



Food and Agriculture  
Organization of the  
United Nations



SPECIAL EVENT ON THE ROAD TO THE



UN  
2023 WATER  
CONFERENCE

NEW YORK  
22-24  
MARCH  
2023

# Water, Agriculture and Food Security

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*Rome Water Dialogue, 29 November 2022, FAO Headquarters, Rome, Italy and online*

[www.fao.org/land-water](http://www.fao.org/land-water)

# Water plays a key role in sustainable development

Water is critical to our existence – we need water to drink and to grow food – and its proper management can improve society as a whole



Improved livelihoods, food security and nutrition, health and gender equality



Improved productivity, resource-use efficiency and economic growth

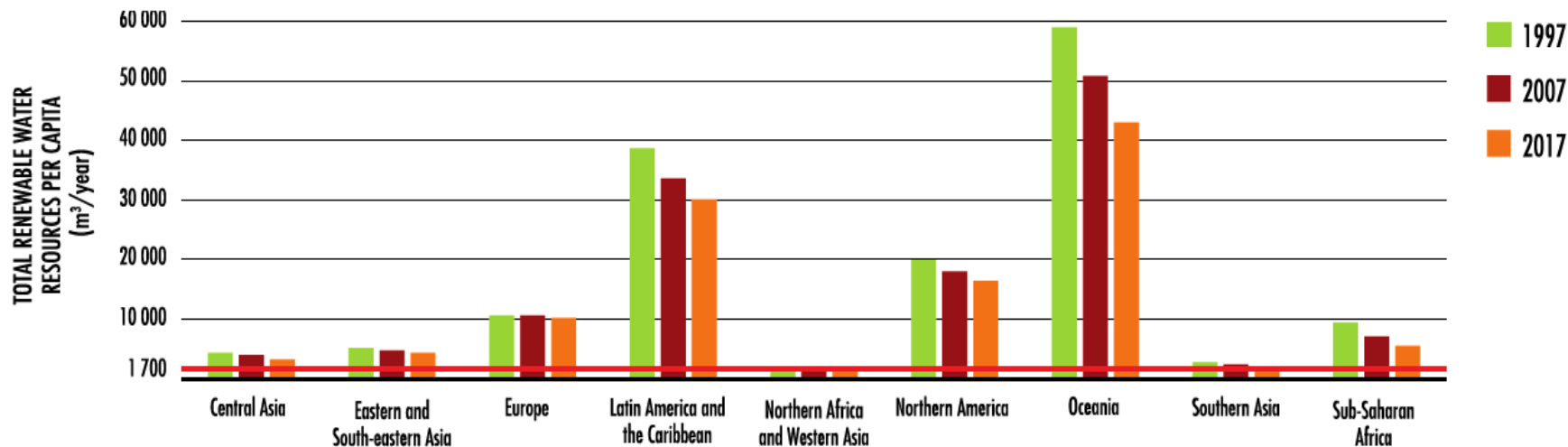


Improved environmental sustainability

# Critical water resources are under increasing pressure

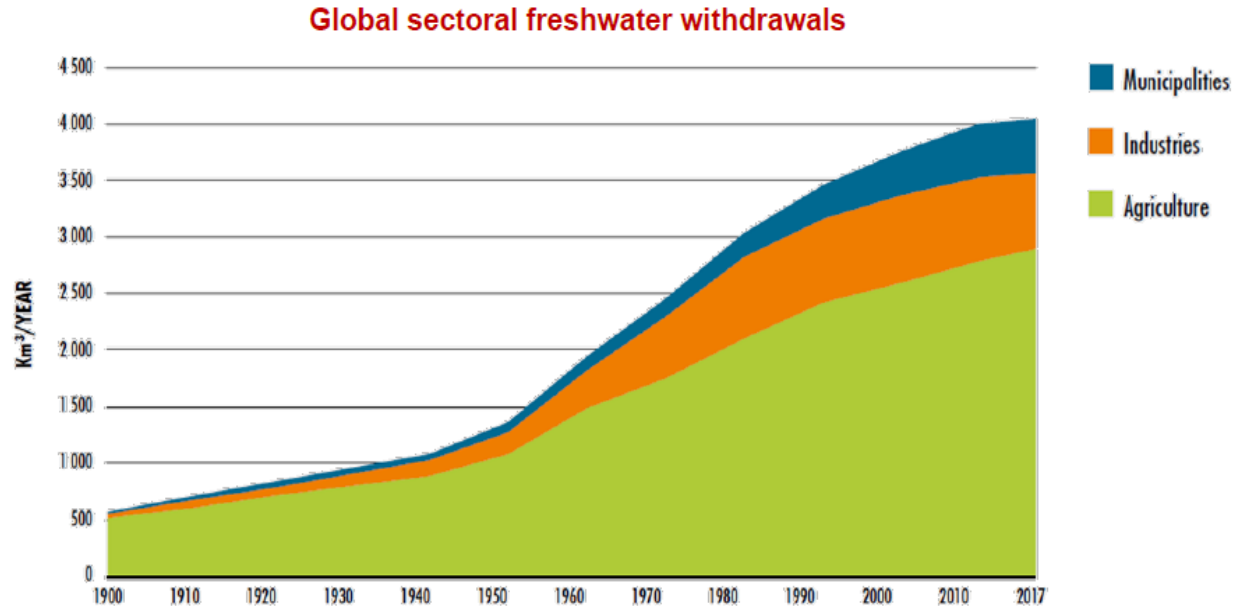
Water resources are under increasing stress owing to population growth and socio-economic development, exacerbated by climate change

Per capita renewable freshwater resources by region, 1997–2017



# Agriculture is at the centre of these challenges

With almost **3/4** of all withdrawals, agriculture holds the key for addressing these issues



## How much agricultural land is water-constrained?



**128 million hectares** (11%) of rainfed cropland experience **high to very high** severe drought frequency



**656 million hectares** (14%) of pastureland experience **high to very high** severe drought frequency



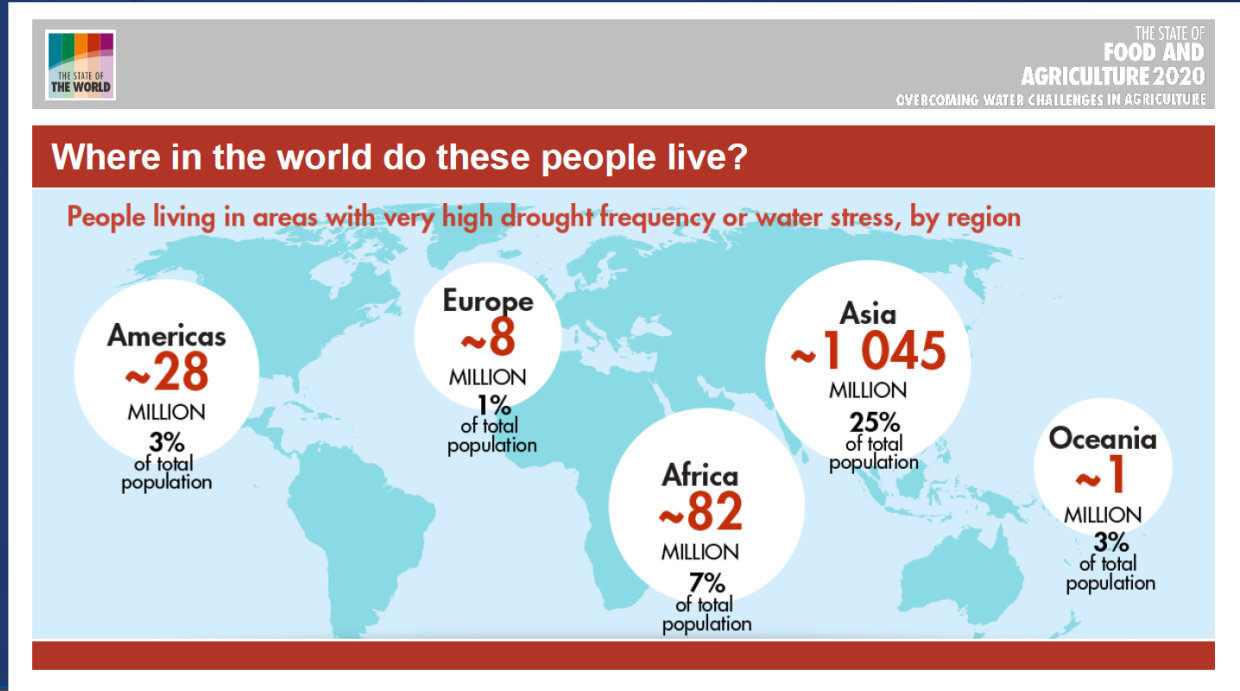
**171 million hectares** (62%) of irrigated cropland experience **high to very high** water stress

# How many people live in water constrained areas?

Estimated 2.3 bil people live in water-stressed countries, of which more than 733 mil people

– approximately 10% of the global population –

live in countries with high and critical water stress.

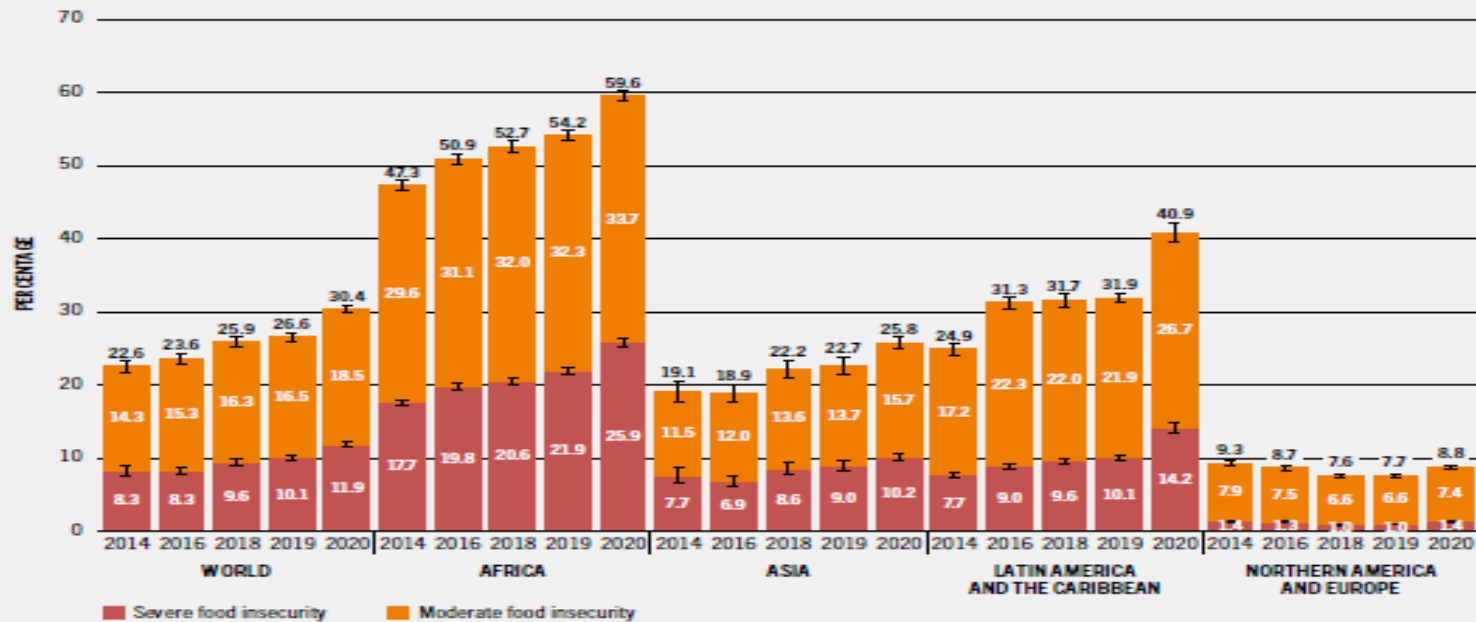


# Global Food Insecurity

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- **11.7%** of the world population is exposed to severe levels of food insecurity in 2021 ~25 million affected due to drought
- between 702-828 million people suffer from hunger in 2021
- almost 3.1 billion people could not afford a healthy diet in 2020
- estimated 22% of children under 5 yrs of age were stunted in 2020
- nearly 1 in 3 women aged 15-49 yrs were affected by anemia in 2019
- 26% of the total damage and loss caused by climate-related disasters in agricultural sector in developing countries

# Moderate to severe food insecurity climbing for 6 yrs affecting more than 30% of the world's population



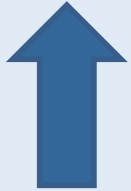
NOTES: Differences in totals are due to rounding of figures to the nearest decimal point.  
SOURCE: FAO.



# Climate change - challenges for water, agriculture and food security

Climate change has both direct and indirect effects on agricultural productivity and water resources, thus affecting food security

## EFFECTS OF CLIMATE CHANGE



### INCREASE

Extreme climatic events  
Pests & diseases  
Temperatures



### DECREASE

Water resources  
Arable land  
Biodiversity

## IMPACTS ON WATER AND AGRICULTURE

less water available for crop production

changes in soil moisture, temperature and rainfall predictability

loss of soil fertility through erosion of top soil

heat stress on plants

changes in height of water table

salinization of freshwater aquifer, and loss of productive land

# Policy and institutional priorities depend on production system



Upgrading **rainfed cropland** may involve water-harvesting and conserving techniques, combined with best agronomic practices



In **pasturelands**, better use of feed and drinking water, and improved animal health can save water, while early warning systems help prepare for drought



Rehabilitating and modernizing **irrigation** can reduce water consumption if preceded by water accounting and auditing, along with effective and equitable water allocation



Protecting **inland fisheries & aquaculture** requires regulating environmental flows and water quality and integrated solutions (e.g. aquaculture–crop systems)

# Future Perspectives

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- Agricultural production needs to grow globally by 50% by 2050 which needs 35% more freshwater withdraw (under current productive level)
- Improve water use efficiency and sustainable allocation to agriculture

# Conclusions

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- **Cross-sectoral coordination and policy coherence are essential in managing water resources across all levels**
- **Agriculture plays a key role in realizing and accelerating integrated water resources management to meet multiple SDGs**
- **Scaling up support for implementing water actions for food security and climate resilience through agriculture water management can deliver on better production, better nutrition, better environment, and better lives**



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# Thank you for your attention

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