



Food and Agriculture  
Organization of the  
United Nations

GLOBAL  
SYMPOSIUM on  
**SOILS and WATER**

02-05 October, 2023

Soil and water:  
a source of life

**Integrated soil and water management  
and effective governance**

Vera Boerger

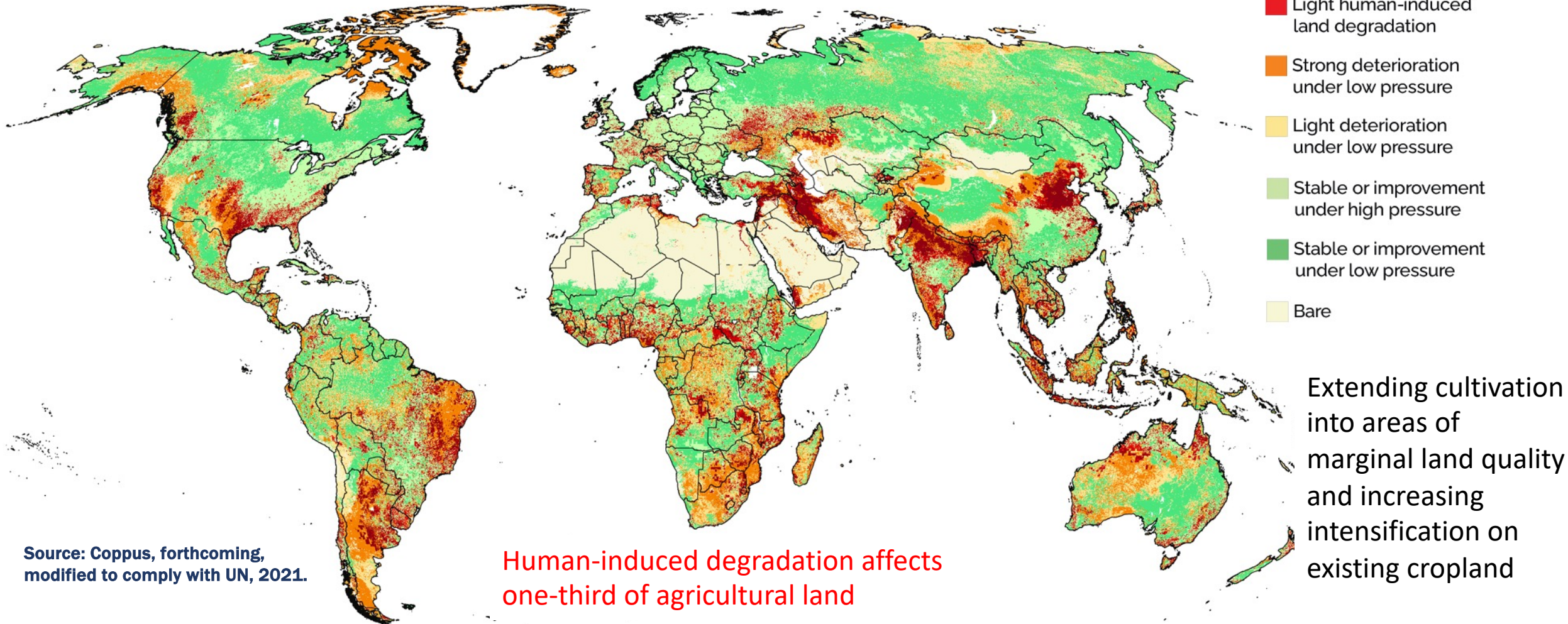
Senior Land and Water Officer

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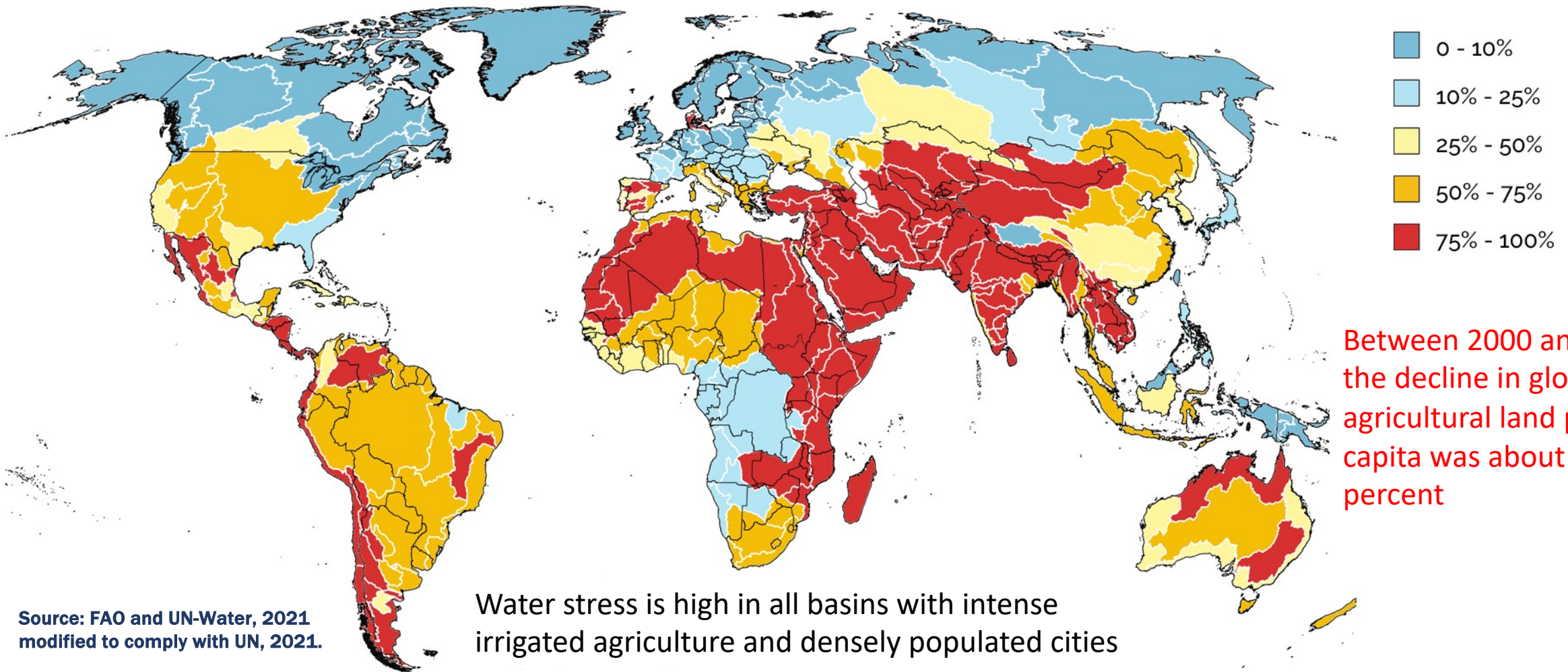
# The State: The interconnected systems of land, soil and water are stretched to the limit

## Land-degradation classes based on severity of human-induced pressures and deteriorating trends, 2015



# The State: Current patterns of agricultural intensification are not proving sustainable

## Level of water stress due to the agricultural sector by basin, 2018



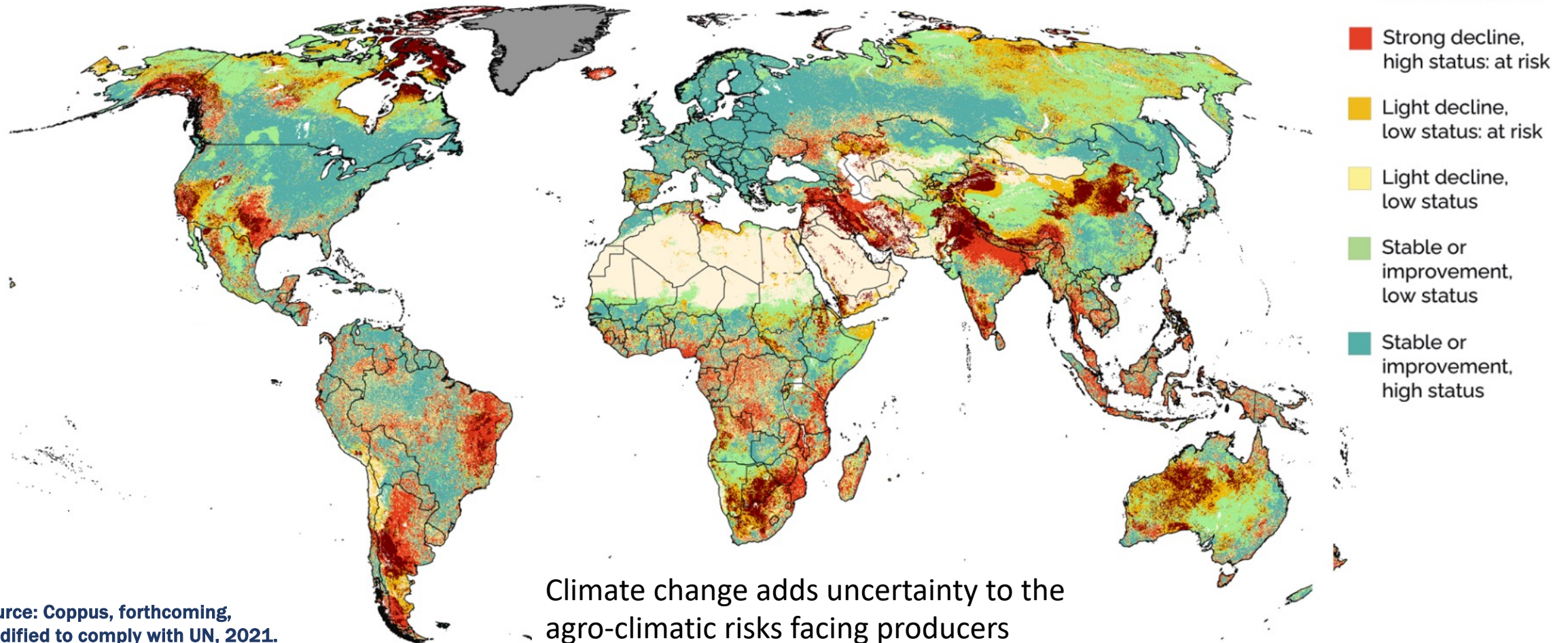
Between 2000 and 2018, the decline in global agricultural land per capita was about 20 percent

Source: FAO and UN-Water, 2021  
modified to comply with UN, 2021.

Water stress is high in all basins with intense irrigated agriculture and densely populated cities

# The Challenge: Future agricultural production will depend upon managing the risks to land and water

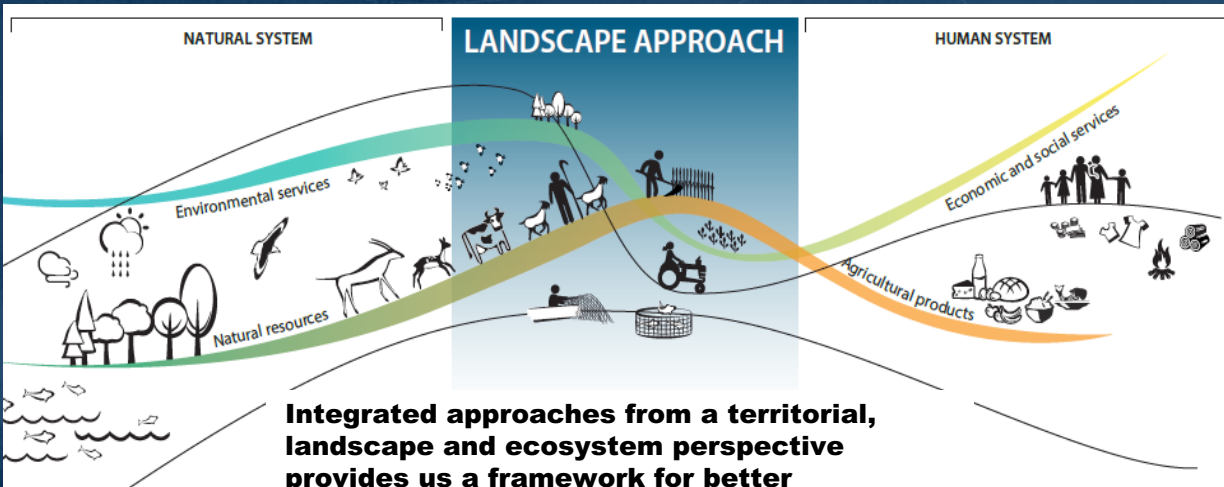
## Regions at risk based on status and trends of land resources, 2015



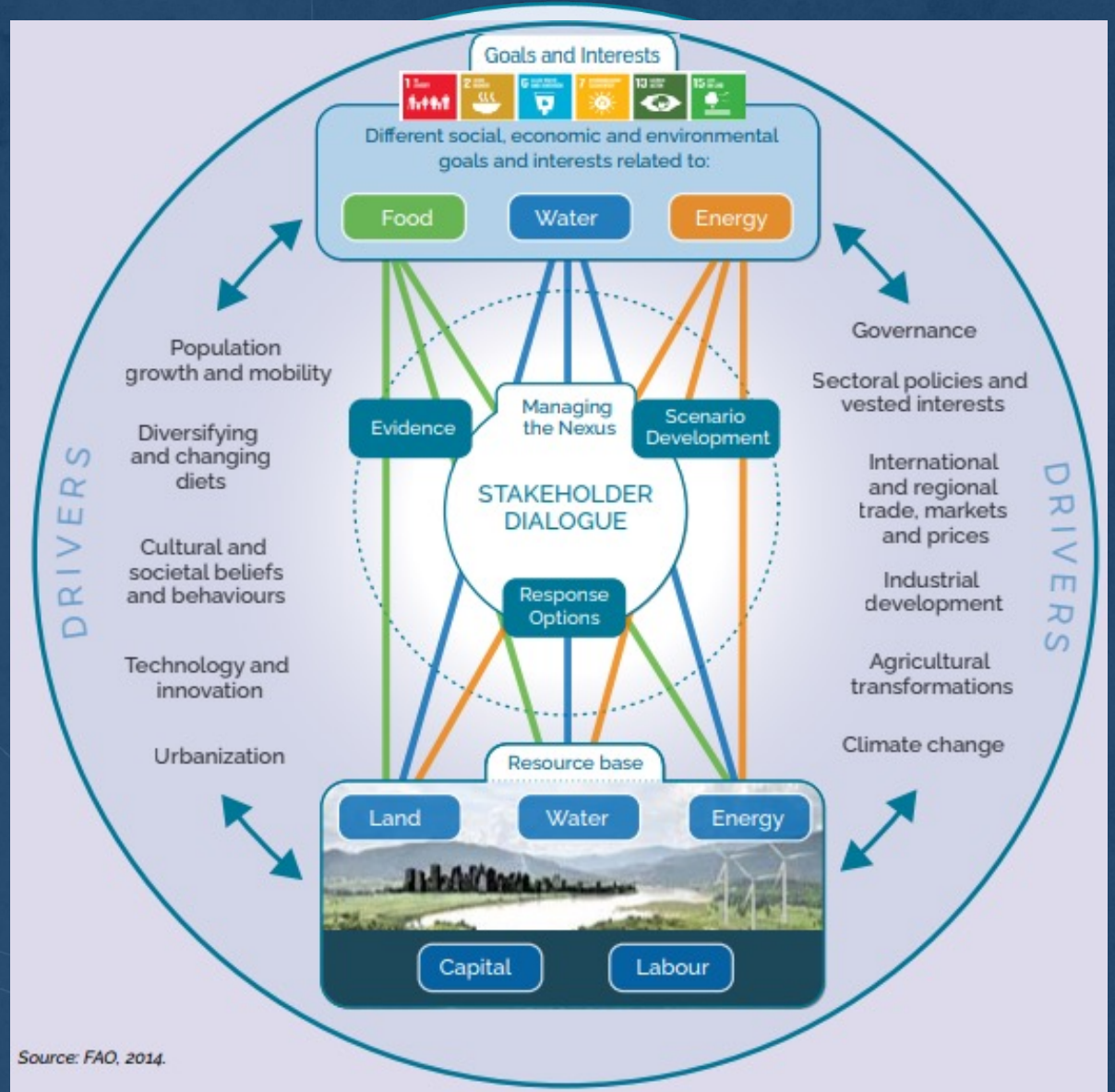
Source: Coppus, forthcoming, modified to comply with UN, 2021.

Climate change adds uncertainty to the agro-climatic risks facing producers

# The responses: integrated solutions need to be planned and implemented at all levels



**Integrated approaches from a territorial, landscape and ecosystem perspective provides us a framework for better understanding complex issues, and also, how to resolve them from a multisectoral perspective, integrating the natural, climate, economic and institutional perspectives.**

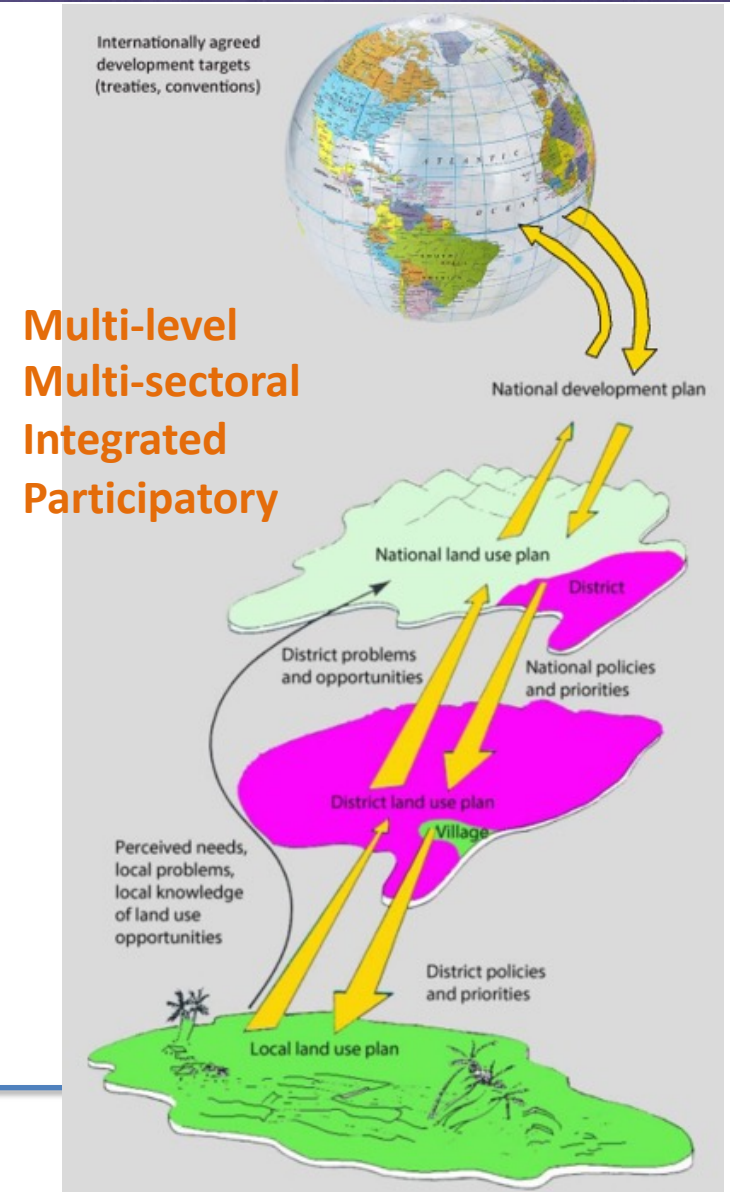
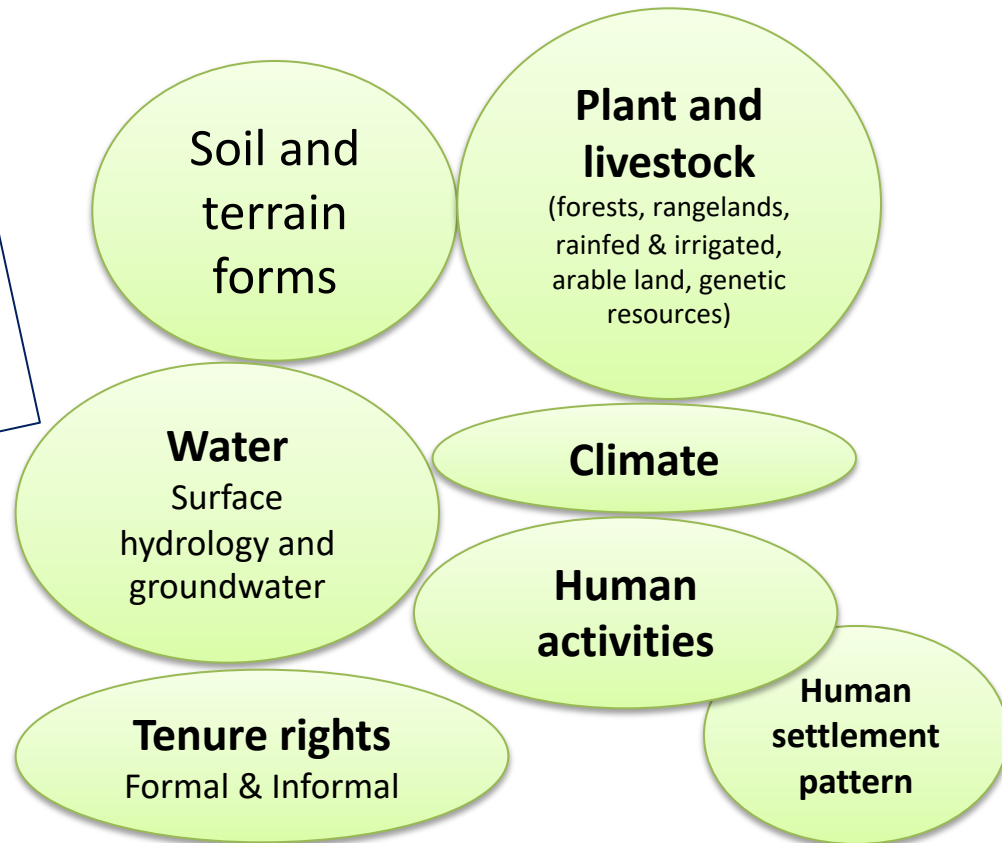


Source: FAO, 2014.

# The Responses: ILUP to answer the question: What is the best use and management for any land?

Land incorporates:

Because we all use the land resources everybody should be concerned about land use planning



# Integrated Land Use Planning for sustainable use of land and water resources



**Control flow and better management and use of land and water resources**

Promote infiltration, regulate flows, increase water points for domestic and productive uses, improve water quality, increase energy production, reduce damage due to runoff, etc..



## Watershed



### FORESTS:

soil protection, avoid erosion, protect springs, improve infiltration

### SUSTAINABLE LAND MANAGEMENT:

Agroforestry, Rotational systems, improved ground,/vegetation cover, Integrated soil fertility management, conservation agricultura, slope protection like contour lines or terraces

### SUSTAINABLE WATER MANAGEMENT:

Ground water management, water harvesting, wetland protection, water reuse, improved irrigation, efficient wáter use

# The Responses: Sustainable soil management as a response to water scarcity

Meeting food security targets requires sustainable agricultural policies that ensure improved soil quality and water retention.

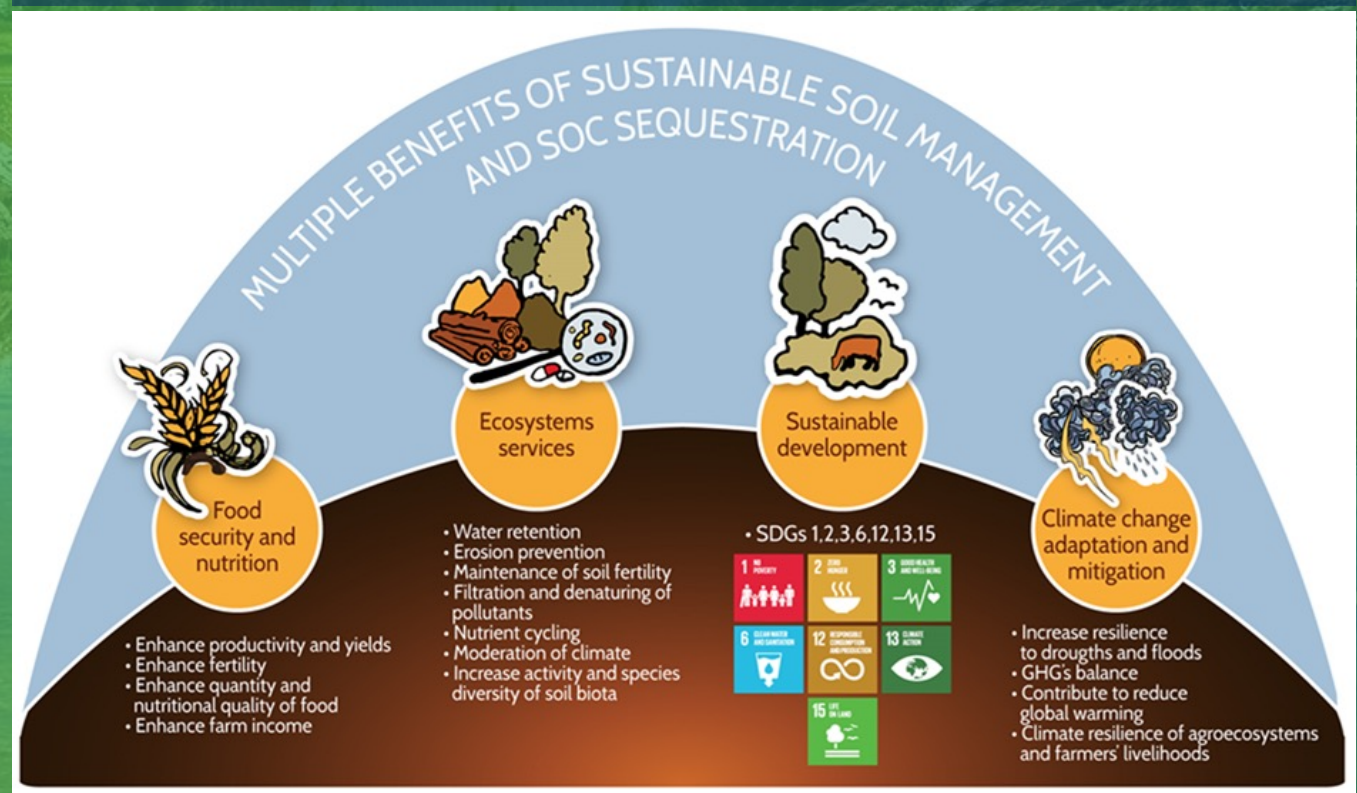
## Improving soil moisture

Many sustainable agricultural and land management practices can improve soil moisture retention:

- Residue covers, cover crops and mulching
- Conservation agriculture
- Knowledge-based precision irrigation
- Conservation tillage
- Capture of runoff from adjacent lands
- Efficient use of water, reduced use of pesticides and improvements in soil health can lead to average crop yield increases of **79%** ↑
- Zero-tillage
- Rainwater harvesting

In response to the increasing occurrence of erratic and violent rainfall events and with less blue water (the water stored in rivers, lakes and reservoirs) available, the practice of sustainable soil management is the key to increase green water use efficiency and to achieve resilience

The implementation of sustainable soil management practices focused on SOC sequestration can restore soil health and enhance the main soil functions and ecosystem services, including water retention, regulation of floods, and the purification of water from contaminants





**The responses: Farmers need to be equipped with the right information and tools to sustainably use and manage land, soil and water**



**The responses: agricultural support and investment can be redirected towards social and environmental gains derived from land and water management.**



# The responses: Land and water governance has to be more inclusive, adaptive and effective.



GUATEMALA  
Organización de las Naciones Unidas para la Alimentación y la Agricultura  
"PROGRAMA FORTALECIMIENTO RESILIENCIA EN EL SECO EN GUATEMALA"





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United Nations

**Over 95% of food is produced on Land  
and begins with Soils and Water.**

**Let's work together to produce more with less and safeguard  
these resources for the future.**

**Thank you !**





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