



Food and Agriculture
Organization of the
United Nations



FAO
virtual booth
for the **9th**

World Water Forum



9TH WORLD WATER
FORUM | DAKAR 2021



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Introduction

By 2050, the world needs to produce an estimated 50 percent more food than in 2012 to ensure global food security, and it must do so while conserving and enhancing the natural resource base. Water is a major input and environmental condition in the provision of food – from production in the field through all the steps in the supply chain. Water is also required to meet personal and household needs, for energy and industrial production, and to maintain important water-dependent ecosystems and their services. With demand and competition for water on the rise, however, the planet's water resources are under unprecedented stress due to climate change, pollution, and poor governance. Agriculture holds the key to successfully achieving the objectives and aspirations articulated in the 2030 Sustainable Development Goals, the Paris Agreement on climate change and the Post-202 Global Biodiversity Framework under finalization. It is also crucial to the livelihoods of over 500 million smallholder farmers and rural communities worldwide. Countries have identified agriculture as a major sector of intervention in their nationally determined contributions (NDC) to the mitigation of climate change, and many have placed water at the top of the list for envisaged adaptation measures.

Water in FAO's mandate

- 1.** Provide information and knowledge through the collection, analysis, interpretation and dissemination of information on water in the context of food and agriculture. FAO fosters knowledge management to improve decision-making and facilitates the timely availability of information for its member countries and partners.
- 2.** Provide legal, policy and technical advice and support, as follows:
 - Legal advisory services for the development, use and protection of freshwater resources, including national water resource legislation and legal issues related to international waters.
 - Support for the formulation, monitoring and evaluation of sustainable water resource policies and strategies and capacity development in public institutions dealing with policy issues.
 - Support for the development of technical capacities to manage agricultural water sustainably and efficiently through best practices on water use and conservation, from water sources to final uses.
- 3.** Contribute to the international water agenda, global knowledge and development as it relates to food and agriculture.
 - FAO is the lead organization in the UN system on water in the context of food and agriculture. FAO collaborates with other UN organizations and international bodies on the preparation of strategic studies, including the UN World Water Development Reports, and at forums such as the World Water Forum. FAO is an active member of UN-Water, which it chaired for two years (2008 and 2009).
- 4.** Advocate for agricultural water
 - FAO is a key partner in the implementation of the Convention on Biological Diversity, the UN Convention to Combat Desertification and the UN Framework Convention on Climate Change, all of which are directly related to agricultural water.

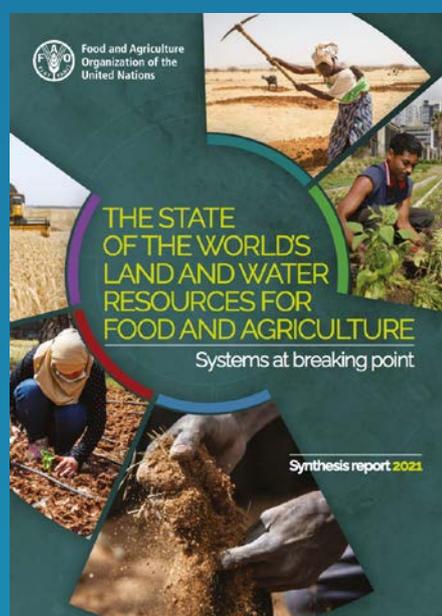
Shaped by these new challenges, FAO's works in water is responding decisively to the needs of its member countries.





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Key publications on FAO's work in water for agriculture



The State of the World's Land and Water Resources for Food and Agriculture – Systems at breaking point - SOLAW 2021



English Version: <https://www.fao.org/3/cb7654en/cb7654en.pdf>

French Version: <https://www.fao.org/3/cb7654fr/cb7654fr.pdf>

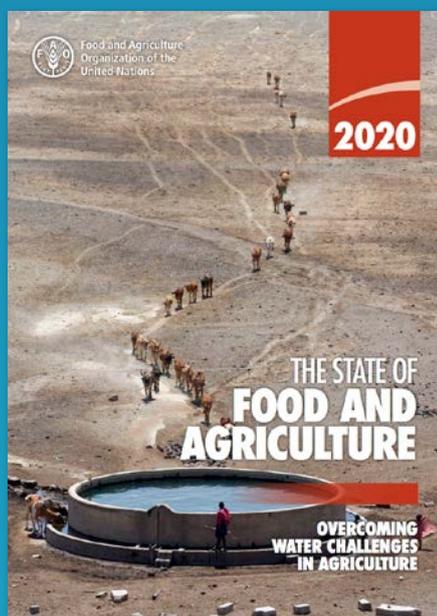
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Chinese Version: <https://www.fao.org/3/cb7654zh/cb7654zh.pdf>

Arabic Version: <https://www.fao.org/3/cb7654ar/cb7654ar.pdf>

Russian Version: <https://www.fao.org/3/cb7654ru/cb7654ru.pdf>

Digital Version: <https://www.fao.org/3/cb7654en/online/cb7654en.html>



The State of Food and Agriculture 2020



English Version: <http://www.fao.org/3/cb1447en/CB1447EN.pdf>

French Version: <http://www.fao.org/3/cb1447fr/CB1447FR.pdf>

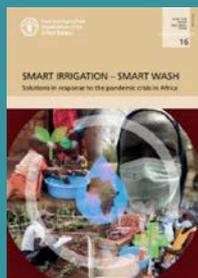
Spanish Version: <http://www.fao.org/3/cb1447es/CB1447ES.pdf>

Chinese Version: <http://www.fao.org/3/cb1447zh/CB1447ZH.pdf>

Arabic Version: <http://www.fao.org/3/cb1447ar/CB1447AR.pdf>

Russian Version: <http://www.fao.org/3/cb1447ru/CB1447RU.pdf>

WASH publications



Smart Irrigation – Smart WASH: solutions in response to the pandemic crisis in Africa

FAO Land and Water Discussion Paper 16
2020

<http://www.fao.org/3/cb1306en/CB1306EN.pdf>

Circular sanitation economies for more resilient and sustainable food systems - Future proofing agriculture systems

FAO Land and Water Discussion Paper 16
2021

<http://www.fao.org/3/cb2444en/cb2444en.pdf>



Water, sanitation, hygiene and wastewater management to prevent infections and reduce the spread of antimicrobial resistance

Technical Brief

English Version: <https://www.fao.org/3/ca9120en/ca9120en.pdf>

French Version: <https://www.fao.org/3/ca9120fr/ca9120fr.pdf>

Spanish Version: <https://www.fao.org/3/ca9120es/ca9120es.pdf>

Russian Version: <https://www.fao.org/3/ca9120ru/ca9120ru.pdf>

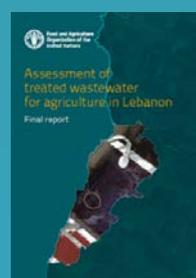
Portuguese Version: <https://www.fao.org/3/ca9120pt/ca9120pt.pdf>

Assessment of treated wastewater for agriculture in Lebanon

2016

English Version: <http://www.fao.org/3/a-i5394e.pdf>

Arabic Version: <http://www.fao.org/3/a-i5394a.pdf>



The wealth of waste - The economics of wastewater use in agriculture

FAO Water Report 35
2010

English Version: <http://www.fao.org/3/cb1306en/CB1306EN.pdf>

Spanish Version: <https://www.fao.org/3/i1629s/i1629s.pdf>

SDG 6.4.1 and 6.4.2 indicators

Change in water use efficiency over time - SDG 6.4.1 - Analysis and Interpretation of Preliminary Results in Key Regions and Countries

2019

<http://www.fao.org/3/ca5400en/CA5400EN.pdf>



Incorporating environmental flows “Water stress” indicator 6.4.2 - Guidelines for a minimum standard method for global reporting

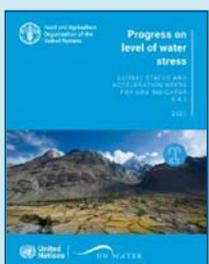
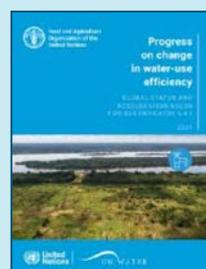
2019

<http://www.fao.org/3/ca3097en/CA3097EN.pdf>

Progress on change in water-use efficiency - Global status and acceleration needs for SDG indicator 6.4.1

2021

<http://www.fao.org/3/cb6413en/cb6413en.pdf>



Progress on level of water stress - Global status and acceleration needs for SDG indicator 6.4.2

2021

<http://www.fao.org/3/cb6241en/cb6241en.pdf>

e-Learning courses



SDG Indicator 6.4.1 - Change in water-use efficiency over time

English: <https://elearning.fao.org/course/view.php?id=475>

Arabic: <https://elearning.fao.org/course/view.php?id=792>

Spanish: <https://elearning.fao.org/course/view.php?id=761>

Russian: <https://elearning.fao.org/course/view.php?id=592>



SDG Indicator 6.4.2 Level of water stress: freshwater withdrawal in percentage of available freshwater resources

English: <https://elearning.fao.org/course/view.php?id=365>

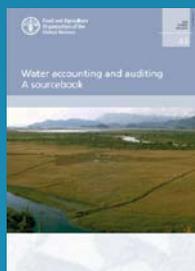
French: <https://elearning.fao.org/course/view.php?id=519>

Spanish: <https://elearning.fao.org/course/view.php?id=518>

Russian: <https://elearning.fao.org/course/view.php?id=588>

Water accounting & water productivity

Water accounting



Water accounting and auditing – A sourcebook

FAO Water Report 43
2016

English Version: <http://www.fao.org/3/a-i5923e.pdf>

French Version: <https://www.fao.org/3/i5923fr/I5923FR.pdf>

Water accounting for water governance and sustainable development

White paper
2018

<http://www.fao.org/3/I8868EN/I8868en.pdf>



Rapid Water Accounting in the Near East and Northern Africa region

Malawi site in Al Minya, Egypt:

<http://www.fao.org/3/cb4194en/cb4194en.pdf>

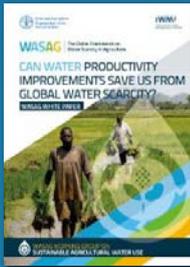
Qazvin Irrigation Network, Iran Al-Mashare', Jordan:

<https://www.fao.org/3/cb3654en/cb3654en.pdf>

Al-Moqatta', Palestine:

<https://www.fao.org/3/cb3654en/cb3654en.pdf>

Water productivity



Can water productivity improvements save us from global water scarcity?

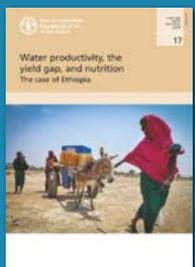
WASAG White Paper
2021

<http://www.fao.org/3/cb3896en/cb3896en.pdf>

Can water productivity improvements save use from global water scarcity?

WASAG workshop report
2021

<https://www.fao.org/3/cb3880en/cb3880en.pdf>



Water productivity, the yield gap, and nutrition

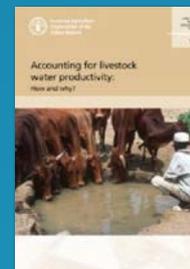
FAO Land and Water Discussion Paper 17
2021

<http://www.fao.org/3/cb3866en/cb3866en.pdf>

Accounting for livestock water productivity: How and why?

FAO Land and Water Discussion Paper 14
2021

<http://www.fao.org/3/ca7565en/ca7565en.pdf>



Guidance on realizing real water savings with crop water productivity interventions

FAO Water Report 46
2021

<https://www.fao.org/3/cb3844en/cb3844en.pdf>

The AquaCrop model: enhancing crop water productivity

FAO Water Report 47
2021

<https://www.fao.org/3/cb7392en/cb7392en.pdf>



Water productivity (continued)



Yield gap analysis of field crops - Methods and case studies

FAO Water Report 41
2014

<http://www.fao.org/3/i4695e/i4695E.pdf>

Field guide to improve crop water productivity in small-scale agriculture - The case of Burkina Faso, Morocco and Uganda

2020

<http://www.fao.org/3/ca8443en/CA8443EN.pdf>



Policy guide to improve water productivity in small-scale agriculture - The case of Burkina Faso, Morocco and Uganda

2020

<https://www.fao.org/3/ca7596en/CA7596EN.pdf>

Strengthening agricultural water efficiency and productivity on the African and global level - Status, performance and scope assessment of water harvesting in Uganda, Burkina Faso and Morocco

2016

English Version: <http://www.fao.org/3/a-i5976e.pdf>

French Version: <http://www.fao.org/3/a-i5976f.pdf>

Arabic Version: <http://www.fao.org/3/a-i5976a.pdf>



Field guide to improve water use efficiency in small-scale agriculture - The case of Burkina Faso, Morocco and Uganda

2019

<http://www.fao.org/3/ca5789en/CA5789EN.pdf>

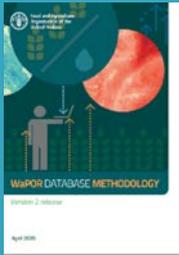
Policy guide to improve water-use efficiency in small-scale agriculture - The case of Burkina Faso, Morocco and Uganda

2019

<https://www.fao.org/3/ca7144en/ca7144en.pdf>



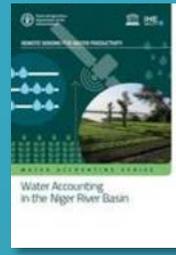
WaPOR portal: Water productivity through remote sensing



WaPOR database methodology Version 2

2020

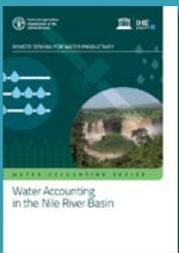
<https://www.fao.org/3/ca9894en/ca9894en.pdf>



Water Accounting in the Niger River Basin

WaPOR Water Accounting series
2020

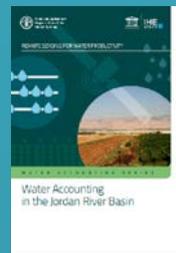
<https://www.fao.org/3/cb1274en/cb1274en.pdf>



Water accounting in the Nile River Basin

WaPOR Water Accounting series
2020

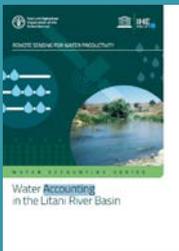
<http://www.fao.org/3/ca9895en/CA9895EN.pdf>



Water accounting in the Jordan River Basin

WaPOR Water Accounting series
2020

<http://www.fao.org/3/ca9181en/CA9181EN.pdf>



Water Accounting in the Litani River Basin

WaPOR Water Accounting series
2019

<http://www.fao.org/3/ca6679en/ca6679en.pdf>



WaPOR Capacity Development series: Stakeholder mapping and needs assessment in Koga, Ethiopia

2018

<https://www.fao.org/3/ca1202en/CA1202EN.pdf>



WaPOR and ICT

Case study
2021

<https://www.fao.org/3/cb4214en/cb4214en.pdf>

Irrigation management



Multiple uses of water services in large irrigation systems - Auditing and planning modernization - The MASSMUS Approach

FAO Irrigation and Drainage Paper 67
2013

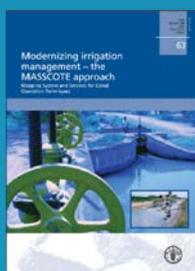
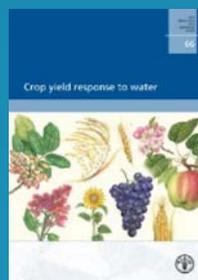
<http://www.fao.org/3/i3414e/i3414e.pdf>

Crop yield response to water

FAO Irrigation and Drainage Paper 66
2012

English version: <http://www.fao.org/3/i2800e/i2800e.pdf>

Spanish version: <https://www.fao.org/3/i2800s/i2800s.pdf>

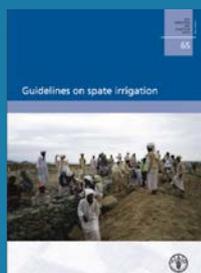


Modernizing irrigation management – the MASSCOTE approach

FAO Irrigation and Drainage Paper 66
2007

<http://www.fao.org/3/a-a1114e.pdf>

Irrigation management (continued)



Guidelines on spate irrigation

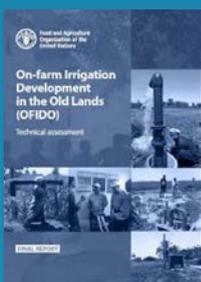
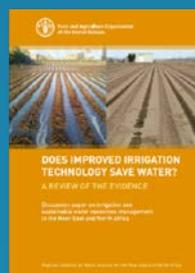
FAO Irrigation and Drainage Paper 65
2010

<http://www.fao.org/3/i1680e/i1680e.pdf>

Does improved irrigation technology save water? A review of the evidence- Discussion paper on irrigation and sustainable water resources management in the Near East and North Africa

2017

<http://www.fao.org/3/l7090EN/l7090en.pdf>



On-farm Irrigation Development Project in the Old Lands (OFIDO)

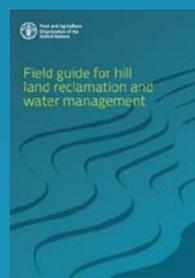
Technical assessment
2020

<http://www.fao.org/3/cb0484en/CB0484EN.pdf>

Field guide for hill land reclamation and water management

2020

<http://www.fao.org/3/ca8381en/CA8381EN.pdf>



Assessment of the water harvesting sector in Jordan

2016

<http://www.fao.org/3/a-i5390e.pdf>



Nature-based solutions and agriculture



**Nature-based solutions in agriculture:
Sustainable management and conservation of land,
water and biodiversity**

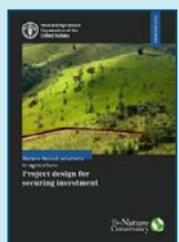
FAO and TNC
2021

<http://www.fao.org/3/cb3140en/cb3140en.pdf>

Nature-based solutions in agriculture: The case and pathway for adoption

FAO and TNC
2021

<http://www.fao.org/3/cb3141en/cb3141en.pdf>



**Nature-based solutions in agriculture:
Project design for securing investment**

FAO and TNC

<http://www.fao.org/3/cb3144en/cb3144en.pdf>

Nature-Based Solutions for agricultural water management and food security

FAO Land and Water Discussion Paper 12
2018

<http://www.fao.org/3/CA2525EN/ca2525en.pdf>





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Water management and governance



Exploring the concept of water tenure

FAO Land and Water Discussion Paper 102016

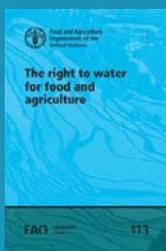
<http://www.fao.org/3/a-i5435e.pdf>

Unpacking water tenure for improved food security and sustainable development

FAO Land and Water Discussion Paper 15
2020

English version: <http://www.fao.org/3/cb1230en/CB1230EN.pdf>

Spanish version: <http://www.fao.org/3/cb1230es/cb1230es.pdf>



The right to water for food and agriculture

2020

<http://www.fao.org/3/ca8248en/CA8248EN.pdf>

**Water auditing/water governance analysis
A methodological guide**

2022

Available soon – check here for updates:

<https://www.fao.org/policy-support/governance/en/>



Water management and governance (continued)



GOBERNANZA DEL AGUA EN TERRITORIOS AGRÍCOLAS - Estudio de caso en Panamá

Subcuenca del río Candela y de la región hidrográfica Volcán-Cerro Punt
2021

<http://www.fao.org/3/cb3728es/cb3728es.pdf>

GOBERNANZA DEL AGUA EN TERRITORIOS AGRÍCOLAS - Estudio de caso en Guatemala

Microcuenca del río Los Amates
2021

<http://www.fao.org/3/cb3731es/cb3731es.pdf>



GOBERNANZA DEL AGUA EN TERRITORIOS AGRÍCOLAS - Estudio de caso en El Salvador

Microcuenca El Jute
2021

<http://www.fao.org/3/cb3733es/cb3733es.pdf>

GOBERNANZA DEL AGUA EN TERRITORIOS AGRÍCOLAS - Estudio de caso en Chile

Subcuenca del río Tinguiririca
2021

<http://www.fao.org/3/cb3617es/cb3617es.pdf>



GOBERNANZA DEL AGUA EN TERRITORIOS AGRÍCOLAS - Estudio de caso en Perú

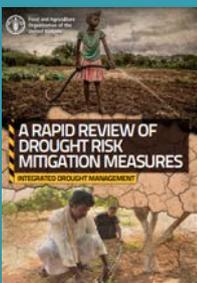
Subcuenca del río Tinguiririca
2021

<http://www.fao.org/3/cb3756es/cb3756es.pdf>



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Water scarcity, drought and climate change



**A rapid review of drought risk mitigation measures -
Integrated drought management**

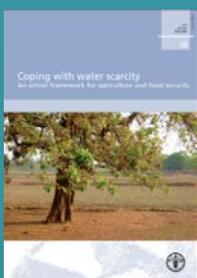
2021

<https://www.fao.org/3/cb7085en/cb7085en.pdf>

**Vers une vision maghrébine pour le renforcement de
la résilience à la sécheresse**

Policy Brief
2021

<https://www.fao.org/3/cb6399fr/cb6399fr.pdf>



**Coping with water scarcity -
An action framework for agriculture and food security**

FAO Water Report 38
2012

<http://www.fao.org/3/i3015e/i3015e.pdf>

Water scarcity, drought and climate change (continued)



Drought Characteristics and management in North Africa and the Near East

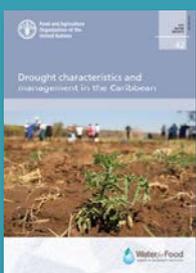
FAO Water Report 45
2018

<https://www.fao.org/3/CA0034EN/ca0034en.pdf>

Drought characterization and management in Central Asia Region and Turkey

FAO Water Report 44
2017

<http://www.fao.org/3/a-i6738e.pdf>



Drought Characteristics and Management in the Caribbean

FAO Water Report 42
2015

<http://www.fao.org/3/a-i6738e.pdf>

Water stress and human migration: a global, georeferenced review or empirical research

FAO Land and Water Discussion Paper 12
2018

<http://www.fao.org/3/I8867EN/i8867en.pdf>



Climate change, water and food security

FAO Water Report 38
2011

<http://www.fao.org/3/a-i2096e.pdf>

Water scarcity, drought and climate change (continued)



Sustainable management of freshwater resources for food security and nutrition in Small Island Developing States

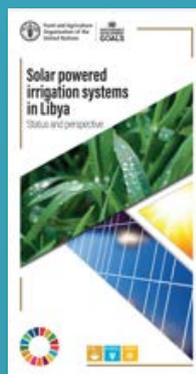
2021

<https://www.fao.org/3/cb7200en/cb7200en.pdf>

Solar powered irrigation systems in Libya - Status and perspectives

2021

<http://www.fao.org/3/cb4139en/cb4139en.pdf>



The benefits and risks of solar-powered irrigation – a global overview

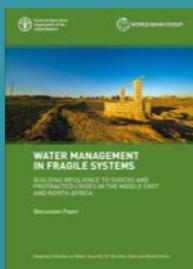
2018

<http://www.fao.org/3/i9047en/i9047EN.pdf>

Land and water governance to achieve the SDGs in fragile systems

2019

<http://www.fao.org/3/ca5172en/CA5172EN.pdf>



Water Management in Fragile Systems Building Resilience to Shocks and Protracted Crises in the Middle East and North Africa

2018

<http://www.fao.org/3/l9730EN/l9730en.pdf>



COVID-19 response



Thinking ahead drought resilience and COVID-19

WASAG Working Paper
2021

<http://www.fao.org/3/cb5547en/cb5547en.pdf>

Building forward better initiative Strengthening natural resources management capacities to revitalize agriculture in fragile contexts

E-learning Nugget Brief
2021

<https://www.fao.org/3/cb7309en/cb7309en.pdf>



Building forward better initiative Strengthening natural resources management capacities to revitalize agriculture in fragile contexts

Initiative Summary & E-learning Nugget Briefs
2020

<http://www.fao.org/3/ca9465en/ca9465en.pdf>

Videos



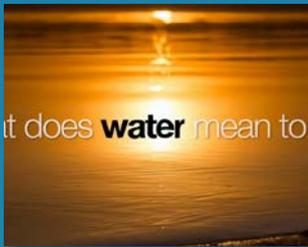
The state of the world's land and water resources for food and agriculture

<https://www.youtube.com/watch?v=g2sJVTi8Lg>



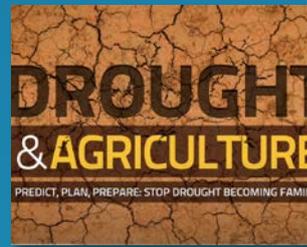
State of Food and Agriculture (SOFA) 2020: Overcoming water challenges in agriculture

<https://www.youtube.com/watch?v=o5-k0qllood4>



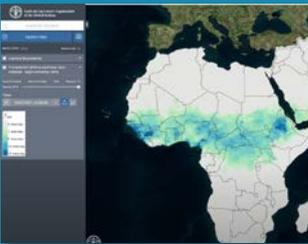
What does water mean to you?

<https://www.youtube.com/watch?v=LZ6Zldlgv2A>



Drought and agriculture - Predict, plan and prepare: Stop drought becoming famine

<https://www.youtube.com/watch?v=J5WMyDg-CHs>



The use of WaPOR data to monitor agricultural production in near real time

https://www.youtube.com/watch?v=gA_t4HuFNhM



Global Agro-Ecological Zones Version 4

<https://www.youtube.com/watch?v=gNpk8rlfO2E>



Water Tenure

English version: <https://www.youtube.com/watch?v=zdIMEm5zTAo>

French version: https://www.youtube.com/watch?v=Mhxy_wajeSY

Sinhala version: <https://www.youtube.com/watch?v=MhUyr1vM-qY>

Tamil version: https://www.youtube.com/watch?v=cs_uldtfqHo

Wolof version: <https://bit.ly/3s47rcv>

Kinyarwanda version: <https://bit.ly/32A96oU>



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Related links

FAO Sub-regional Office for West Africa
<https://www.fao.org/africa/west-africa/en/>

AQUASTAT - FAO's global water information system
<http://www.fao.org/nr/water/aquastat/main/index.stm>

Remote sensing for water productivity (WaPOR)
<http://www.fao.org/in-action/remote-sensing-for-water-productivity/en/>

AQUAmaps, spatial database on water and agriculture
<http://www.fao.org/nr/water/aquamaps/>

KnoWat – Knowing water better
<http://www.fao.org/in-action/knowat/en/>

Contact us

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