

# Drought Risks Management in IWRM

## Vulnerability and Impacts of Droughts

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# Goal and objectives of the session

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## Goal

**Understand the importance of addressing human concerns in drought conditions**

## Objectives

- Identify the range and magnitude of the impact of droughts
- Understand the social, economic and health impacts of droughts on human well-being

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- **Understand vulnerability, reasons for vulnerability and the cycle of vulnerability**
- **Need for data/information on impacts of and vulnerability to droughts to help design and implement interventions**
- **Individual and community level coping mechanisms and mitigation strategies**
- **Role of the State and NGOs in addressing the adverse impacts of droughts adopting IWRM approaches.**

# Presentation outline

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- **Introduction**
- **Range and magnitude of drought impacts**
- **Impact of droughts: social, economic and health**
- **Vulnerability and resilience: definition, effects and consequences of vulnerability**
- **Inadequacy of data and information**
- **Coping mechanisms**
- **Role of the State and NGOs**
- **Drawing lessons**

# Introduction

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- **Droughts impact economies/societies in many ways**
- **Impacts on people is subsumed and more so of those who are marginalised and powerless**
- **People have indigenous ways of coping with droughts**
- **Responsibility and role of state and non-state actors in addressing droughts**
- **What needs to be done to reduce vulnerability to impacts of droughts and increase resilience.**

# Range and Magnitude of Droughts

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- **Widespread in North Africa, Mid-East, West Asian Countries, China, North and Central America**
- **Ranked second highest of natural hazards, between 1980-2008 it affected more than 15.5 billion people; an average of 53 million people and a loss of 2.6 billion USD each year.**  
*(<http://www.preventionweb.net/english/hazards/statistics/?hid=59>)*
- **The range and magnitude is based on severity, duration, spatial extent, human and economic losses, etc.**
- **Impacts are further rising year by year due to global warming and climate change.**

# Impacts of drought

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- **Social**
- **Economic**
- **Health**

# Social Impacts of Droughts

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<b>Well being and Mortality</b>	<b>Increasing poverty, reduced human development, health impacts, declining purchasing power and increase income inequality</b>
<b>Rural livelihoods, food security and agriculture production</b>	<b>Impacts on rain-fed agriculture and the rural economy. Crop failure, livestock reduction and drop in food production</b>
<b>Urban and economic development</b>	<b>Water and electricity shortages-impaired functioning of cities and non-agriculture sector, job losses etc.</b>
<b>Migration and Variation</b>	<b>Crop failures induce forced migration-variation in demographic pattern-conflicts</b>

# Social Impacts of Droughts

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<p><b>Changes in family structure</b></p>	<p>Forced migration, increased debt, borrowing, reduced food consumption, unemployment and poor health, changes in household decision-making patterns due to increase in women-headed households</p>
<p><b>Public spending</b></p>	<p>Increased competition and conflict between different sectors of water users-- Government expenditure on relief and compensation</p>
<p><b>Environment</b></p>	<p>Affects habitat and water bodies, major ecological impacts, increasing species vulnerability, loss of biodiversity</p>

# Economic Impacts

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<b>Loss of livelihood</b>	<b>Increased price for farming commodities, deepening poverty, increased unemployment, reduced business, loss of jobs and income.</b>
<b>Food security</b>	<b>Loss of crops for food and income, drastic price increase, expensive import/substitutes, increased expense for buying food and starvation among the very poor.</b>
<b>Reduction of livestock and assets</b>	<b>Sale of livestock and assets at reduced market prices, and loss of livestock.</b>

Source : [www.fao.org/docrep/008/y5744e/y5744e04.htm](http://www.fao.org/docrep/008/y5744e/y5744e04.htm)

# Economic Impacts

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<b>Water scarcity</b>	<b>Lack of access to adequate and safe drinking water, water for livestock, increased access cost, school dropout of particularly girls to fetch water from long distances.</b>
<b>Indebtedness</b>	<b>Increased debt from informal money lenders and unregulated interest rates, increased credit risk from formal financial institutions</b>

Source : [www.fao.org/docrep/008/y5744e/y5744e04.htm](http://www.fao.org/docrep/008/y5744e/y5744e04.htm)

## Health Impacts

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- **Droughts make human beings susceptible to diseases due to lack of access to adequate and safe drinking water and sanitation**
- **Unaffordable high food prices leading to lack of purchasing power hence malnutrition in children, sick and elderly and other vulnerable groups**
- **Stressful socio-environmental conditions leading to anxiety, depression and suicidal tendency.**
- **lack of access to medical aid during drought increases morbidity and mortality.**

**The impacts differ across individuals, states and nations based on their vulnerability and resilience.**

# Vulnerability

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**Vulnerability generally means the potential for loss. These losses vary geographically and among different social groups, hence vulnerability also varies over time and space. Literature reveals that vulnerability has many different connotations, depending on the research orientation and perspective (Cutter, 2001a).**

**The three main tenets in vulnerability research are:**

- **identification of conditions that make people or places vulnerable to extreme natural events (Anderson, 2000)**

- **assumption that vulnerability is a social condition, a measure of societal resilience to hazards (Hewitt, 1997)**
- **integration of potential exposures and societal resilience with a specific focus on particular places or regions (Cutter, Mitchell, and Scott, 2000).**

**Vulnerability is more comprehensively defined as the “Degree to which a population, individual and/or organization is unable to anticipate, cope with, resist and recover from the impacts of a disaster”. (Blaikie et al 1994)**

# Components of Vulnerability

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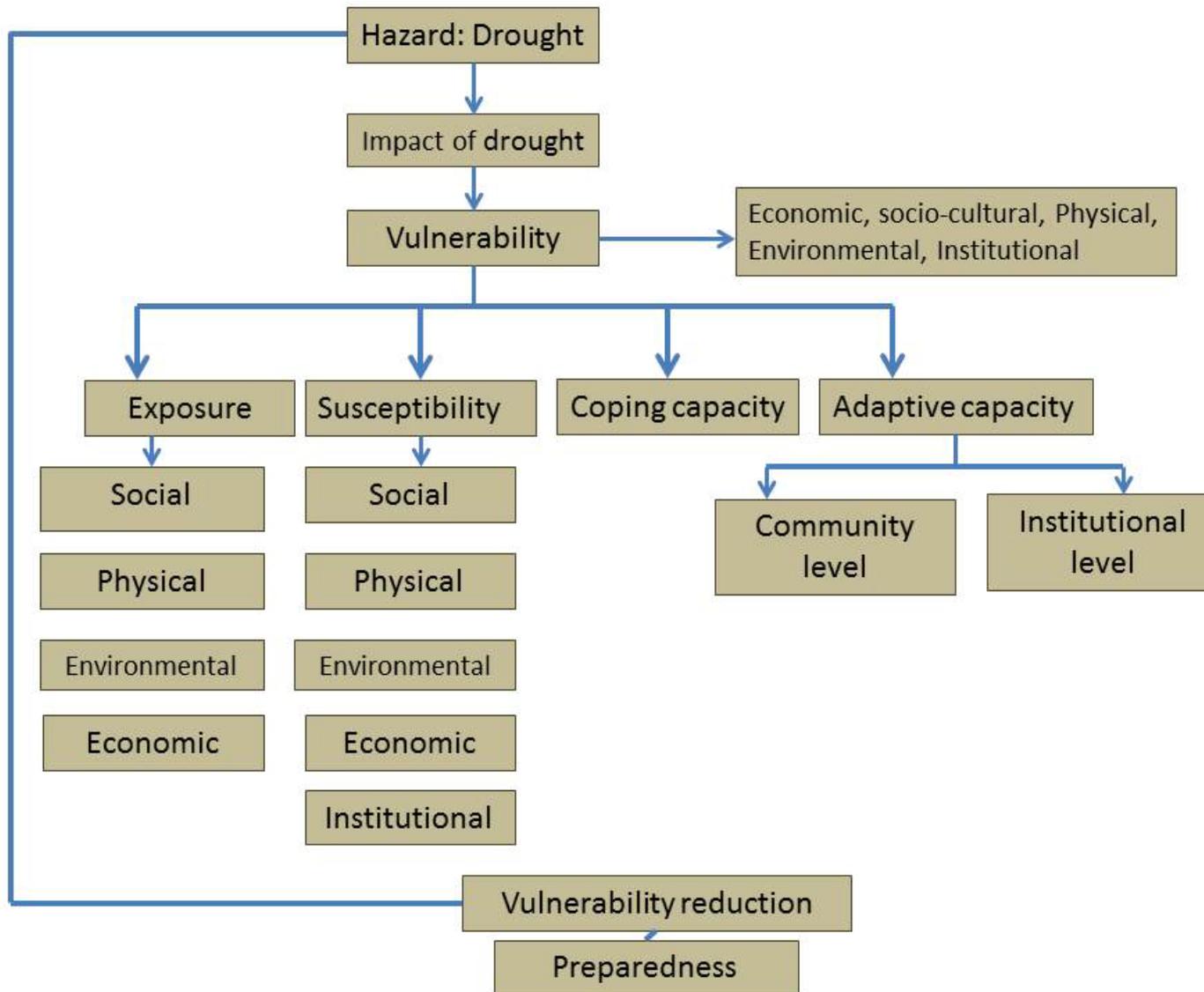
Exposure

Susceptibility

Coping capacity

Adaptation

# Conceptual Framework (UNU-EHS)



## Contd..

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**Vulnerability mapping needs to look at a paradigm shift from focus on adjustment of physical structures to improvement in planning and governance processes (Birkmann et al 2010) *which is participative and consultative***

- **Vulnerability varies across groupings such as ethnicity, gender, class, age, geographic locations, etc.**
- **Livelihood, access to information, medical aid, institutions, etc., decide the degree of vulnerability**
- **Understanding vulnerability helps in identification of people's requirements.**

**It is important to vulnerability indicators for reducing vulnerability and enhancing resilience.**

# Data and Information — Vulnerability/Impacts

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- **Dynamics of drought impacts and vulnerabilities are poorly understood.**
- **Inter-connectedness of impacts have overlooked losses and are difficult to access.**
- **Data/information is mostly segmented and sectoral.**
- **Research on identification on a comprehensive set of vulnerability indicators and their measurement has been inadequate.**

# Data and Information — Vulnerability/Impacts

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**Research carried out in the USA (3141 counties):**

**From a originally 250 variables identified 11 composite factors were produced.**

**They are:**

- **personal wealth**
- **Age**
- **Density of the Built Environment**
- **Single-Sector Economic Dependence**

# Data and Information — Vulnerability/Impacts

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- **Housing Stock and Tenancy**
- **Race (African American, Asian)**
- **Ethnicity (Hispanic and Native American)**
- **Occupation**
- **Infrastructure dependence**

Source: Cutter, Boruff, and Shirley (2001)

**Generating more data on indicators is necessary**

# Resilience

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**Resilience means the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of the hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR, 2009).**

# Resilience

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## Capacities determining resilience to disasters:

- **Physical/material capacity: command over information, knowledge, technology and financial resources**
- **Social/organizational capacity: access to networks in community and support by social/political /financial institutions**
- **Attitudinal/motivational/psychological capacity: peoples ability to cope and recover from the impacts**

# Drought Coping Strategies

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- Drought coping refers to measures taken by the communities in the short run to survive the scarcity of food, water and fodder caused by drought. Moench and Dixit, 2004: ([http://www.i-s-e-t.org/images/pdfs/AS%20Report\\_Part\\_A.pdf](http://www.i-s-e-t.org/images/pdfs/AS%20Report_Part_A.pdf))
- Each society has a certain capacity to cope with drought, with enhancement of social-economic parameters, the coping mechanisms improve.

# Coping Strategies: Rajasthan, INDIA

32 districts, 41500 villages, 54 million people



# Coping Strategies: Rajasthan, India

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- Water deficit, non-availability of quality seeds, land degradation, fall in investment capacity of farmers, rising prices, reduced grain trade, power supply shortage affected the people tremendously.
- It led to less food production, food insecurity and economic losses.
- There was an increase in expenditure in government relief measures from 2.26 million in 1950's to 1137.4 million during recent years.
- **Coping Strategies: Borrowing, using stocks, sale of assets, lesser consumption, sale of livestock and livestock products, wage labor, change of livelihood patterns and migration.**

# Coping strategies: Kandahar, AFGANISTHAN

One of the worst-hit regions of the World

Repeated droughts

Subsistence farmers

Agriculture and livestock

Impact on economy



# Coping Strategies

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- **Use of stored grains, sale of livestock and assets, limiting the cropping area, changing the crop pattern and eating habits.**
- **Partial relief received from donations from the Government and NGOs.**
- **Adopting land and water management practices (farm ponds).**
- **Mass migration due to lack of drinking water for humans and livestock.**

# Role of State and NGOs

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## Responsibility and obligation of the state:

- **Ensure right to life and a life with dignity**
- **Ensure entitlements vs. welfare**

## But the response varies from:

- **Reactionary/immediate relief measures (potable water, food grains, medical aid, etc.) to long term structural interventions**

## Need:

- **Shift from relief centric interventions to those that are holistic, integrated and coordinated.**

# Disaster risk and crisis management (Human dimensions)



*Source: Wilhite 1999*

## Contd...

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- **Risk management comprises the level of protection available to people in the event of a drought.**
- **It includes mitigation and prevention, the extent of preparedness and, prediction and early warning of a drought (quantitative).**
- **Crisis management determine the response by the state, non-state and other agencies including the communities in evolving policies and drought plans for recovery and reconstruction**

# Some practices

## I N D I A

- **Integrated child development services (ICDS) for food security and nutrition supplement**
- **Mid -day meal programme**
- **Public distribution system to cover all sections including non-target groups**
- **Capacity development to stakeholders through training and education**
- **Awareness building and dissemination of information**

- Engagement between the government and NGOs in disaster management planning.
- Capacity building of each of the role players which increases their capacity to effectively and efficiently respond to drought.
- Evolving long term plans, policies and programmes to address drought is a continuous process which does not end after the drought.

# Questions for reflection

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## **In the context of your country:**

- **What have been the impact of droughts?**
- **Who have been most affected?**
- **What interventions have been made by the Government and/or non-government actors in addressing these impacts?**
- **What are their strengths and limitations: Give reasons**
- **Who has benefitted from these interventions?**
- **What suggestions you would make to influence policies, programmes and schemes.**

# Learning

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- **The impact of droughts are complex and local specific**
- **Data/information should be generated at the individual/community levels to understand vulnerabilities so as to facilitate decision makers in framing policies and interventions.**
- **Learn from best practices across the globe as well as from national and local experiences.**
- **Co-ordination of all stakeholders is essential – international agencies, government, NGOs, communities and the vulnerable sections**

# Thanks

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- **Dr. Sailen Routray**
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- **Dr. Binoy**
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- **The Resource Team, and**
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## Contd...

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- **Short term interventions:** response in the absence of and inadequate assessments of impacts is limited in its scope.
- **Recovery measures:** be more than political responses (waiver of loans, providing subsidies, food grains, etc.).
- **Long term interventions:** policies, schemes and programmes should be evolved through consultation/participation of stakeholders.
- **Integrated planning:** synergising the efforts of all ministries should be central to the process.