Module 1 :
Drought Occurrences, Vulnerability and IWRM

Drought risk management in IWRM

Monterrey, Mexico, 24-28 June, 2013

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WaterCap Water Capacity Building Network

UNEP-DHI CENTRE for Water and Environment

UNEP DHI

Goal and objectives of the session

Goal:

- Introduce occurrences of droughts globally
- Conditions that make areas vulnerable to droughts
- Introduce some drought concepts
- Introduce basic principles and concepts of IWRM and how the approach can assist in addressing droughts.

Goal and objectives of the session

At the end of the session participants should be able to:

- Understand droughts concepts
- Understand occurrences of droughts risks
- Understand how IWRM approaches can assist in addressing droughts through water management
- Understand the role of climate change in drought risks

Session outline

- Introduction
- Drought risk and occurrences
- Drought concepts
- IWRM and the link to droughts through water management tools

Introduction

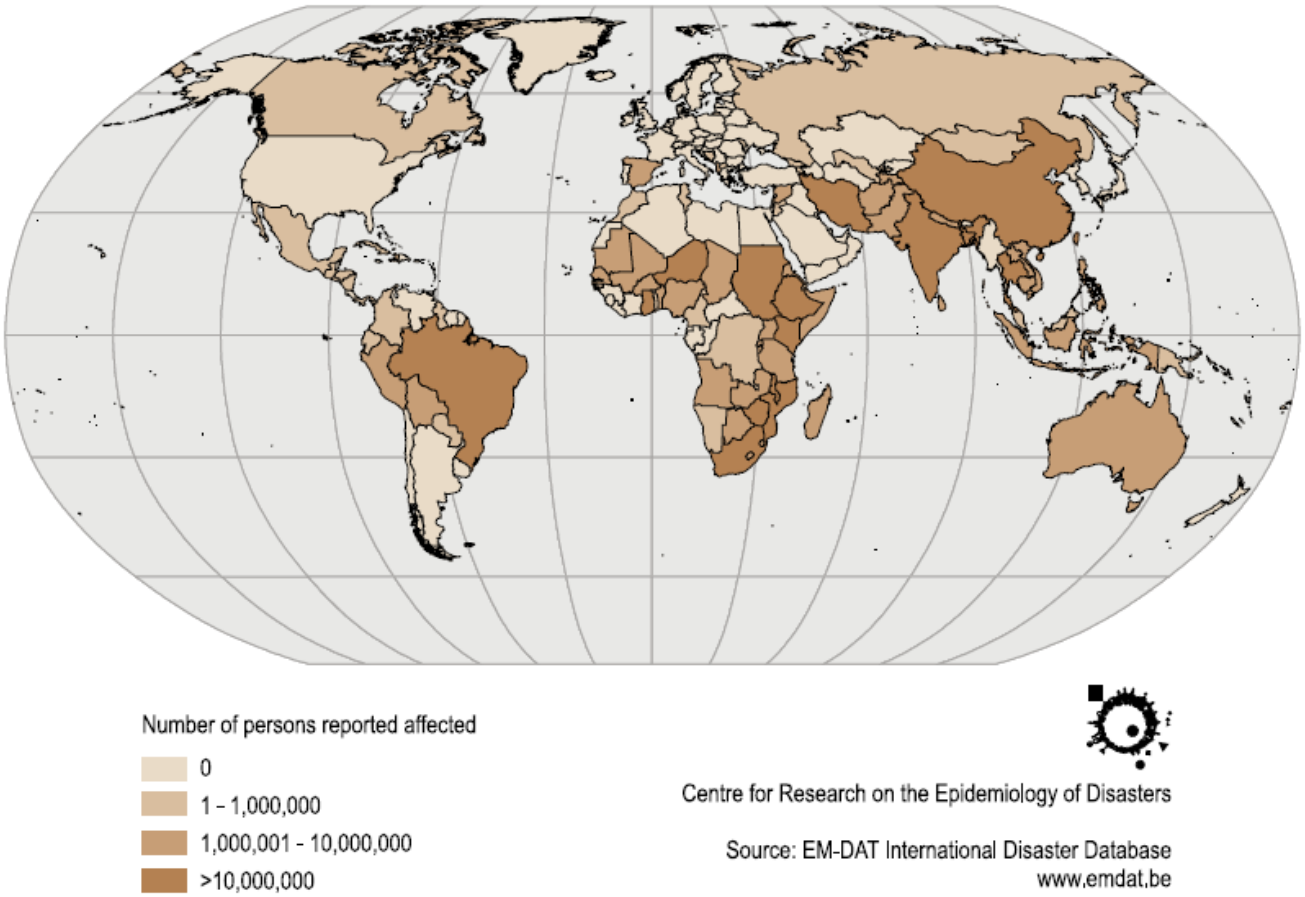
- An introductory module on:
  - what droughts are;
  - their importance in water management;
  - where and how they occur;
  - what makes areas susceptible to droughts; and
  - what sustainable water management can contribute to mitigation and drought risk management

Drought risk and occurrences

- Where do droughts occur ?
- Projections & role of climate change in drought risks
- Why is drought an important issue to address for water managers ?
- Causes

Drought occurrence

Figure 3:
Number of drought disasters reported by country: 1970-2008



Impacts


Impact of climate change on food prices is underestimated, Oxfam warns
Price spikes will be a devastating blow to the world's poorest and will also affect UK consumers
Rebecca Smithers, consumer affairs correspondent
guardian.co.uk, Wednesday 5 September 2012 06.00 BST
MAY
Linda Watson
Founder, Cook for Good
GET UPDATES FROM LINDA WATSON
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5 Ways to Drought-Proof Your Grocery Budget
Posted: 08/16/2012 12:56 pm
React Amazing Inspiring Funny Scary Hot Crazy Important Weird
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21 10 11 0
Food prices are already going up as a result of the terrible drought in the Midwest. Withered corn and soy crops will likely boost the cost of meat, soft drinks, fast food, and processed food more next year. These foods rely on corn and soy, which are usually cheap because they are so productive and because of heavy government
Voice of America
HOME USA AFRICA ASIA MIDEAST EUROPE SCIENCE & TECH ENTERTAINME
News / Africa
US Drought Impacts Global Food Security
Print Email
U.S. DROUGHT
Severe drought Extreme drought Main corn/soy producing regions
CANADA
U.S.A.
Washington D.C.
Atlantic
News Opinion Business
Learn English The China Post Subscribe
World service
USA Live
E OF RUSSIA
Baghdad
dead on ince
Torture under Bush administration
Save the Child ordered out of
RUSSIA 2012 BUSINESS SUMMIT
INTERVIEWS VIDEO
When will the US drought end?
Tags: drought, Society, World, Opinion & Analysis
Virginia Pasley
Aug 28, 2012 16:46 Moscow Time
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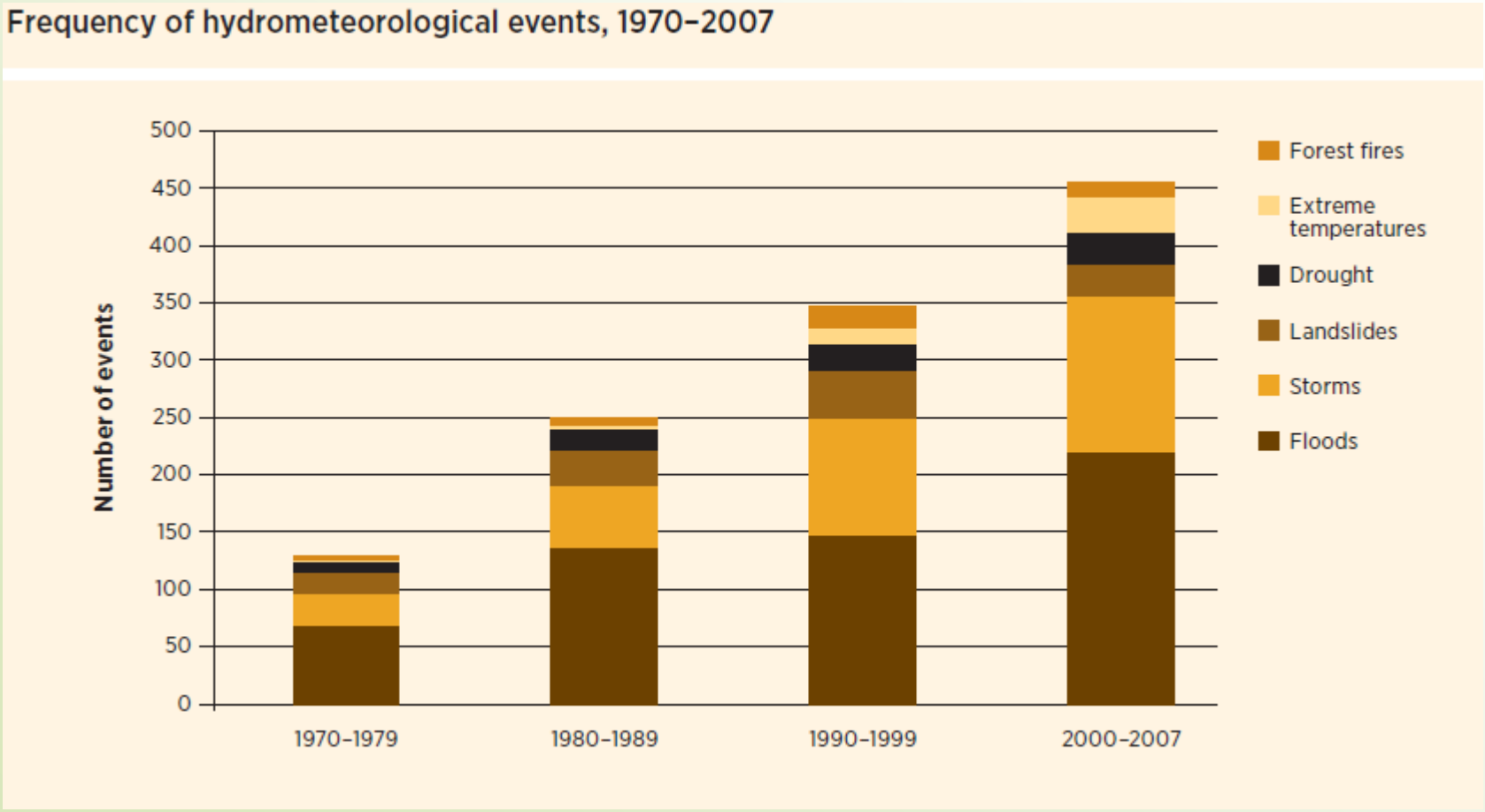
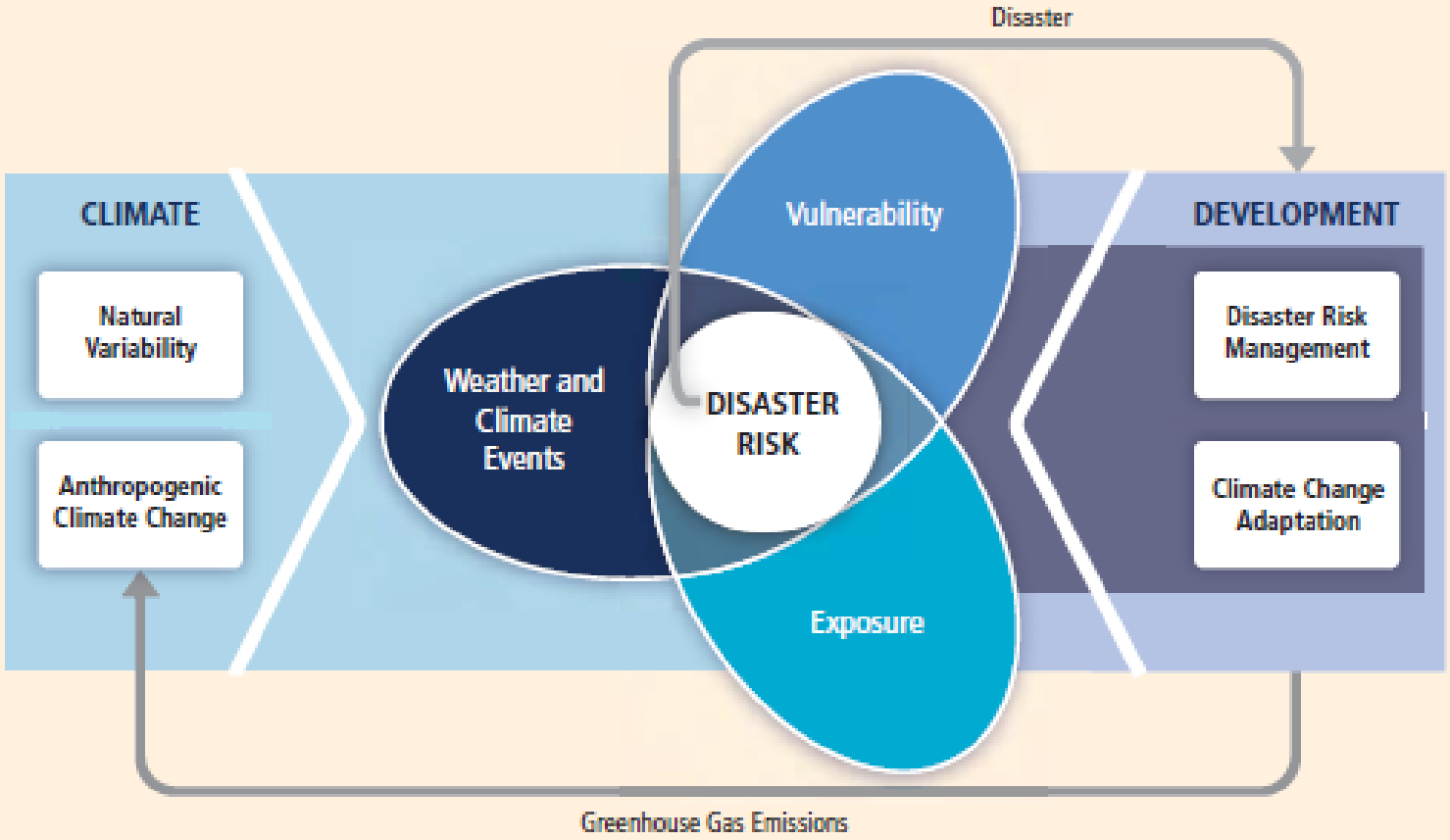
Climate change impacts



Source: WWDR-4

Concepts & definitions of CC & DRM



Source: IPCC, 2012

Drought concepts

Basic understanding of the following which are also explained in detail in proceeding modules

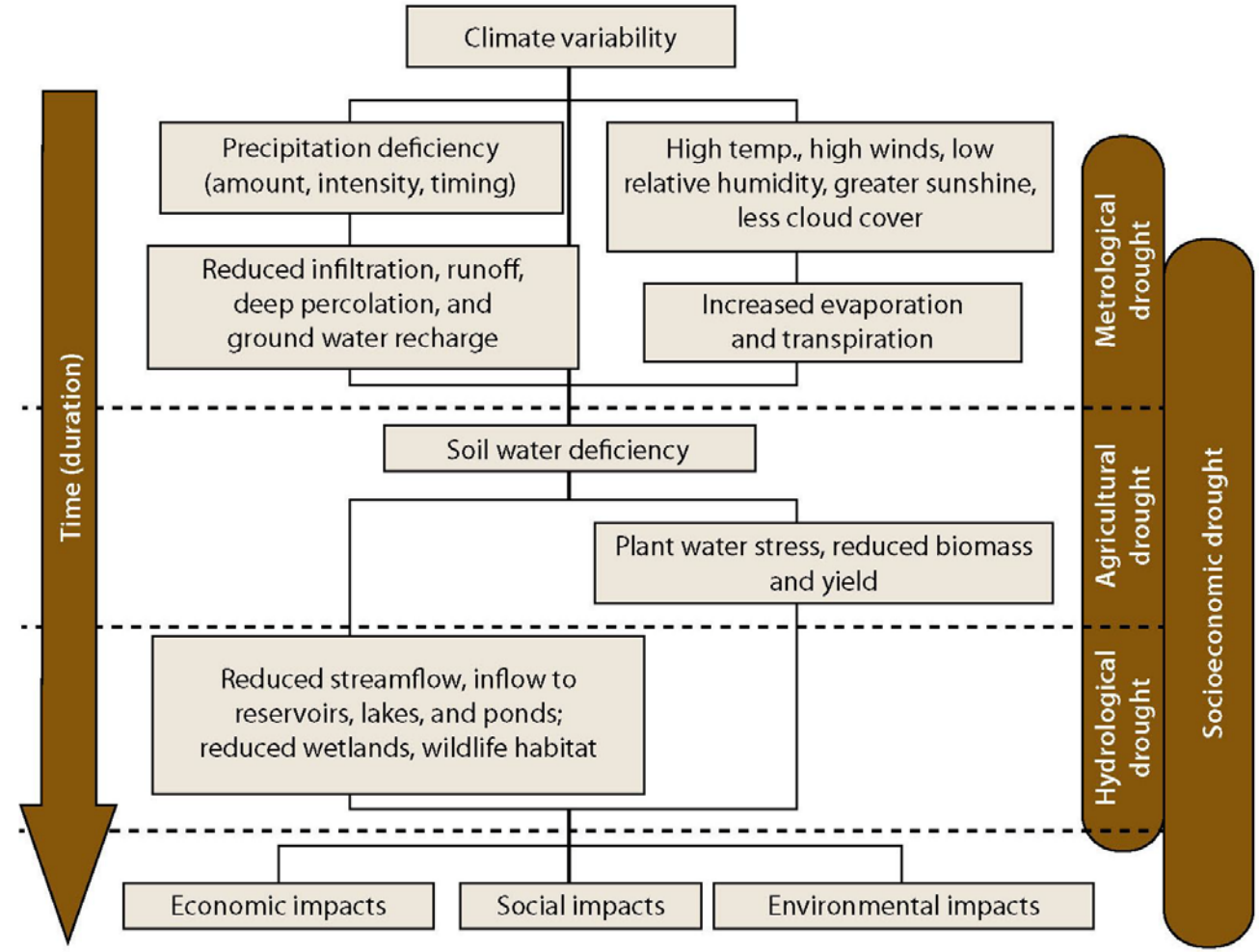
- Drought and types of drought
- Drought versus water scarcity, aridity and desertification
- From threat – hazard - disaster;
- Hazard exposure;
- Vulnerability
- Risk

Short pairwise discussion (5 Mins)

- What does drought mean to me ?

- Discuss in pairs and provide feedback to the group how you would know there is a drought based on your educational background, professional role, or as a person who has been affected by drought
- Provide feedback in keywords

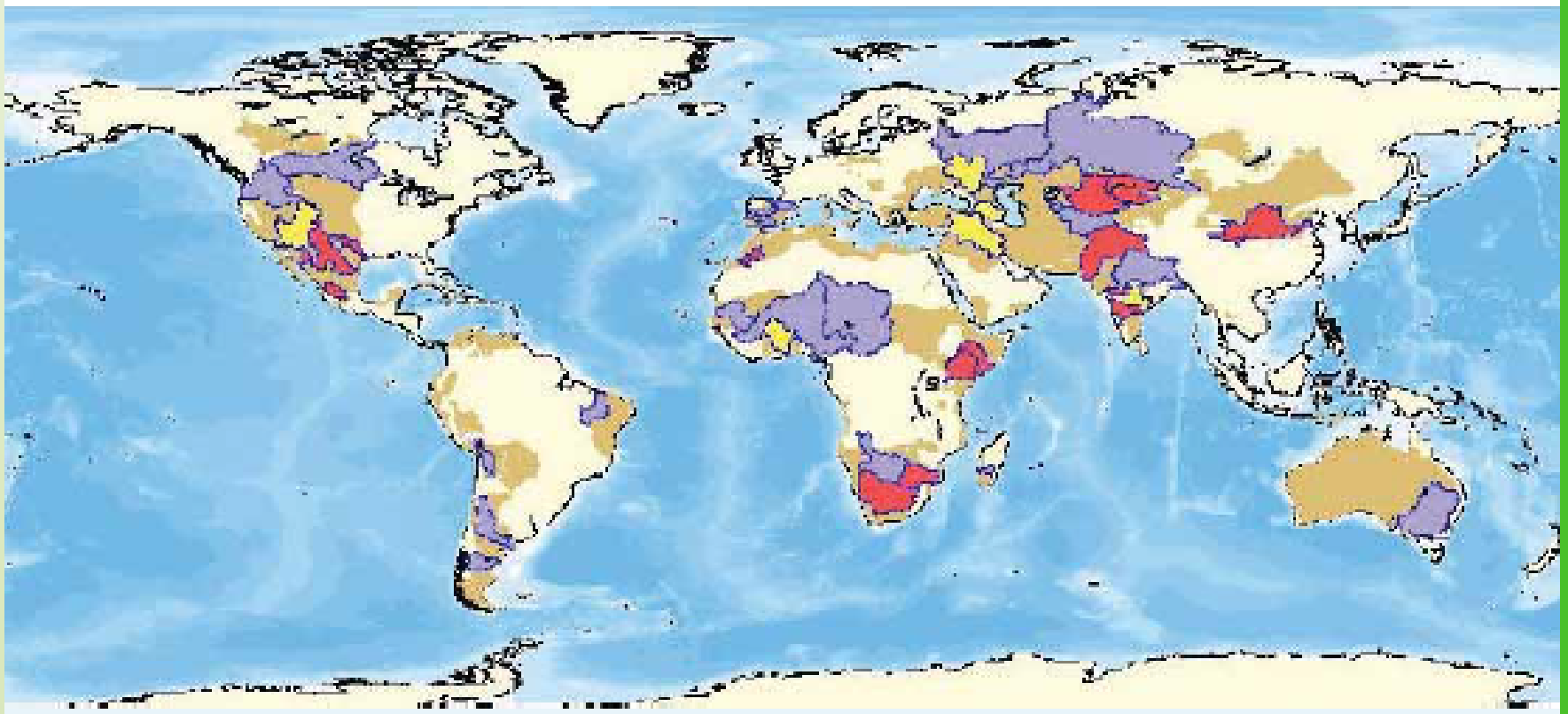
Drought typologies and cascading impacts



Source: UNISDR (2009)

Interaction of scarcity & aridity

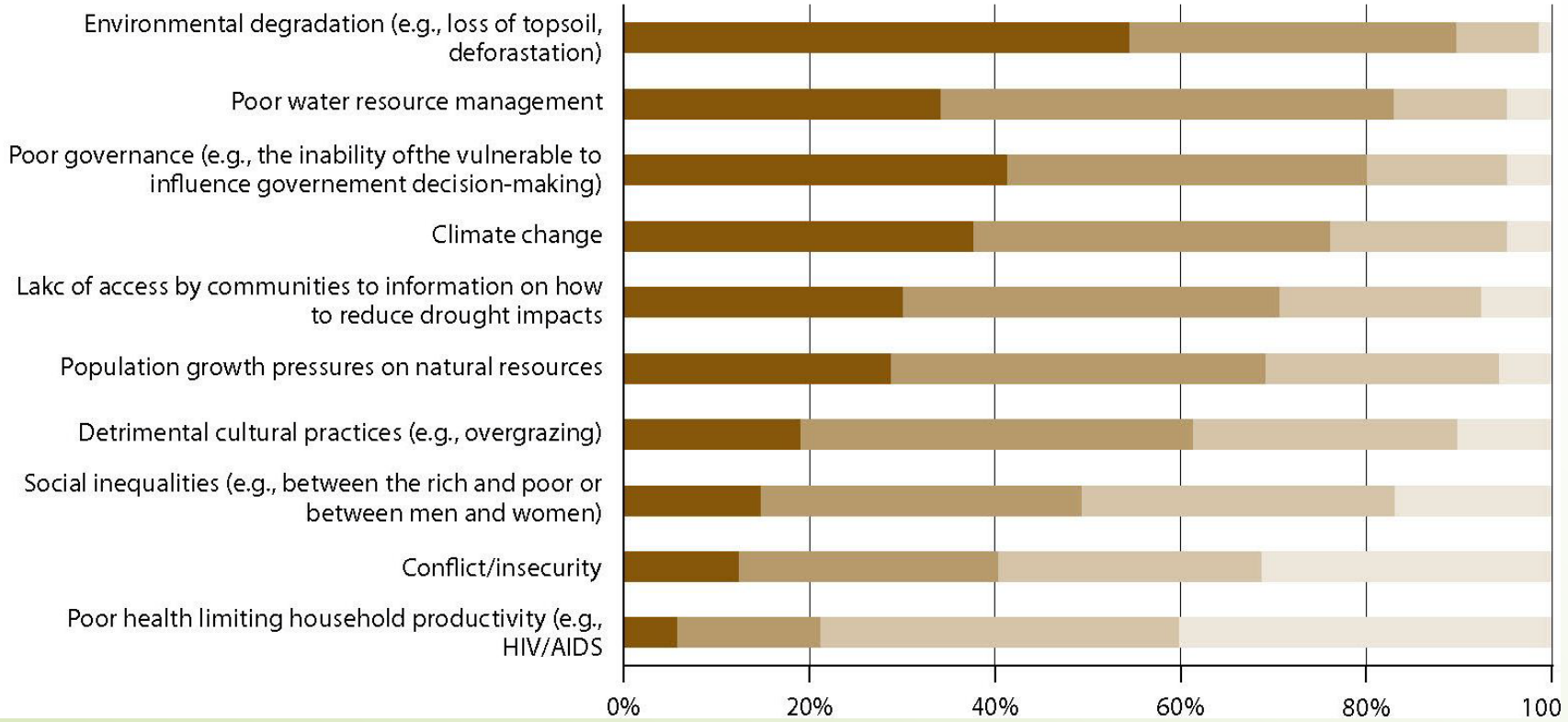
Projected water supply in major watersheds in drylands by 2025: water scarcity will be exacerbated in many key dryland areas worldwide



Source: White and Nackoney (2003).

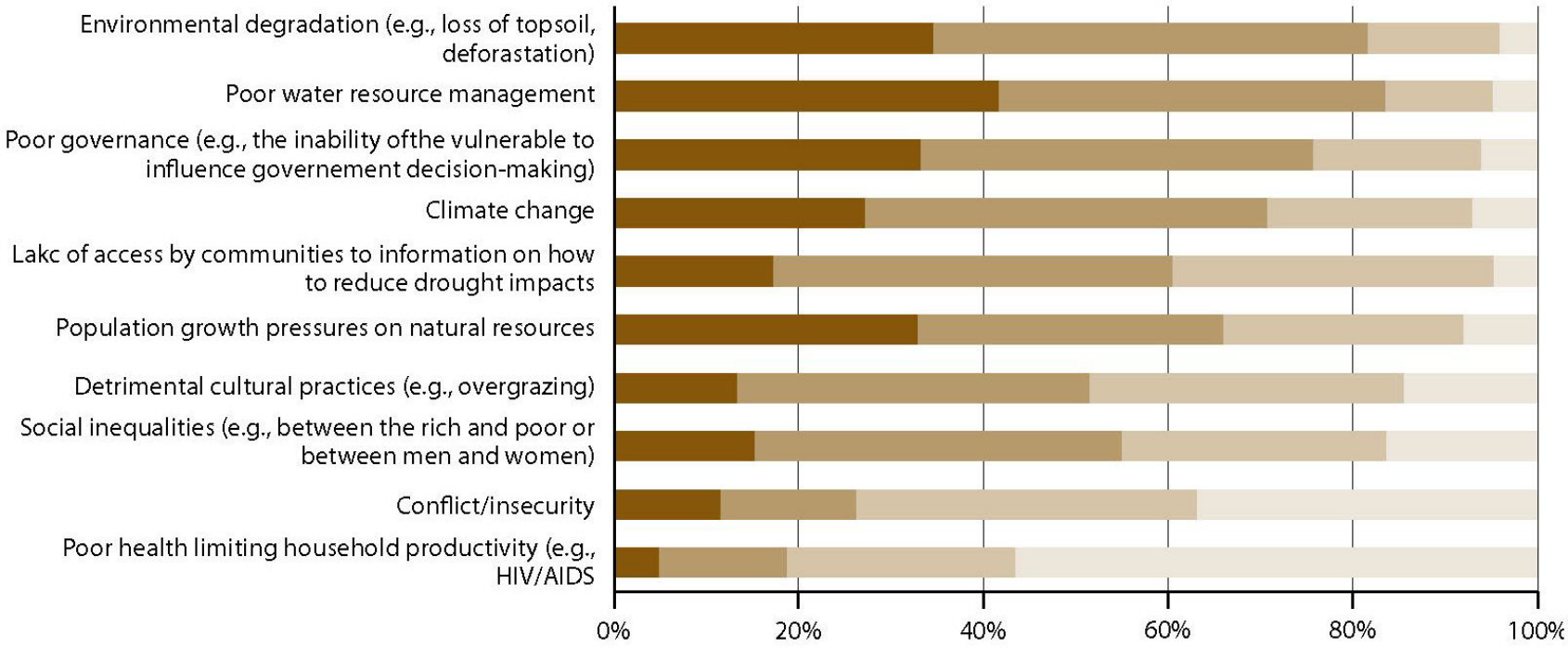
Figure 3: Root Causes of Drought Impacts

Africa



Source: UNDP, Drylands programme, 2012

Asia



- MOST IMPORTANT: Compared with the others, this issue is a/the fundamental, deep-rooted problem
- VERY IMPORTANT: Compared with the others, this issue has widespread significance for causing drought losses
- SOME IMPORTANCE: Compared with the others, this issue is relatively important
- LEAST IMPORTANT: Compared with the others, this is not a major issue of concern

Source: UNDP, Drylands programme, 2012

IWRM and the link to droughts through water management tools


WRM Evolution


1. What is IWRM


2. Why IWRM?


3. Principles


4. The users


5. The process


6. Policy

Get more from the IWRM tutorial

cap-net.org

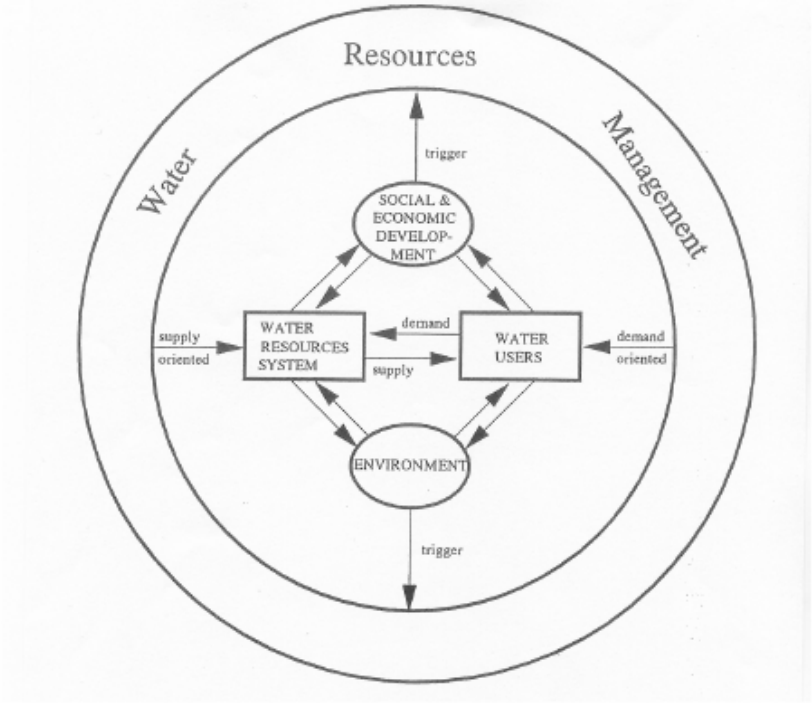
Examples of early developments in IWRM

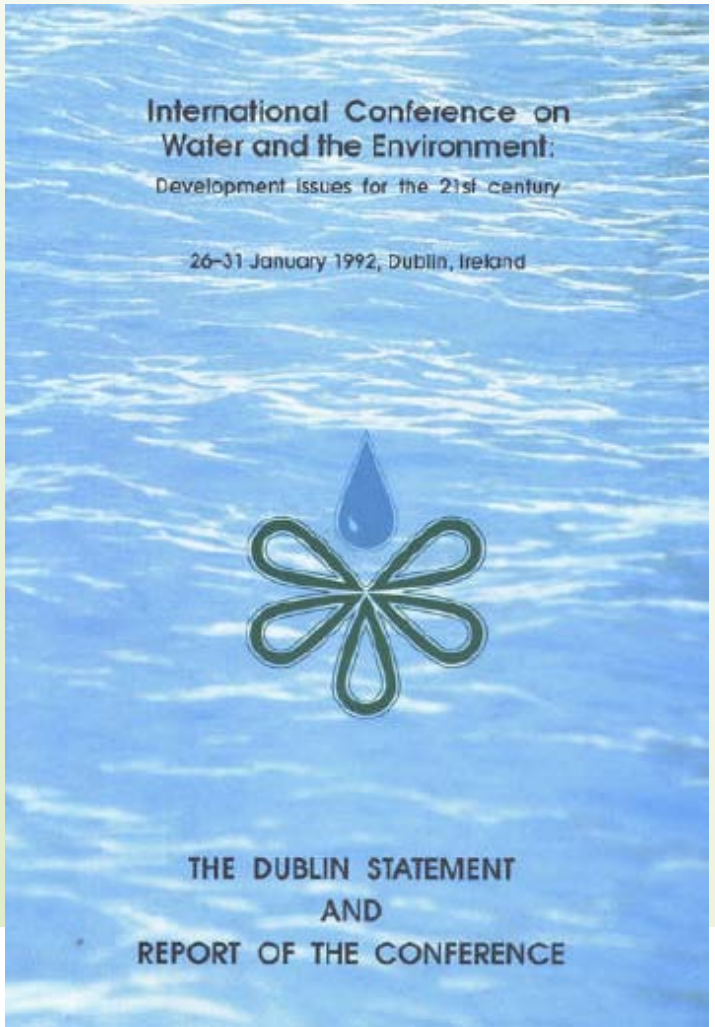
- 1933: early case of something close to IWRM was Tennessee Valley Authority
  - functions of navigation, flood control, power production combined with activities on erosion control, public health and welfare
- 1957 : report on Integrated River Basin Development to the UN Secretary General
  - emphasised support services to agriculture
- +20 years: International Water Conference, Mar del Plata , 1977
  - the need for coordination of water related functions
  - the master plan era

Examples of early developments in IWRM

15 years later, frustration with slow pace of coordination within the water sector (Rio Earth Summit)

Despite this slow progress, new additions were made to the IWRM concept





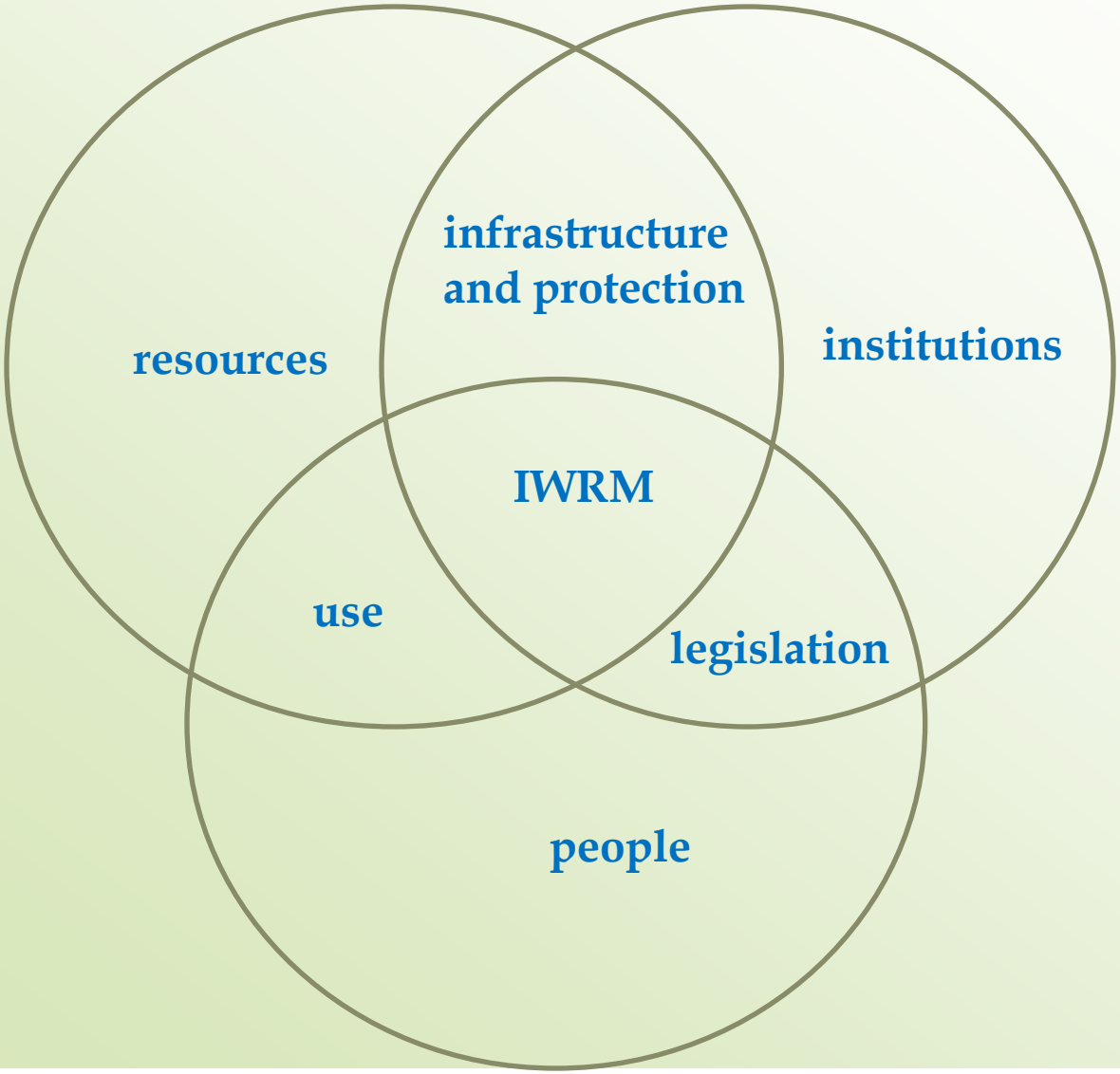
Overview of IWRM: what is integrated ?

- Integration of WRM in the broader **development context**
- Sectoral integration – integrating different **use of water / different** water using sectors
- Integration of the (biophysical) **resource base**
- **Spatial** integration (upstream /downstream interlinkages)

■ 1930s

■ 2013

What is IWRM ?


infrastructure
and protection
resources
institutions
IWRM
use
legislation
people

IWRM principles & drought risk management

IWRM principle	Applicability to drought risk management
Water is finite and vulnerable resource	Participatory evaluation of water allocation regimes under different water availability conditions can dampen the conflict between water uses during times of stress
Participatory approach	This calls for the involvement of key stakeholders in the planning cycle implying engagement of organizations tasked with drought planning and management
Role of women	Noting that, the impacts of drought differ for the different genders , the inclusion of women in capacity development and water management, would lead to more relevant planning and actions *Is he the farmer or the farmer's husband ? (Hagmann et al. 1997)*
Social and economic value of water	Giving water a real monetary value can stimulate efficient use There is a minimum amount of water needed for basic needs which should be guaranteed, even in emergencies

Why IWRM ?

- **The Ganges, the Brahmaputra and the Meghna Delta -Bangladesh**

Table 2.1 **Seasonal fluctuation in surface water availability and overall demand**

	Critical dry period *(February–April)*	Wet season *(June–October)*
Average water availability	60 billion m^3	1,030 billion m^3
Demand	90 billion m^3	142 billion m^3

- 35 central government institutions, affiliated with 13 different ministries, have responsibilities and activities relevant to the water sector
- Storage would require a regional plan and the construction of facilities in the upstream countries of India and Nepal
- about 70% of irrigation water is abstracted from aquifers
- In Dhaka the water table has declined 2 to 3 meters per year over the last decade
- There is potential for regulating river flow in upstream countries to reduce flooding

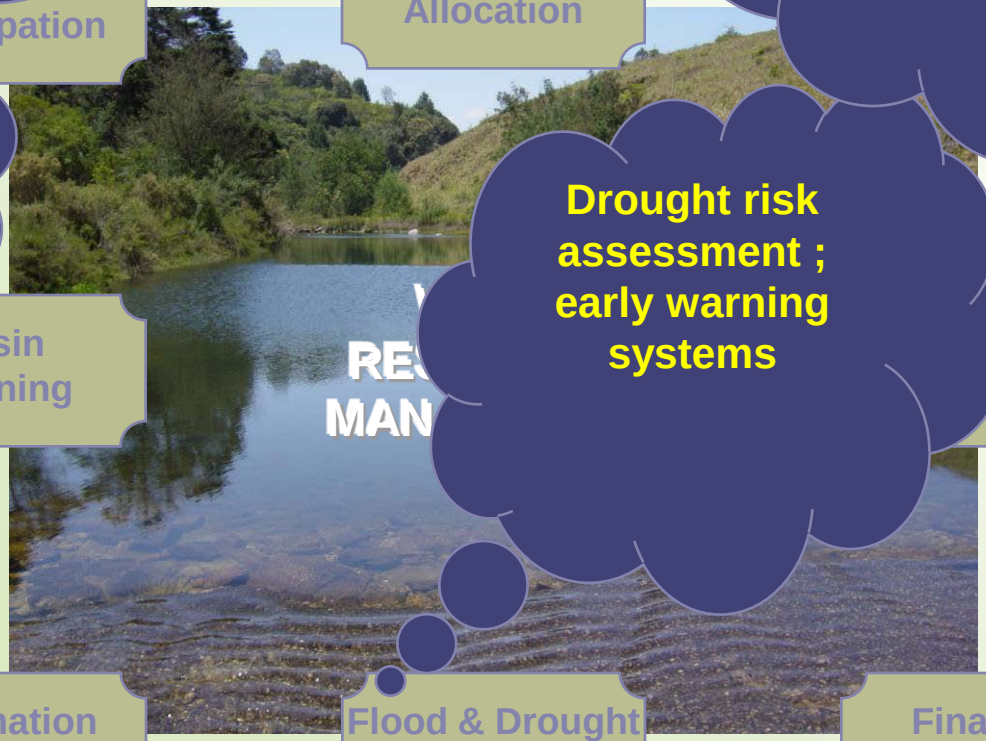
W[illegible]d DRM

Action: Reallocation; efficient use; conjunctive use of surface, ground and green water resources

More water, less water ? More or less demand

Action: Adaptation planning with relevant stakeholders

Drought risk assessment ; early warning systems



Water Allocation

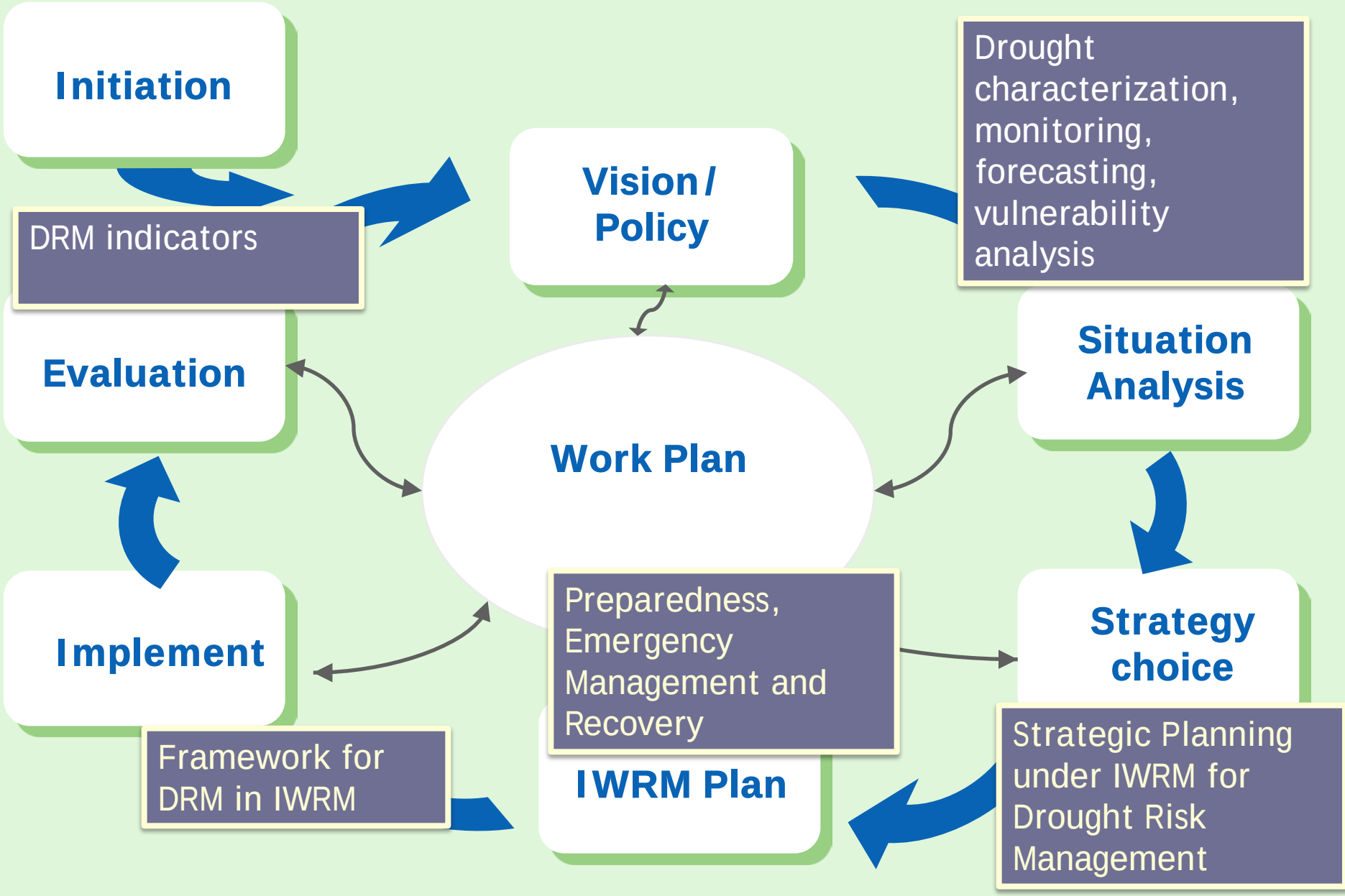
Basin Planning

Information Management

Flood & Drought Management

Financial Management

IWRM planning and DRM



Using sustainable land and water management for risk adaptation and mitigation

Source: UNCCD (2010).

Exercise

Water resources management functions; activities; and anticipated effect on drought risk

Group work process

In groups of 5, study the Water Resources Management functions in the hand out

Qn 1. For each function, what measures can be taken to improve drought risk management

Qn 2. What would be the result of the measures

Time: 30 minutes

WRM functions	Measures	Effects
Stakeholder participation		
Water allocation.		
Pollution control		
Monitoring (of water resources, water use and pollution)		
Information management		
Economic and financial		
River basin planning		

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River basin planning		

SADC Case

- Drought endemic in SADC region & presents major challenge to sustainable development;
- Groundwater sources offer security when surface water supplies fail during dry seasons and dry years. This role is key to climate change adaptation;
- Lack of coordination and planning in three successive drought events in South Africa in 80s/90s – with 50% of boreholes inoperative after 5 - 10 years;
- Policy responses to drought have, in the past, been based on short-term crisis reactions, which have generally proved to be inefficient or ineffective.
- Thus groundwater has not yet been able to play its strategic role in this regard (SADC). WCS & BGS (2003)