



WORLD  
METEOROLOGICAL  
ORGANIZATION

# Pillar 2. Vulnerability assessment and impact

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E-nugget – 7<sup>th</sup> July 2020

Thematic area: Integrated Drought Management

*Building Forward Better Initiative*

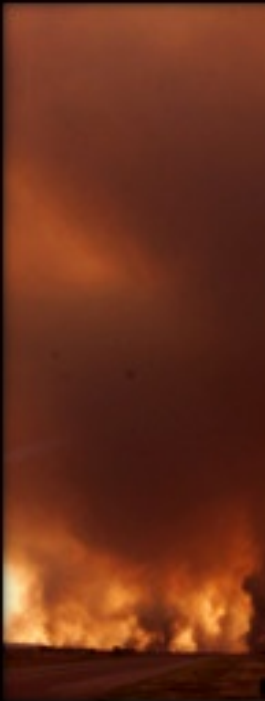
*Project “Strengthening natural resources management capacities to revitalize agriculture in fragile contexts”*



# Changes in Societal Vulnerability

Drought impacts are complex with economic sectors affected and interlinked, creating more conflicts between water users

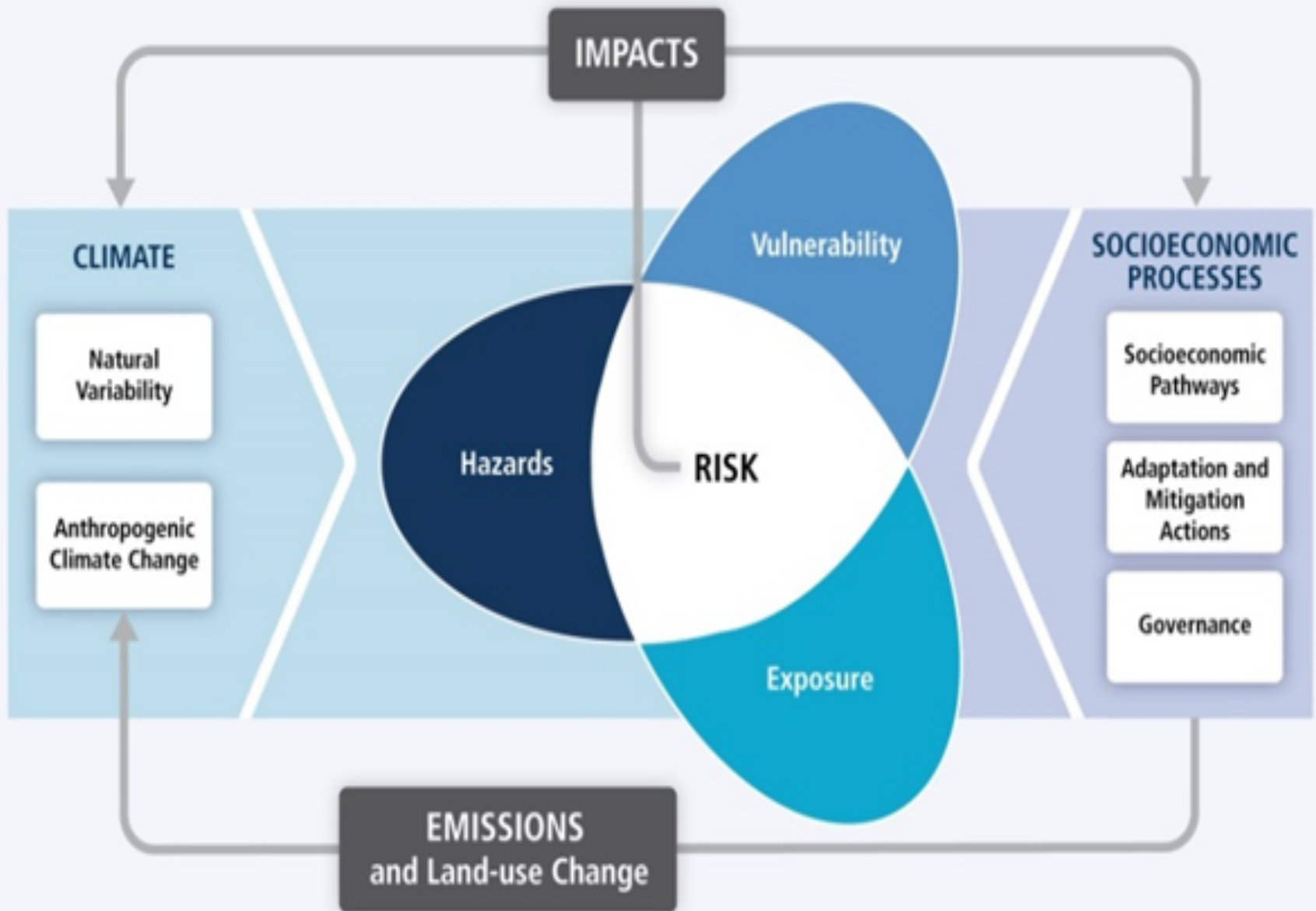
- Agricultural production
- Food security
- Energy
- Transportation
- Tourism/Recreation
- Forest/rangeland fires
- Municipal water
- Water quality/quantity
- Environment
- Ecosystem services
- Health



# Characterizing Vulnerability

- ▶ **Vulnerability** refers to the inability to withstand the effects of a hostile environment (drought).
- ▶ Vulnerability is the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard (**Resilience**)
- ▶ Vulnerability is dynamic.
- ▶ Vulnerability arises when people are at risk through their exposure to a shock or stress associated with a natural hazard.
- ▶ People, sectors, communities and institutions differ in their exposure and vulnerability to risk (coping capacity).





Source: IPCC, SREX 2013

# Addressing Vulnerability

- ▶ To determine people's vulnerability, two questions need to be asked:
  - ▶ **Who and what is vulnerable?**
  - ▶ **Why are they vulnerable?**
- ▶ Addressing vulnerability requires:
  - ▶ reducing the impact of the hazard itself where possible (through **mitigation, prediction and early warning, preparedness, education, etc.**);
  - ▶ **building capacity** to withstand and cope with hazards;
  - ▶ tackling the **root causes of vulnerability**,

# Risk Assessment: Purpose

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- ▶ To identify those sectors, population groups, or regions most at risk from drought, most probable impacts, and mitigation actions that will reduce impacts to future events.



**Who and what is at risk and why?**

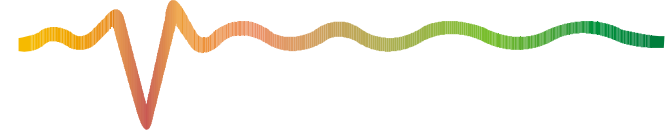
**Vulnerability Profile**

# Why Monitor Drought Impacts?



- ➔ Impacts are becoming more **complex**
  - ➔ Agriculture, energy production, transportation, tourism and recreation, forest and wild land fires, urban water supply, environment and human health
- ➔ **Conflicts** between water users increasing
- ➔ To know where to **direct** relief
- ➔ Officials tend to **underestimate** drought impacts
- ➔ To **justify** mitigation actions, officials need quantitative impact information

# Drought Impact Reporter

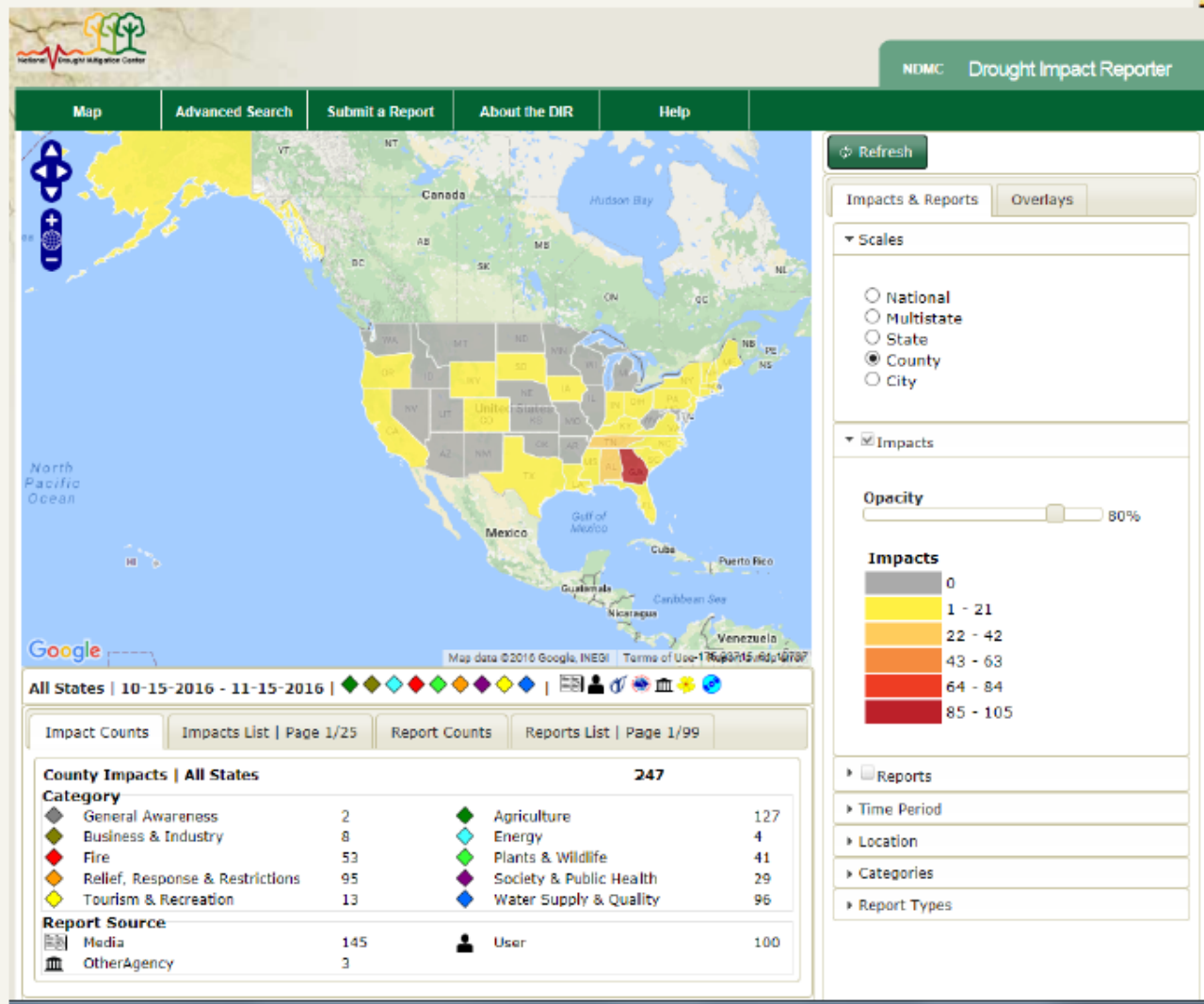


- ➔ **Went live in July 2005**  
<http://droughtreporter.unl.edu>
- ➔ **Web-based** (GIS architecture) package of products and **interactive** features
- ➔ Ability to incorporate **user**-supplied **input** and information/**feedback** (all levels)
- ➔ 14,000 impacts collected, categorized



# Drought Impact Reporter (DIR):

- On-line since **2005**
- **42,000+** media reports and **21,000+** impacts in our database to date and growing
- Establishing a **"baseline"** of impacts due to droughts over time
  - "Face of drought"
  - Risk/vulnerability
  - Climate change
- **Ground truth** indices/RS
- Quantitative **AND** qualitative
- Direct **AND** Indirect



NDMC Drought Impact Reporter

Map Advanced Search Submit a Report About the DIR Help

Refresh

Impacts & Reports Overlays

Scales

- National
- Multistate
- State
- County
- City

Impacts

Opacity 80%

Impacts

- 0
- 1 - 21
- 22 - 42
- 43 - 63
- 64 - 84
- 85 - 105

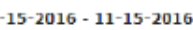


Reports

Time Period

Location














Categories

Report Types

All States | 10-15-2016 - 11-15-2016 |  |  | 

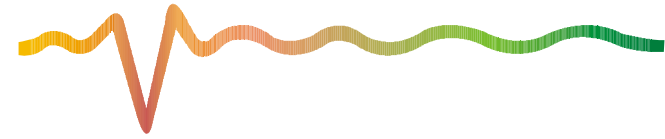
Impact Counts Impacts List | Page 1/25 Report Counts Reports List | Page 1/99

County Impacts | All States **247**

Category			
	General Awareness	2	 Agriculture
	Business & Industry	8	 Energy
	Fire	53	 Plants & Wildlife
	Relief, Response & Restrictions	95	 Society & Public Health
	Tourism & Recreation	13	 Water Supply & Quality
<b>Report Source</b>			
	Media	145	 User
	Other Agency	3	



# Reporter Challenges



- ▶ Identifying and validating sources of information
  - ▶ Fostering user input
  - ▶ Strengthening partnerships
- ▶ How to best organize/categorize information (e.g., by sector, local vs. regional, basins, etc.)
- ▶ Positive impacts
- ▶ Drought impacts and “citizen science” or “participatory science”



# DROUGHT TOOLBOX

Test Lorem etc.

With more text and links, that is the introduction to the toolbox

[> Read more](#)

[Development of national drought plans](#)

[Training, capacity, building, upscaling](#)

[About](#)

## UPDATES

[Sample news #1](#)

[Go to archive »](#)

## The UNCCD Drought Toolbox

DROUGHT  
Monitoring  
and Early  
Warning

Introduction

DROUGHT  
Vulnerability  
and Risk  
Assessment

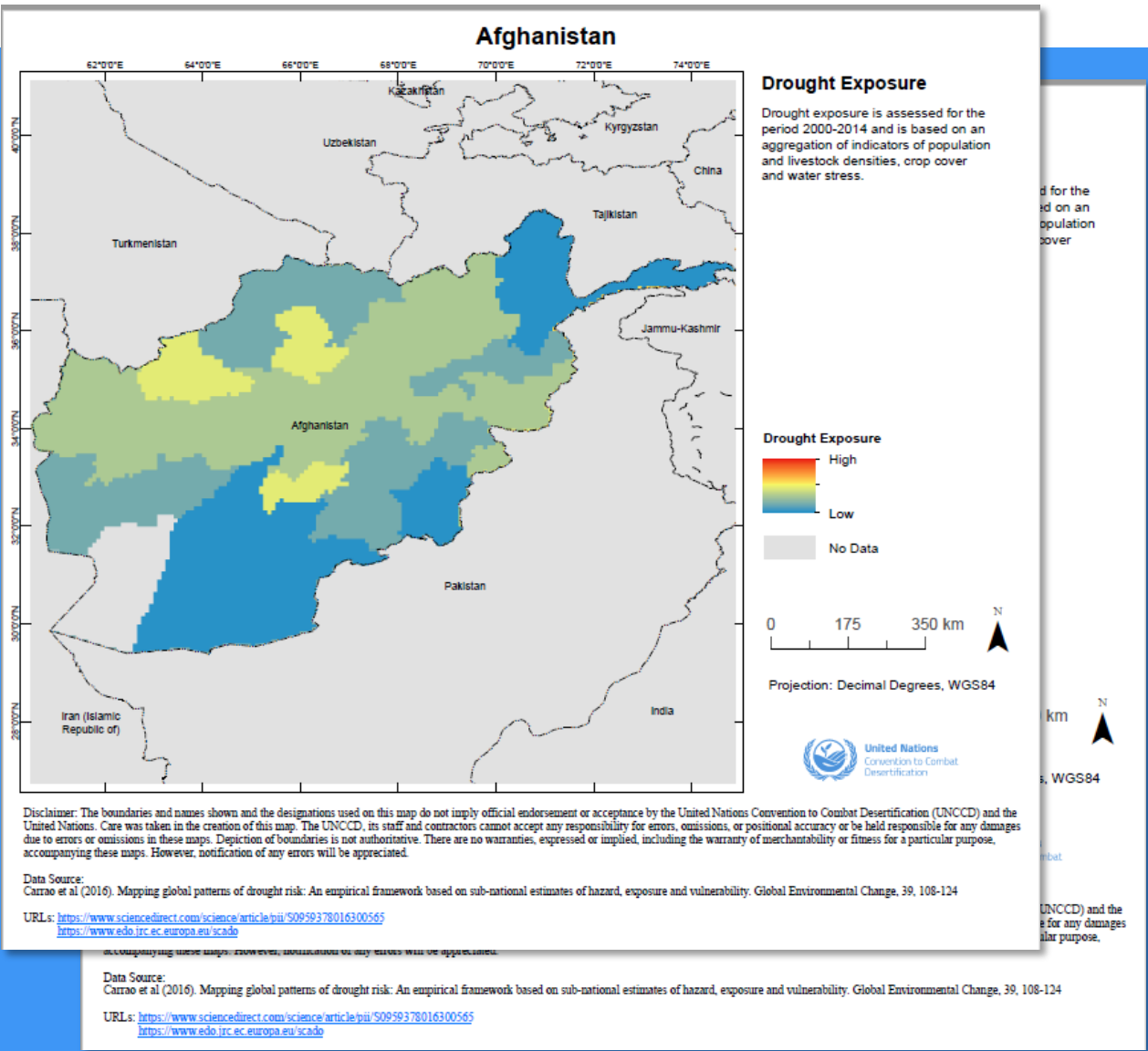
Introduction

DROUGHT  
Risk  
Mitigation

Introduction



# Pillar 2: Drought Risk assessment



Drought risk mapping tool will be available in the UNCCD Drought Toolbox.

Based on drought risk assessment as completed by the Joint Research Centre of the European Commission, applicable for 2000-2014.



# Drought Assessment Visualization

## FILTER

### Country

Ghana

### Indicators

Show

#### Risk

Search box for indicators

Select indicator

Hazard

Exposure

Vulnerability

Risk

NOTE: Background map, not associated with UNCCD data

### Toolbars

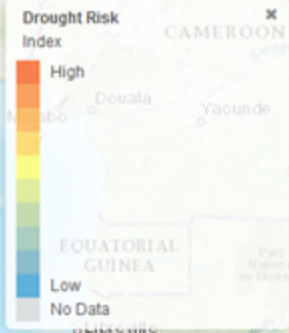
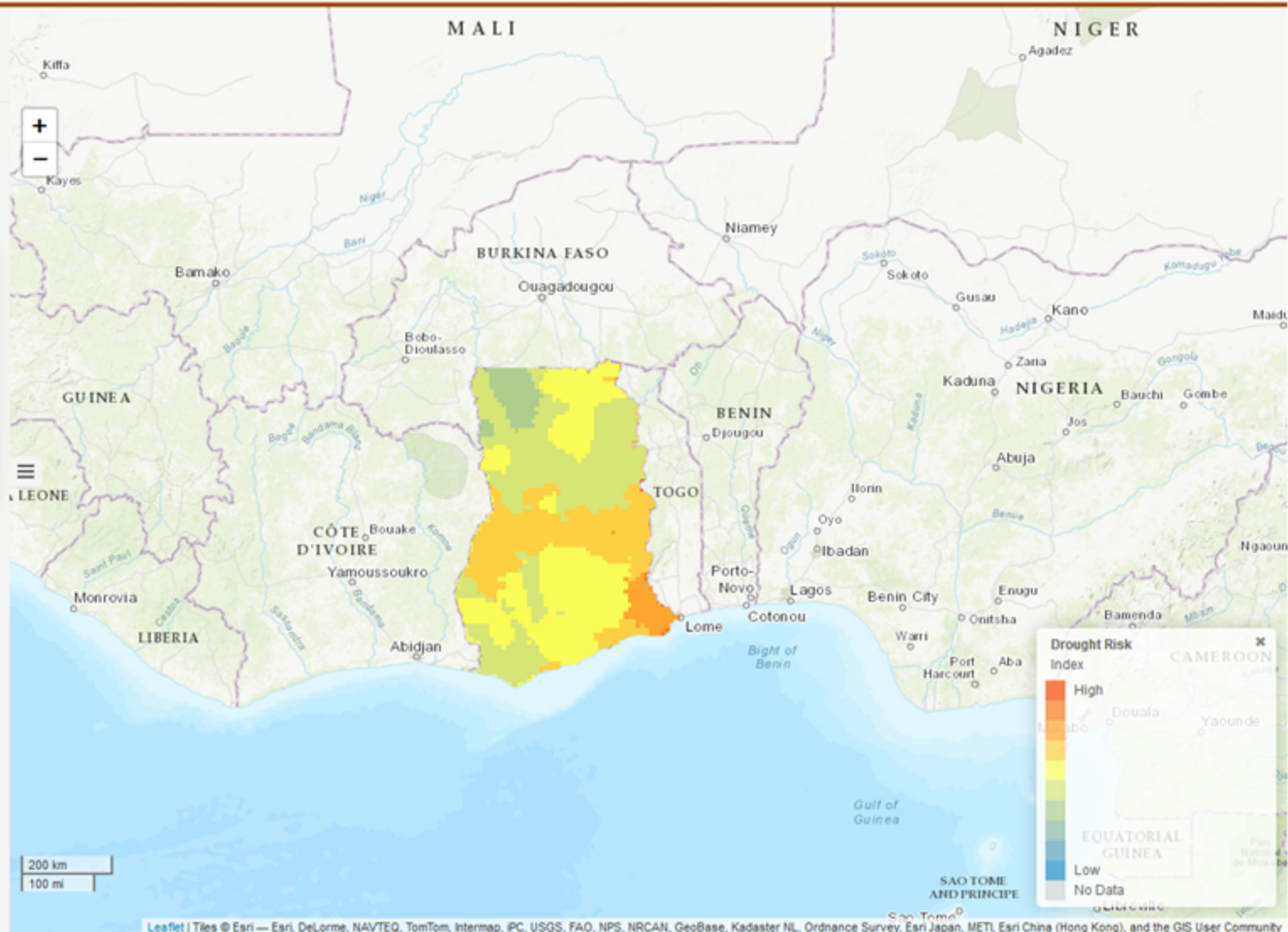
Map

Metadata

Legend

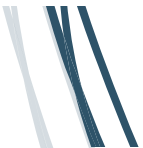
Disclaimer

Help



# Needed Actions for Change: Reducing Societal Vulnerability

- Improve **drought awareness**
- Develop/improve monitoring, seasonal forecasts, early warning and **information delivery** systems
- Improve **decision support** tools
- Complete **risk assessments** of vulnerable sectors, population groups, regions
- Improve understanding and quantification of **drought impacts vs. mitigation costs (4:1 ratio)**
- Develop and implement **drought preparedness plans**
- Create **national drought policies** based on the principles of risk reduction



# Questions?

Get in touch: **Integrated Drought Management Helpdesk**

The image shows three interactive cards arranged horizontally. Each card has a title in an orange box, a central icon, a description in a white box, and a small orange plus sign in the bottom right corner. The first card, 'Ask', is highlighted with a blue border and contains icons of a question mark and an information 'i' in speech bubbles. The second card, 'Find', features a magnifying glass icon. The third card, 'Connect', shows a circular arrangement of stylized human figures holding hands.

Ask	Find	Connect
Ask for assistance on integrated drought management	Find knowledge resources on integrated drought management	Learn about the activities of IDMP and connect to them

[www.DroughtManagement.info](http://www.DroughtManagement.info)

[idmp@wmo.int](mailto:idmp@wmo.int)  
[rstefanski@wmo.int](mailto:rstefanski@wmo.int)  
[kehlert@wmo.int](mailto:kehlert@wmo.int)