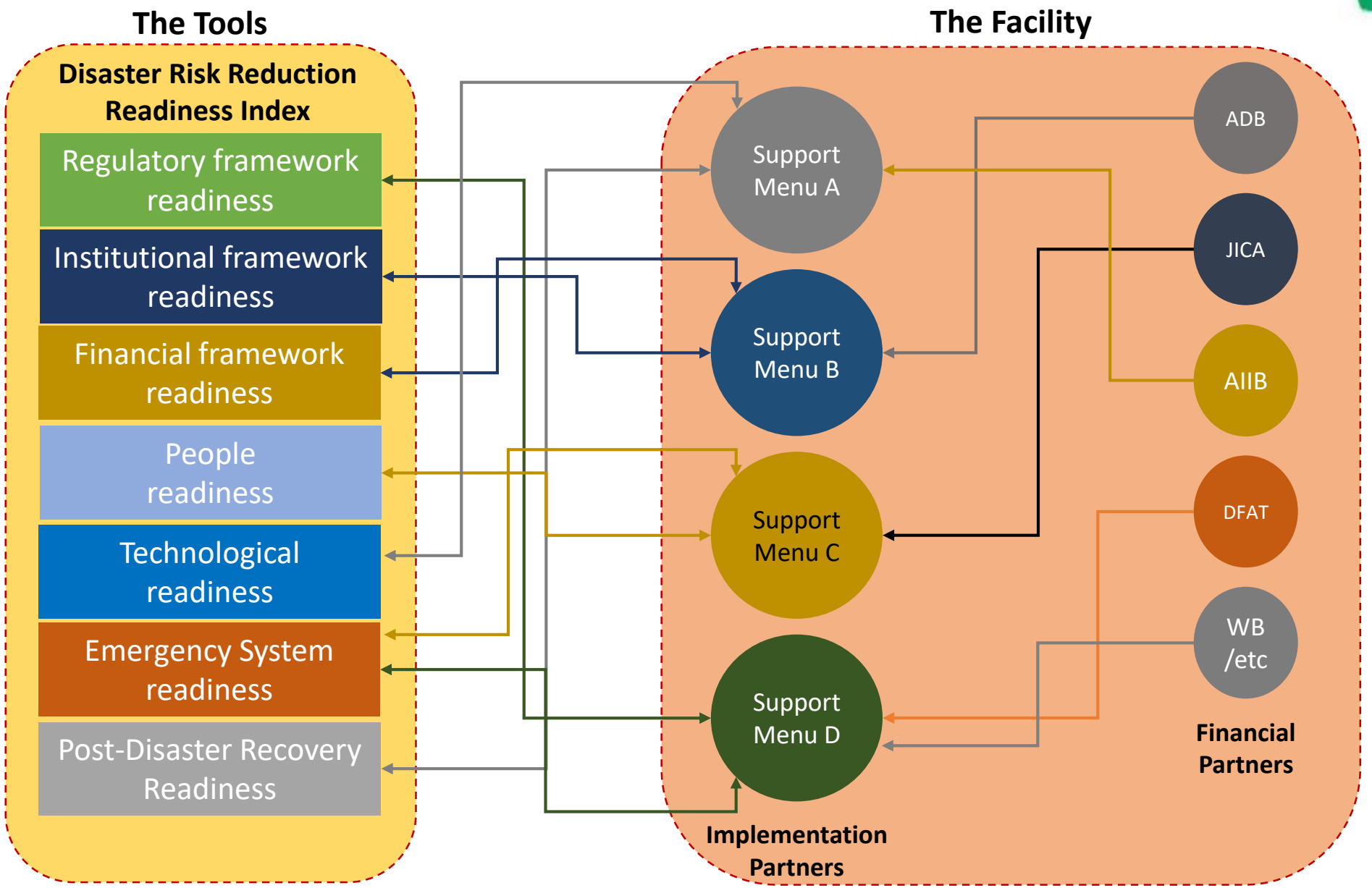
Mid-term Multistakeholders Perspective Synthesis Report 2018 - 2022

Mid-term Multistakeholders Policy Recommendations 2018 - 2022

Joint Development Projects Blue Book 2018 - 2022

Annual Joint Development Projects Green Book 20XX

GWP's DRR Preparedness Facility - Concept



Join the Partnership!

Go to **PARTNER** at: www.gwp.org

And visit our online library for water reources management: www.gwptoolbox.org