Water and Food Security for a Sustainable Future

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Overview

• FAO’s origin and mandate
• Water and Food Security
• Global Framework on Water Scarcity in Agriculture
• Droughts Preparedness
The Food and Agriculture Organization of the United Nations

- Established on 16 October 1945 in Quebec city, it is the oldest specialized agency of the United Nations:

- Our goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.

- FAO has over 194 member states and works in over 130 countries worldwide.
The 2030 Agenda for Sustainable Development

- Unanimously adopted on 25 September 2015 by the 193 Member States of the United Nations

- 17 Sustainable Development Goals (SDGs) and 169 targets

- Aim to end poverty and hunger and achieve sustainable development by 2030
FAO and the SDGs

1. No Poverty
- Almost 80% of poor people live in rural areas
- 2021: 1 billion people go hungry

2. Zero Hunger
- We produce enough food for everyone, yet about 800 million go hungry

3. Good Health and Well-Being
- Good health starts with nutrition
- Nutrition food is critical to learning
- Women produce 1/3 of the world’s food but have much less access to land

4. Quality Education
- Sustainable agriculture holds potential to address water scarcity
- Modern food systems are heavily dependent on fossil fuels

5. Gender Equality
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

6. Clean Water and Sanitation
- Agricultural growth in low-income economies can reduce poverty by half

7. Affordable and Clean Energy
- Food and Agriculture Organization of the United Nations (FAO)
- Land & Water

8. Decent Work and Economic Growth
- Partnerships help raise the voice of the hungry
- Partnership: 800 million
- Farmers contain over 80% of the world’s terrestrial biodiversity
- Fish gives 3.6 billion people 26% of animal protein
- Agriculture is key in responding to climate change
- 1/3 of the food we produce is lost or wasted

9. Industry, Innovation, and Infrastructure
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

10. Reduced Inequalities
- Land reforms can give fair access to rural land
- Sustainable agriculture holds potential to address water scarcity
- Modern food systems are heavily dependent on fossil fuels

11. Sustainable Cities and Communities
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

12. Responsible Consumption and Production
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

13. Climate Action
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

14. Life below Water
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

15. Life on Land
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

16. Peace, Justice, and Strong Institutions
- Rural investment can foster sustainable urbanization
- Land reforms can give fair access to rural land
- Agriculture accounts for 40% of GDP in developing countries

17. Partnerships for the Goals
- Rural investment can foster sustainable urbanization
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FAO Priorities

- Help eliminate hunger, food insecurity and malnutrition
- Make agriculture more productive and sustainable
- Reduce rural poverty
- Enable inclusive and efficient agricultural and food systems
- Increase the resilience of livelihoods from disasters
Today, food and agricultural systems are facing an unprecedented confluence of pressures

Population increases and requires more and better food, energy, and other agricultural products

Poverty, inequality, hunger and malnutrition are still higher in rural areas than elsewhere

Natural resources are over-exploited, degraded, and their productivity declines, biodiversity is shrinking

Climate change and volatile food prices affect vulnerable people, in particular in rural areas

As pressure on resources increase, actions in one part of the agriculture ‘system’ increasingly affect other parts
A common approach across sectors to “Making agriculture, forestry and fisheries more productive and more sustainable”

Five principles for sustainable food and agriculture

1. Improving efficiency in the use of resources is crucial to sustainable agriculture

2. Sustainability requires direct action to conserve, protect and enhance natural resources

3. Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable

4. Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture

5. Sustainable food and agriculture requires responsible and effective governance mechanisms
Changing Context, Growing Demand

- **Population**
  - World
  - Developing countries
  - Industrial countries
  - Transition countries

- **Per capita food consumption**
  - World
  - Developing countries
  - Industrial countries
  - Transition countries

Source: FAO Report on "Global Agriculture Towards 2050"
we aim to enhance the agricultural productivity and advance the sustainable use of land and water resources through their improved management, development and conservation
Agricultural Water Demand

Agriculture is responsible for an average of **70%** of water withdrawals from surface and groundwater sources worldwide.

That leaves 30% for everything else:
- Domestic
- Industries
- Electricity
- Environment

Source: Adapted from www.ceres.org/FoodWaterRisk
Global Water Demand

Evolution of Global Water Use
Withdrawal and Consumption by Sector

Note: Domestic water consumption in developed countries (500-800 litres per person per day) is about six times greater than in developing countries (60-150 litres per person per day).
4 billion people (66% of all people) lives under severe water scarcity for at least 1 month of the year. It affects all regions of the world.

Source: Mekonnen & Hoekstra, Univ. Twente, Feb 2016
From the WEF Global Risks Report (2018)

The 5 risks that will have the biggest impact in the next 10 years

<table>
<thead>
<tr>
<th>Risk</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Weapons of mass destruction</td>
<td>1</td>
</tr>
<tr>
<td>Extreme weather events</td>
<td>2</td>
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<tr>
<td>Natural disasters</td>
<td>3</td>
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<tr>
<td>Failure of climate change mitigation &amp; adaptation</td>
<td>4</td>
</tr>
<tr>
<td>Water crises</td>
<td>5</td>
</tr>
</tbody>
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Source: Global Risks Perception Survey 2017-2018, World Economic Forum
Priorities

- **Agenda 2030** and the Sustainable Development Goals 2, 6, 12, 13 and 15
- **Climate Change agenda** in agriculture: 77% of countries include water scarcity in their NDCs
- **Other country priorities** (drought management, water and migration, waste water, etc)

*Water scarcity* = an entry point to address agriculture adaptation in the context of climate change
The Global Framework on Water Scarcity in Agriculture

**October 2016**
Endorsed by the Summit of Water Ministers at the Second World Irrigation Forum in Chiang Mai, Thailand.

**November 2016**
The Global Framework on Water Scarcity was officially launched during the **UNCCC COP22** in Marrakesh, Morocco.

**January 2017**
Endorsed by 83 Ministers of Agriculture during the 9th Berlin Agriculture Ministers’ Conference at the **Global Forum for Food and Agriculture (GFFA)**, and the **G20**.

**September 2017**
Endorsed by the **UNCCD COP 13** as a knowledge-sharing partnership to help countries develop their drought preparedness plans in Ordos, China.

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WASAG Governance

50 Partners (from 20 different countries)

A functional Interim Steering Committee

Guided by the:

Rome Statement

Terms of Reference adopted by the ISC and FAO

Hosted by FAO

WASAG Support Team - Secretariat
VISION

A world whose food systems are secure and resilient to increasing water scarcity in a changing climate

MISSION

To support measurable, significant and sustainable progress on improving and adapting agricultural systems in conditions of increasing water scarcity and a changing climate, using the combined expertise and resources of the Partners
To urgently address the following important and relevant work areas at international and country levels:

- **Advocating for political prioritization.**
- Cooperating on work programmes.
- **Sharing and disseminating knowledge and experience.**
- Developing new or improved solutions.
- **Promoting sustainable and integrated water resources management.**
- Building capacity of Partners and countries and other stakeholders.
- **Contributing to consistent monitoring systems.**
Six working groups established since the 3rd ISC meeting with the aim to focus the work of WASAG on emerging issues (also for quick wins):

- Water and Migration
- Drought Preparedness
- Financing Mechanisms
- Water and Nutrition
- Sustainable Agriculture Water Use
- WASAG Communication strategy

A seventh working group on a Biosaline Agriculture is being considered.
Drought: a major threat

• Drought is a major cause of water shortage and soil erosion and has devastating impacts, especially in countries with reduced capacity to absorb the shocks

• Recurrent droughts can lead to:
  – poor soil fertility
  – reduced output, loss of livestock,
  – limited access to markets
  – a host of other constraints faced by smallholder farmers
Damage and loss in agriculture as share of total damage and loss across all sectors (2006–2016) by type of hazard

Source: FAO, based on PDNAs
Drought planning:

is defined as actions taken by individual citizens, industry, government, and others before drought occurs to mitigate impacts and conflicts arising from drought.
The cycle of disaster management

Adapted from Wilhite (1999)
Increase agricultural resilience to drought, and reduce risk, by advocating an integrated, proactive approach to drought planning, adaptation and management.

Kick-start a renewed focus on drought in relation to climate change and to scale-out upon the knowledge residing in the drought community.

Showcase examples of best practice, share knowledge and experience across the global drought community.

Encourage better links between political decision-making, technology development, and financing.
Current concerns and our 4 themes on drought

1. Integrating and aligning water and soil management strategies to maximize response to drought

2. Connecting farmers to technologies - changing threats to opportunities

3. Moving from reactive to proactive management in drought emergencies

4. Mainstreaming drought management in the context of the 2030 Agenda
Monitoring and Early Warning & Info. Delivery

Vulnerability and Impact Assessment

Mitigation and Response

3 Pillars of Drought Policy & Preparedness

- Monitoring and Early Warning & Info. Delivery
  - Drought status (meteo., hydro, agric., socio-econ.)

- Vulnerability and Impact Assessment
  - Who/What is at Risk & Why. Prioritization/Ranking

- Mitigation and Response
  - actions and measures to mitigate drought impacts and respond to drought emergencies (short-, medium- & long-term)

Feedback

Data, info for decision-making

Monitoring, Feedback
Components of Drought Plans

- Monitoring, early warning and information delivery systems
  - Integrated monitoring of key indicators
  - Use of appropriate indices
  - Development/delivery of information and decision-support tools

- Risk and impact assessment
  - Conduct of risk/vulnerability assessments
  - Monitoring/archiving of impacts

- Mitigation and response
  - Proactive measures to increase coping capacity
  - Response to drought (when it hits)
Challenges of the agricultural sector

- Growing population (mostly in cities) and changing diets
  - Need to increase and improve (nutritious) food production

- Cause and casualty of climate change and climate variability
  - Mitigation and adaptation measures required

- Increased competition for scarce resources
  - Need to improve water productivity
Water Scarcity, Agriculture, and Nutrition

WHAT IS AT STAKE?

• In 2050, diet shifts to animal and energy rich products combined with population growth will increase water demand by 55%.

• In 2016, 155 million children under five were stunted and 52 million were moderately or acutely malnourished worldwide.

• In the same year, 41 million children under five affected by overweight in 2016 and over 500 million adults affected by obesity in 2010.

• Water scarcity can lead to decreased quantity, quality and diversity of foods.

• The most vulnerable such as the youth, the poor and marginalized, especially women will be the most affected.
Small water footprint of a “healthy diet”

- **Diversity** – a wide variety of foods
- **Fresh** food - vegetables, fruits, legumes, whole grains and pulses
- **Resilient** crops that are less prone to spoilage and require less energy for storage
- **Local** production = less energy for transport and local incomes
- **Very limited consumption of processed foods** (which often coincides with foods high in fat, sugar or salt and low in micronutrients e.g. crisps, confectionery, sugary drinks)
Water Scarcity, Agriculture, and Nutrition

OPPORTUNITIES

• Arid and semi-arid areas exposed to water scarcity can provide valuable adaptation strategies.
• Controlled wastewater reuse offer good quality nutrient-rich water for agriculture.
• Diversified agricultural systems contribute to better yields and improved nutrition compared to monocultures.
• Effective water management and governance to reduce wastewater.
• Holistic approach linking water, agriculture, energy, nutrition and human health.
THANK YOU!