

# The Challenges Facing the Agriculture and Food Security in Jordan Due to Climate Change, and the Importance of a Just Transition

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# Outline

- 1 The Agriculture Sector and Food Security in Jordan**
- 2 National Plan for Climate Change Adaptation**
- 3 Priorities for the Next Stage**

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# The Agriculture Sector and Food Security in Jordan

# The Agriculture Sector

- ◆ Jordan's agriculture sector is one of the most competitive sectors that is experiencing strong growth & has doubled its contribution to Jordan's GDP from 2.0% to 5.5 % in 2017 (equal USD\$ 2.3 billion)
- ◆ The agriculture land of significant importance is 9.0 million donums
- ◆ The agriculture sector has socioeconomic dimensions, especially in rural areas where the sector is considered as a source of income for the majority of people in the rural areas (employs more than 50% of rural women). It also contributes to providing job opportunities
- ◆ A considerable quantity of fruits & vegetables exports to high end markets such as Western & Eastern Europe
- ◆ Jordan has and continues to have competitive advantages as a supplier of fresh fruits & vegetables due to the unique & diverse geographical climatic zones of agricultural areas in Jordan (the production of the Jordan Valley especially in the winter time)

# The Top Challenges for Agriculture in Jordan

## Water Scarcity

- ◆ The availability of fresh water & water resources is one of the key challenges in the agriculture sector
- ◆ Limited availability of surface water resources in the Jordan Valley & other agricultural areas
- ◆ The rapid depletion of ground water resources in the highlands due to over exploitation, inefficient & misuse of irrigation water & degradation of soil and water quality
- ◆ Dryland farming relies exclusively on rainwater and soil moisture

## The Impact of Climate on Agriculture

- ◆ Land degradation and desertification
- ◆ Loss of topsoil
- ◆ Saltwater contamination of freshwater supply
- ◆ Increase in a crop's water needs
- ◆ Depletion of freshwater sources for irrigation

## Political Instability & Conflict in the Region

- ◆ Syrian crisis & hosting millions of Syrian refugees / Iraqi crisis
- ◆ The marketing & exporting crisis which led to closing border crossings in the way of Jordanian horticultural crops, whether it was a passage or a final destination for these crops

## Economic Factors

- ◆ Unemployment & rising food prices which will have impact on farm production & food access
- ◆ Lack of business investment in agricultural R&D which might hinder the pace towards productivity, sustainability, efficiency & equity of farms & value chain

# The Top Challenges for Agriculture in Jordan

## Public-Private Partnership

- ◆ A weak interaction & collaboration between the public & private sector
- ◆ Low priority for the agriculture sector by the government

## Agriculture Labors

- ◆ Agriculture employment is dominated by non-Jordanians due to rural-urban migration
- ◆ Unfavorable working environment
- ◆ Low wages in the agriculture sector

## Legislation & Laws Issues

- ◆ Expatriate labor & imposing new fees on permits which increased up to \$ 30-500
- ◆ Imposing sales tax on agricultural production requirements & imposing sales tax on agricultural crops

## Access to Credits & Loans by Small-Scale Farmers

- ◆ Almost 70% of farmers rely on loans, either through banks, companies or intermediaries, the farmer is in danger & threatened for not being able to pay back their debts due to marketing difficulties & crisis
- ◆ Small-scale farmers have little access to formal credit and finance, which limits their capacity to invest in the technologies & inputs they need to increase yields & income

## Land Fragmentation

- ◆ Farming households possess several disconnected land plots spread over a wide area, a growing challenge for sustainable land use
- ◆ Gaps in land use governance, such as unclear land tenure policies & weak land-use planning systems
- ◆ Fragmentation increases the complexity of governing land use & planning agricultural development
- ◆ It also restricts the ability of farmers to achieve economies of scale, which further limits the profitability of their agricultural activities
- ◆ This can further compound the levels of environmental degradation & soil erosion, creating a vicious cycle

# Prevalence of Undernourishment (%) & the Number of Undernourished (million) in Jordan

Year	2007-2009	2009-2011	2011-2013	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2021-2022
%	6.7	7.2	8.6	9.0	9.0	8.6	8.7	8.5	16.9
Million	0.3	0.4	0.5	0.7	0.8	0.8	0.8	0.9	1.0

# The Way Forward for Food Security

Food security is a complex condition requiring a holistic approach to all forms of malnutrition, the productivity and incomes of small-scale food producers, resilience of food production systems and the sustainable use of biodiversity and genetic resources

## The Way Forward for Food Security

An urgent need to protect the most vulnerable people

Maintaining the food supply chain

Mitigating the effects of COVID-19 pandemic throughout the food system and increase the food production

Building better resilient food systems

Investment in agricultural RDI & accelerating the pace towards more productive, sustainable, efficient, & equitable value chains



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# National Plan for Climate Change Adaptation

# National Plan for Climate Change Adaptation

## 1. Integrating climate resilience into policies and institutional reforms in the agricultural sector.

### Goal

This program aims to introduce a structural approach to building resilience to the impacts of climate change in the agricultural sector at legal, policy, and institutional levels, with a particular focus on the Ministry of Agriculture.

### Main Measures:

- ◆ Preparation and implementation of the agricultural investment plan to enhance resilience to climate change.
- ◆ Providing economic incentives at the farm level to mitigate the impacts of climate change and support adaptation programs.
- ◆ Enforcing land-use laws to prevent urban expansion into agricultural lands.
- ◆ Amending legislations and implementing action plans with a focus on social and economic strategies aimed at addressing the agricultural impacts of climate change.
- ◆ Enhancing the capacities of climate change units and departments at the Ministry of Agriculture and the National Agricultural Research Center.

# National Plan for Climate Change Adaptation

## 2. Improving drought management systems.

### Goal

This program aims to enhance the institutional and technical capacities of public institutions responsible for monitoring and managing drought in Jordan, enabling them to provide early warning systems for drought occurrence and strengthen preparedness and response to this phenomenon.

### Main Measures:

- ◆ Enhancing the effectiveness of existing drought management systems in the Ministries of Water and Agriculture, directly linked to climate change adaptation and resilience.
- ◆ Strengthening the available financial resources to compensate farmers for the impacts of drought.
- ◆ Providing support programs and incentives to prevent the collapse of animal production during drought conditions.
- ◆ Utilizing local traditions and indigenous knowledge of farmers to adapt to climate change during periods of drought.

# National Plan for Climate Change Adaptation

## 3. Improving the efficiency of irrigation systems.

### Goal

Enhancing the efficiency of irrigation systems is one of the most important objectives of climate-resilient agriculture in Jordan. This program aims to improve this efficiency through various interventions at the level of legislation and practices.

### Main Measures:

- ◆ Developing soil-water-plant monitoring programs (such as environmental and agricultural forecasting, remote sensing, geographic information systems, and measuring devices like net radiometers, etc.).
- ◆ Adopting water harvesting techniques and promoting the reuse of treated wastewater in agriculture, enhancing water use efficiency, and expanding drip irrigation programs in irrigated areas.
- ◆ Improving water storage methods in the soil and retaining it to increase the available water for plants by enhancing soil water saturation levels.
- ◆ Utilizing supplementary irrigation during critical stages of crop growth through rainwater harvesting and on-farm rainwater management systems.
- ◆ Reducing soil erosion through enhancing community-based management by small-scale farmers in rural areas, using Ecological-Based Adaptation (EbA) measures and rainwater harvesting techniques.

# National Plan for Climate Change Adaptation

## 4. Transitioning to high water-efficient crops.

### Goal

This program aims to support the gradual and necessary transition to using high water-efficient crops and adopting high-efficiency irrigation and agricultural techniques in suitable agricultural lands and within appropriate time frames.

### Main Measures:

- ◆ Introducing and diversifying high water-efficient and productive crops that can withstand drought, salinity, and high temperatures (Climate-smart agriculture).
- ◆ Adjusting crop planting and harvesting timings through the production and development of agricultural climate calendars.

# National Plan for Climate Change Adaptation

## 5. Supporting water-efficient agriculture systems and other flexible agricultural production systems.

### Goal

This program aims to enhance the contribution of water-saving technologies in agriculture, with a special focus on water-efficient agriculture, by providing appropriate regulatory frameworks, suitable technologies, and sufficient capacities to promote the widespread adoption of these technologies in Jordan.

### Main Measures:

- ◆ Encouraging the use of resource-conserving agriculture (such as organic, biodynamic, and agroecological practices) and soil-conserving techniques suitable for arid lands.
- ◆ Establishing community cooperatives responsible for organizing pasture use and grazing rights.
- ◆ Enhancing the balanced system between fodder and livestock to increase productivity and sustainability.
- ◆ Scaling up resource-conserving agricultural methods to increase wheat and barley production in dry regions using improved varieties.

# National Plan for Climate Change Adaptation

## 6. Enhancing the productivity of rangeland management programs.

### Goal

This program aims to provide rangeland management options based on enhancing climate resilience in the Jordanian desert and other semi-arid rangelands, ultimately safeguarding rangeland productivity through sustainable utilization approaches and community engagement.

### Main Measures:

- ◆ Supporting livelihood and income diversification in pastoral areas.
- ◆ Improving sustainable management of grazing reserves.
- ◆ Identifying suitable locations for implementing rotational grazing concepts in rangeland and arid lands management.
- ◆ Enhancing the productivity of rangeland management programs.

# National Plan for Climate Change Adaptation

## 7. Improving the sustainable productivity of food chains.

### Goal

This program aims to improve the agricultural sector's contribution to food security and enhance self-sufficiency amidst the challenges of climate change and emergencies. The program targets the agricultural production and marketing value chain to ensure the continuity of low-cost and sufficient food production for local markets while adapting to climate change challenges.

### Main Measures:

- ◆ Enhancing the efficiency of food chains in a sustainable manner, while reducing post-harvest losses, food waste, and increasing nitrogen use efficiency, and improving livestock productivity.



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## Priorities for the Next Stage

# Priorities for the Next Stage

## 1. Organizing and Restructuring the Agriculture Sector

### Organizing Farmers

- ◆ Amending the farmers union law to include most farmers
- ◆ Increasing representation of agricultural sectors in the General Union of Jordanian Farmers)

### Organizing Agricultural Activities

- ◆ Developing & amending legislations related to licensing agricultural activities
- ◆ Issuing a law of a chamber of agriculture

### Organizing Agricultural Cooperatives

- ◆ Developing & amending legislations related to cooperatives
- ◆ Establishing a qualitative union for cooperatives

### Developing the Agricultural Government Services

- ◆ Creating an inclusive agri database
- ◆ Developing the agri infrastructure & services
- ◆ Institutional capacity building for the M of A
- ◆ Connecting agricultural services with each others such as registration, labor & water consumption

### Improving the Services of Agri Risks Management Fund

- ◆ Amending the law to include other risks & developing the services
- ◆ Establishing a cooperative insurance program

# Priorities for the Next Stage

## 2. Digitizing the Agriculture Sector (Enhancing the Use of ICT in Agriculture)

**Increasing the Efficiency of Digital Services by the Ministry of Agriculture**

**Capacity Development & Knowledge Dissemination**

**& For Example:**

- ◆ Introducing digital applications & AI to track & control red palm weevil
- ◆ Using smart agricultural application
- ◆ Supporting the ICT to connect to external markets
- ◆ Operating information system for internal and external markets
- ◆ Enhancing the use of ICT in the fish sector & enhance investing in this sector

# Priorities for the Next Stage

## 3. Promoting the Use of Modern Technologies

### Developing Animal & Plant Production Systems

- ◆ Projects financing package for hydroponic, aquaponics, & modern irrigation systems
- ◆ Supporting the use of solar systems in agriculture
- ◆ Investing in small ruminants & reducing poverty in rural areas

### Developing and Building Capacities in Modern Agri Technologies

- ◆ Training
- ◆ Empowerment
- ◆ Employment On mechanization
- ◆ Improving the competitiveness of agrifood products
- ◆ Exploring high value, socio-economic projects, & water-saving projects

### Enhancing Research, Development & Innovation in the Use of Modern Agri Technologies

- ◆ Promoting sustainable irrigation water management & the use of non-traditional water
- ◆ Developing governance for allocation of sustainable water resources
- ◆ Use of genetic diversity & mixture of breeding programs to enhance The ability of the farmer to adapt to changing climate

# Priorities for the Next Stage

## 4. Focusing on Production, Productivity & Strategic Crops

### Developing agricultural land & increasing productivity

- ◆ Reclaiming agricultural land & construction of water collection wells
- ◆ Financing package for land use & cultivating strategic crops

### Increasing the efficiency of irrigation water use & increasing the productivity of water

- ◆ Maintaining springs & irrigation channels
- ◆ Developing water resources & using modern technologies

### Agricultural research for increasing production & yield

- ◆ Sustainable agriculture
- ◆ Impact assessment of agricultural practices & climate change on Medjool date palm
- ◆ Biodiversity research

### Conservation of livestock & plant production & increasing productivity

- ◆ Supporting and protecting livestock & plant production

### Conservation of fishing farming & increasing productivity

# Priorities for the Next Stage

## 5. Increasing the Efficiency of Logistics & Value Chain

**Developing the infrastructure for laboratories**

**Developing & modernizing transportation for agricultural products**

**Increasing the efficiency of marketing**

**Developing & constructing storage facilities for agricultural products**

**Thank you**