



# Advancing towards Drought Risk Management

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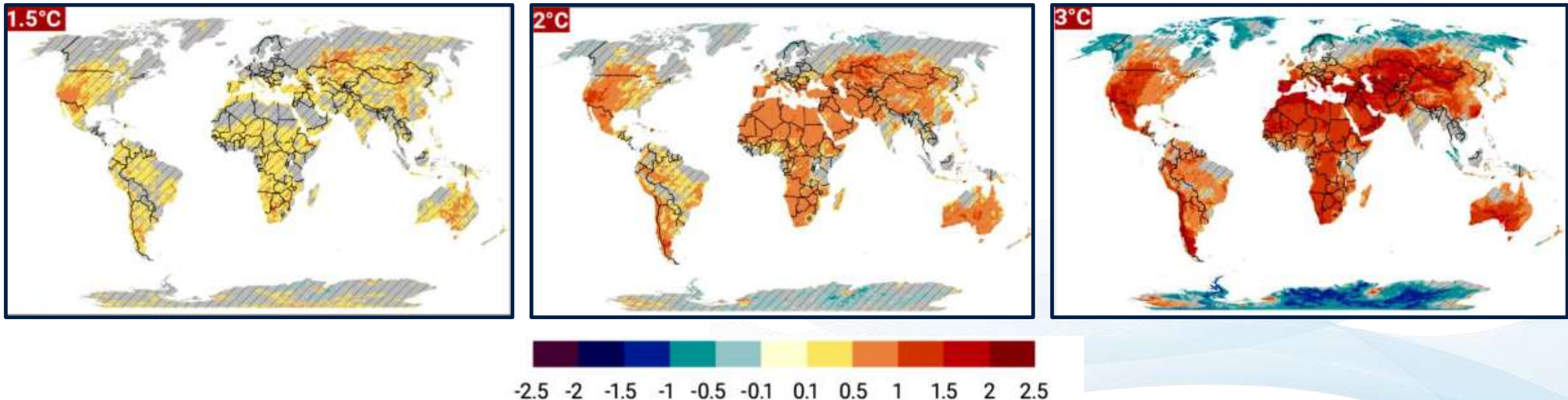
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# Recap from yesterday: on the need to pay attention to drought...especially under more substantial global warming

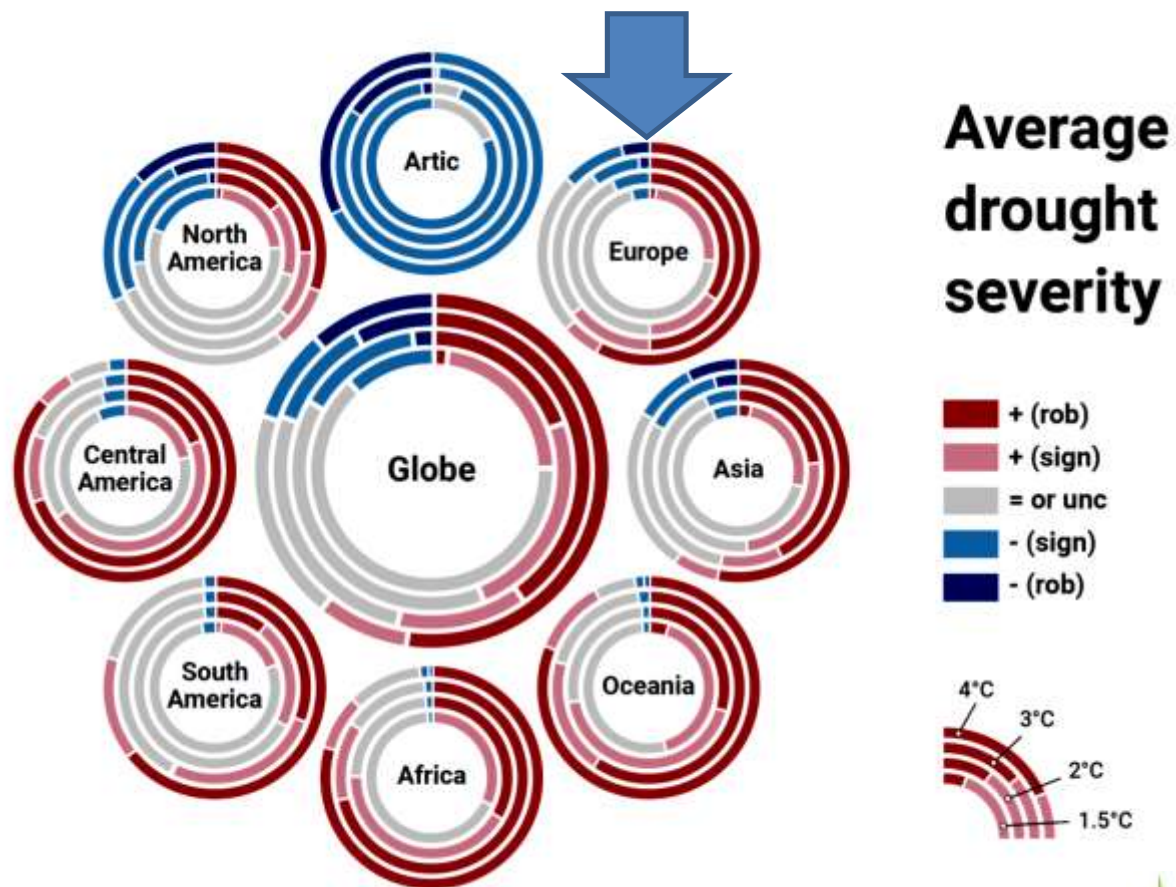
Change in meteorological drought frequency (events/decade) from recent past (1981–2010) to 2100 for three projected warming levels of global surface air temperature (baseline: pre-industrial levels)





# Recap from yesterday: Climate change also brings more severe droughts

Percentage of areas with positive (red), null or uncertain (grey) or negative (blue) change in average severity of meteorological drought events (baseline: 1981-2010) for different warming levels (baseline temperature: pre-industrial levels)



# Recap from yesterday: It is crucial to distinguish between types of drought



## Meteorological drought

- Deficiency in precipitation
- Dry weather patterns dominate an area
- Can begin and end rapidly



## Agricultural drought

- When crops become affected
- Threatens food production through crop damage and yield decreases



## Hydrological drought

- When low water supply is evident in the water system (reservoirs, GW levels, etc.)
- Usually after many months of meteorological drought
- Takes longer to develop and recover

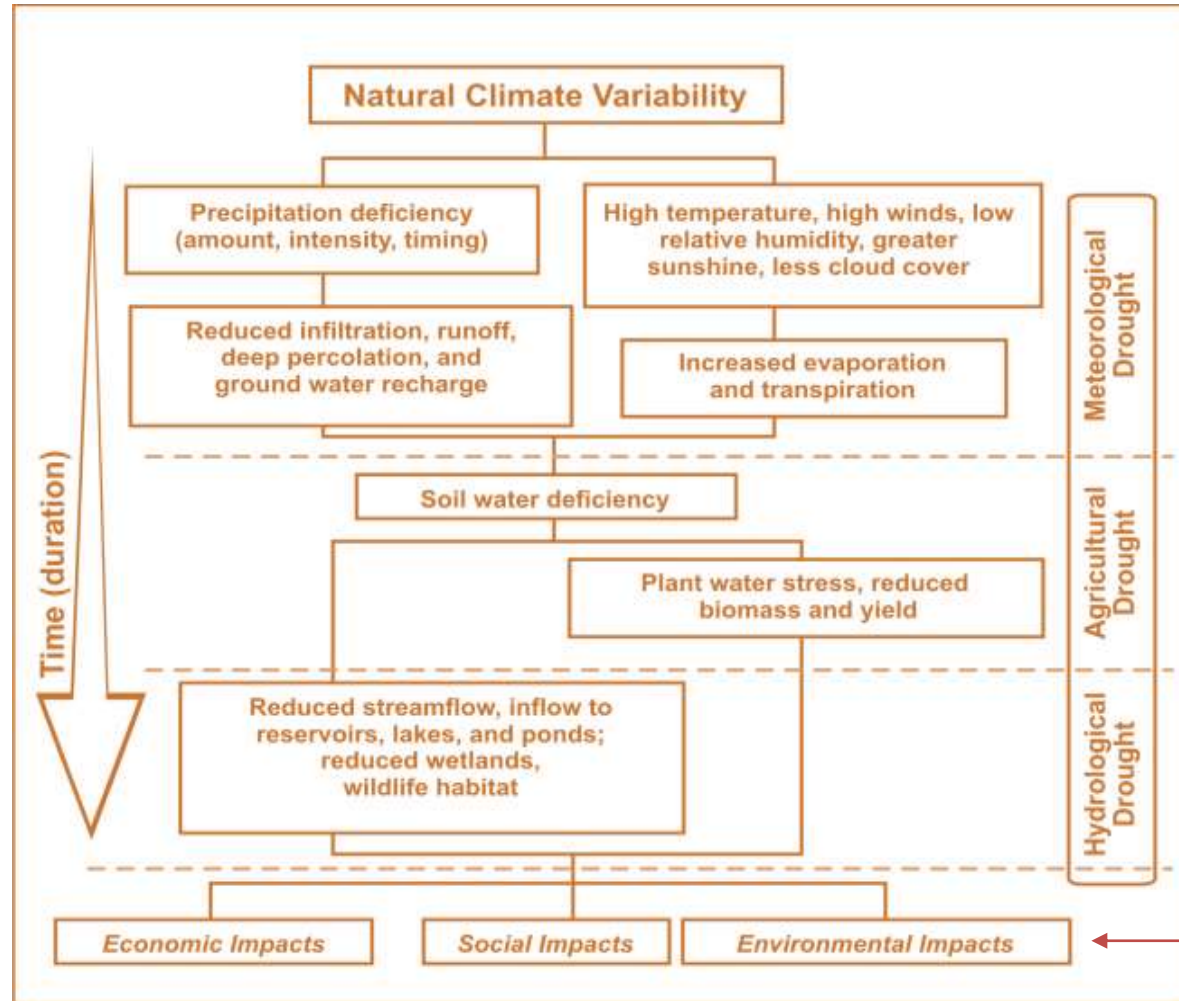


## Ecological drought

- Natural ecosystems are affected
- Prolonged and widespread deficit in naturally available water supplies that create multiple stresses across ecosystems
- Increased risk of wildfire

...All have different socioeconomic impacts

# Recap from yesterday: It is crucial to distinguish between types of drought



Water shortage or socio-economical drought

# Recap from yesterday: The impacts of drought are cross-sectoral, spatially diffuse, and long-lasting

## Droughts are costly, and there will be more

Cyclical droughts are exacerbated by climate change, and their frequency and intensity are increasing in many regions

## Less developed areas tend to be more vulnerable

Particularly women, children, and the poorest within these economies, are most vulnerable to droughts

## Droughts are felt across borders

Droughts affect landscapes beyond national border; lack of infrastructure and low institutional capacity can worsen the impacts of droughts

## Impacts are felt across the economy

Cities run out of water; power generation declines; food production decreases; ecosystem degradation ensues; and rural livelihoods collapse

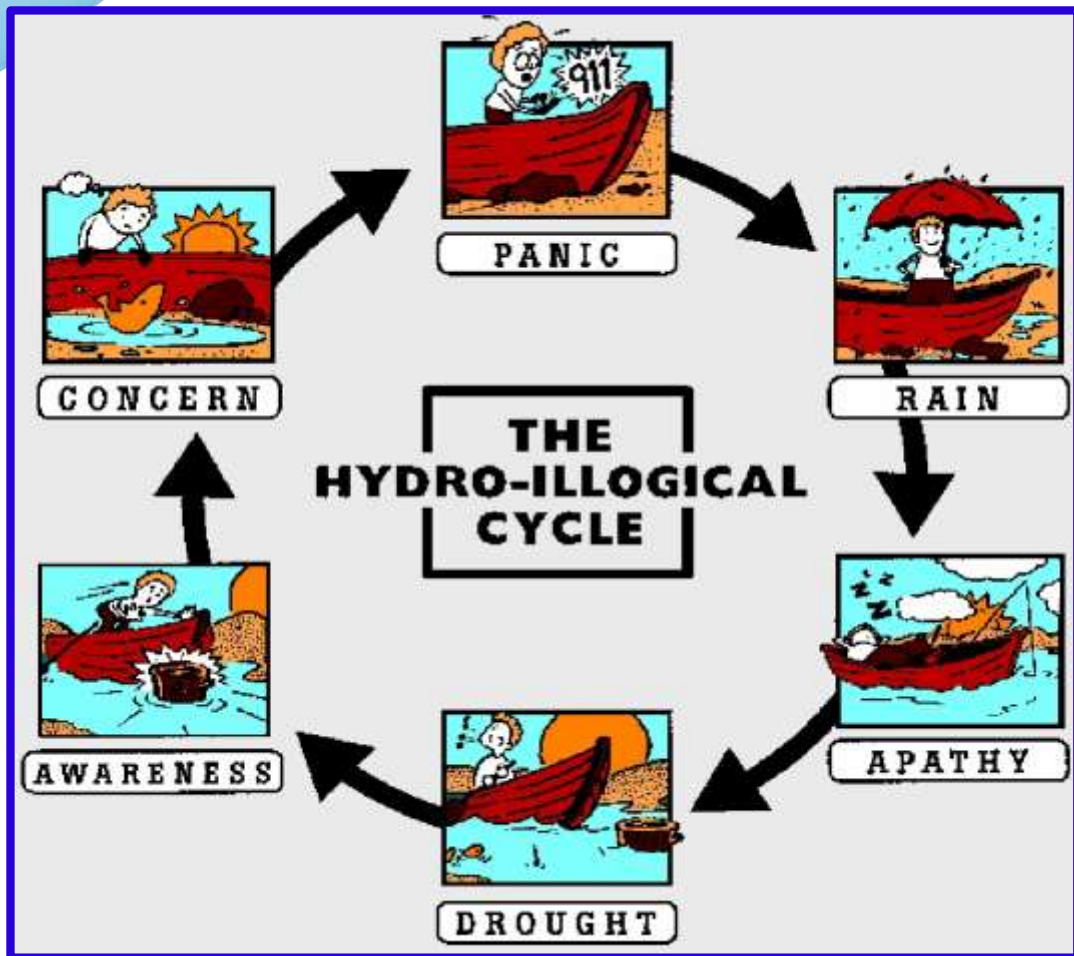
## Action must be comprehensive, regional & cross-sectoral

The drought challenge requires an integrated response across sectors and spatial scales



# Need for more strategic and longer-term approaches to drought – we must do better!

## Typical Drought Management = Crisis Management

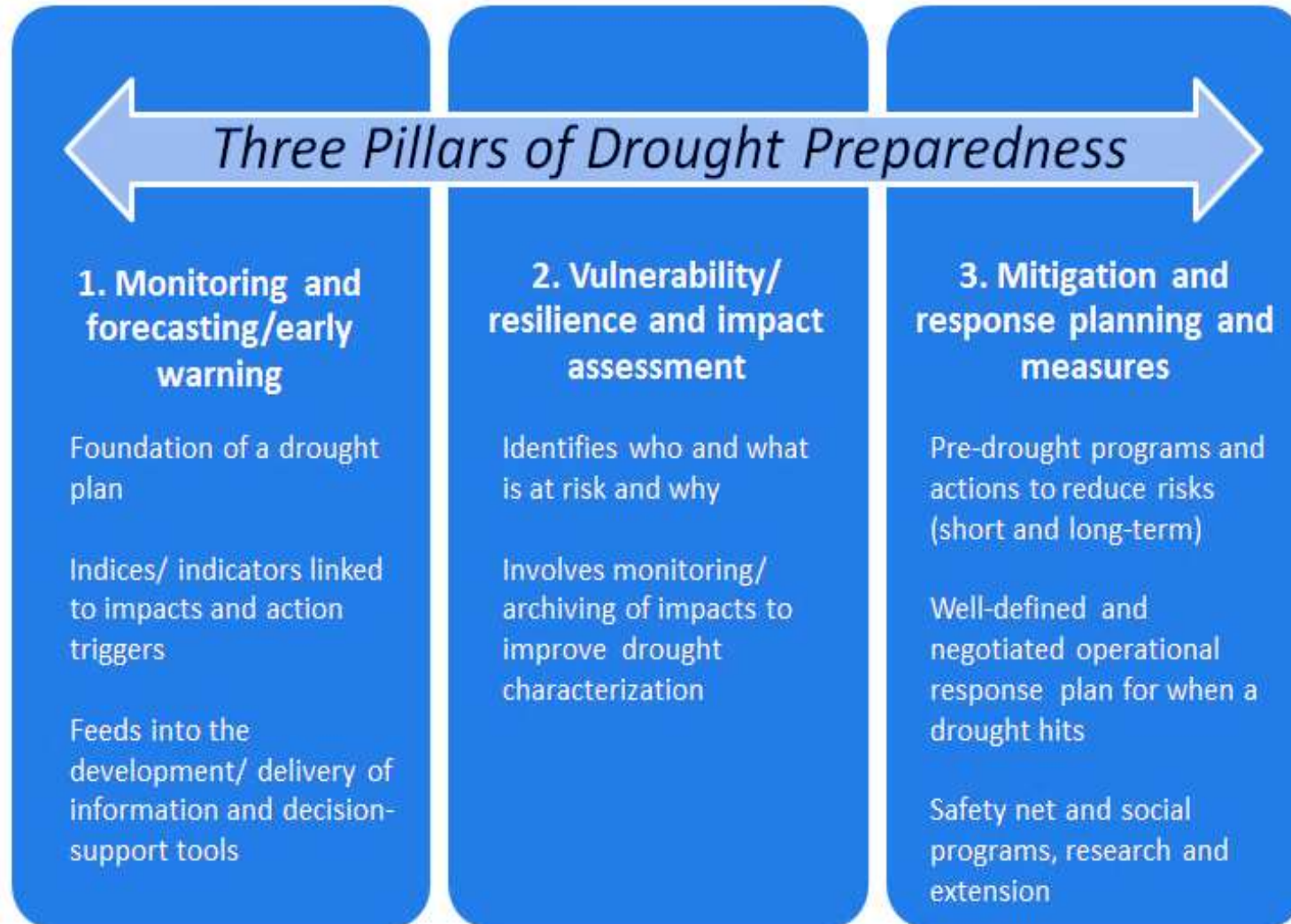


“If you do what you’ve always done, you’ll get what you’ve always got”

“We **MUST** adopt a paradigm for drought management!”

- Ineffective, treats symptoms
- Untimely, response actions
- Increases dependence
- Poorly coordinated
- Expensive, large expenditures
- Increases vulnerability

# Need for more strategic and longer-term approaches to drought – we must do better!





# The World Bank supports developing more strategic and proactive approaches to drought

- Brings global expertise and innovative methods → Global networks
- Places economic case for drought resilience and preparedness at the center
- Undertakes quick scoping assessments & investments with different spatial approaches: (e.g., basin scale, landscape perspective, cities/municipalities, etc.)
- Works with many socioeconomic dimensions and sectors associated with droughts, which facilitates integrated, cross-sectoral and multi-disciplinary solutions → convening role
- Assesses institutional and technical capacity needs for drought management, and works to help clients fill these gaps

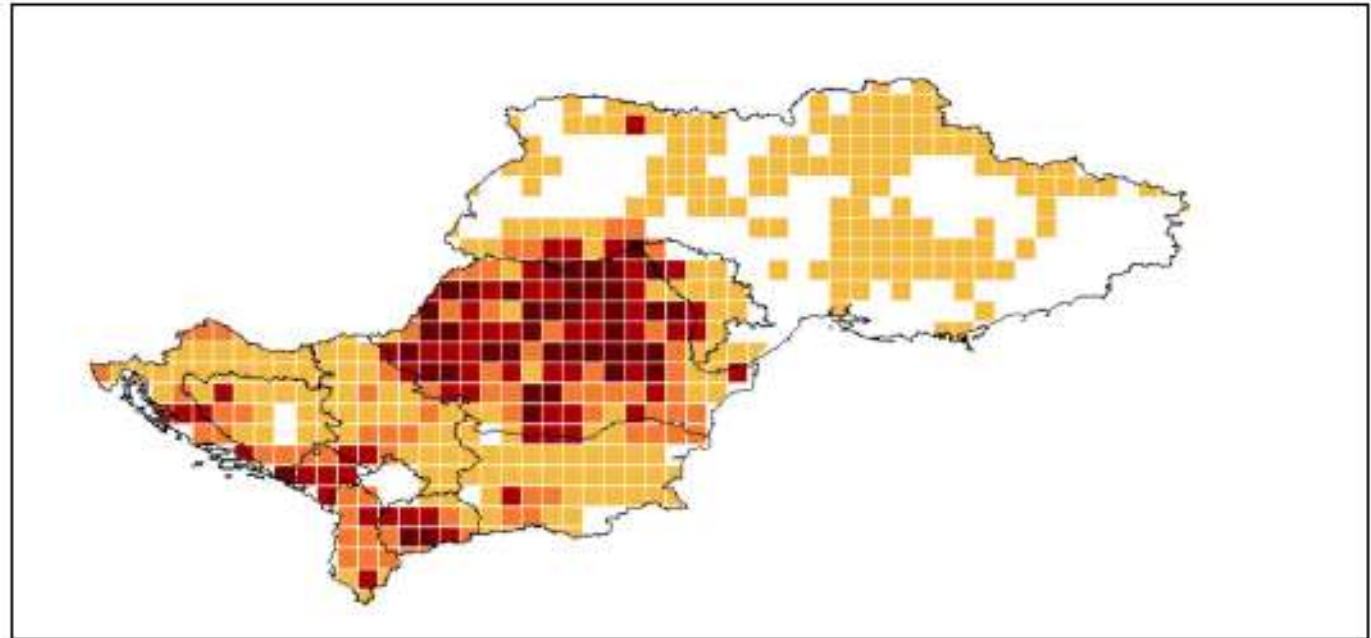
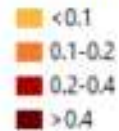


# Early risk identification



Analyses to recognize vulnerable drought “hot spots”

Cumulative Mean Annual  
Losses of GDP per capita  
growth  
(% points) (1994-2014)



Estimates of previous impacts can guide prioritization of interventions by identifying where economic losses are likely to be the highest when the “next” drought hits.

# Prioritizing interventions

## Drought risk and resilience assessment



Block I: "Bottom-up" country reality check. Readiness for the exercise

1 CMU –LEVEL MULTI-GP COORDINATION SETTINGS ASSESSMENT

2 DONORS COORDINATION SETTINGS ASSESSMENT

3 CLIENT MULTI-SECTORAL COORDINATION SETTINGS ASSESSMENT

Block II: Characterizing and monitoring the drought in the country/region

4 CURRENT/RECENT DROUGHT HAZARD CHARACTERIZATION  
(situated within the historical context)

5 MAIN TRENDS OF FUTURE DROUGHT HAZARD CHARACTERIZATION

Block III: Assessing impacts, vulnerabilities, and drought risks in the country/region

6 CURRENT/RECENT DROUGHT IMPACT ASSESSMENT

7 VULNERABILITY ASSESSMENT

8 OVERALL DROUGHT RISK ASSESSMENT

Block IV: Characterization of the current response and preparedness in the country/region

9 CURRENT DROUGHT RESPONSE  
STRENGTHS AND WEAKNESSES ASSESSMENT

10 CURRENT DROUGHT PREPAREDNESS  
STRENGTHS AND WEAKNESSES ASSESSMENT

Block V: Prioritizing amongst potential investments in the country/region

11 DROUGHT RISK MANAGEMENT UPGRADES –  
EVALUATION OF OPPORTUNITIES AND NEEDS

Aligned with Menu of Investments

- During or in the wake of a drought event, more rapid diagnostics can be applied, but must also look at how to build proactive mechanisms for future droughts
- Mechanism for coordination and collaboration around developing drought operations
- Incorporation of different tools, methodologies, and expertise that can be combined to address each of the components of the assessment
- Approach for more systematically evaluating across drought related investment options → identification of where investments are most needed.
- Cross-GP solutions are Paramount → linkage with investments



# Example of a Drought Operation: Angola – From Drought Risk and Resilience Assessment to Investments



Initial drought risk assessment and analysis of opportunities for water resources development to build resilience: ASA (early 2019)

Publication



- 1) Mapping & characterization of drought impacts and vulnerabilities in the communes, including water access
- 2) Assessment of water resources available to be mobilized, to target investments

- A- Identification of main vulnerabilities:
- Lack of basic infrastructure, lack of safe water, lack of storage.
  - No monitoring of the status and water use of water points. No information sharing
  - Lack of governance and human and financial capacity
- B- Identification of priority communes in the region (high risk)

Making Drought Resilience and Water Security in the South of Angola Happen: ASA (2020-present)

Prioritizing and targeting nature-Based Solutions

Assessment of management of water points

Articulation of municipal water plans and drought contingency plans

NEW WORLD BANK PROJECT 450M. USD (2022) → RECLIMA PROJECT

# Example of a Drought Operation: Angola – From Drought Risk and Resilience Assessment to Investments

## RECLIMA PROJECT



**Strengthening climate-resilient water resources management. Supports central and basin institutions to achieve climate preparedness while improving WRM**

### Proposed Project Outputs & Outcomes

**Adaptation to climate change is increased through resilience-building activities**

- Communities have higher capacity to manage WASH
- Relevant players have robust **monitoring systems** and can adequately support rural areas
- **Municipalities & Provinces have a stronger capacity** to prepare and respond to climate events, including having in place preparedness and drought emergency and disaster response programs.

**Rural water supply systems in the south of Angola are strengthened to withstand drought and a community-level infrastructure program is developed.**

- **RBMPs** updated
- **Improved capacity of River Basin Agencies**, that will coordinate drought monitoring and preparedness, and flood and drought emergency and disaster response programs
- Monitoring of water resources is carried out systematically and decisions are based on monitoring data and subsequently operationalized
- Groundwater studies conducted inform water availability and vulnerability
- A community-level **infrastructure program** is established
- An analytical approach for storage investments is developed

### PROJECT OUTCOMES

Increased data-driven decision making to fight drought

Systematic monitoring of drought and other climatic events and integrated plans developed and/or endorsed: Municipal Water Plan & Basin Plans

### Project Development Objective:

Improve WASH services and water resources development in targeted areas and strengthen the institutional capacity for drought resilience in the water sector.



# THANK YOU!



**WORLD BANK GROUP**

Water Global Practice

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