Food Security and Trade under Climate Change
Challenges for Arab States

Projections & Simulated effects of price and trade on food security with climate change

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FAO
OECD-FAO Agricultural Outlook

- 10 year horizon
- Global coverage
- Major temperate climate commodities
- Model based projection validated through global expert consensus
- Scenario analyses
Information for the following countries were considered in the chapter:

- Algeria
- Egypt
- Libya
- Morocco
- Tunisia
- LDC North Africa (Mauritania, Sudan)

North Africa

- Iran (Islamic Republic of)
- Jordan
- Lebanon
- Yemen
- Other Western Asia
  (Palestine, Iraq, Syrian Arab Republic)

Western Asia

- Other Gulf States
  (Kuwait, Qatar, Bahrain, United Arab Emirates, Oman)
- Saudi Arabia

Least Developed

Gulf States
Projections and challenges

• Rising and evolving food demand
• Scarce land and water resources
• Low productivity and limited diversity
• Increasing import dependence for basic food commodities
• Food security threatened by conflict and political instability
Average calorie availability per person in the region grows 0.4 % p.a.

Vegetal sources continue to provide about 90% of calories.

Sugar and edible oil consumption increases rapidly.

Share of animal foods (protein) expands at a low rate.
Projections and challenges

• Rising and evolving food demand

• **Scarce land and water resources**

• Low productivity and limited diversity

• Increasing import dependence for basic food commodities

• Food security threatened by conflict and political instability
Projections and challenges
Land and water scarcity

Suitability for low input, rain fed cereal production

- High: 2%
- Good: 2%
- Medium: 4%
- Moderate: 7%
- Marginal: 11%
- Very marginal: 19%
- Unsuitable: 55%

Total renewable water resources per capita

Cubic meters per capita, 2014

Countries with water deficits include:
- Kuwait
- UAE
- Qatar
- Saudi Arabia
- Yemen
- Bahrain
- Libya
- Jordan
- Palestine
- Algeria
- Oman
- Tunisia
- Egypt
- Lebanon
- Morocco
- Syria
- Sudan
- Iran
- Iraq
- Mauritania

Food and Agriculture Organization of the United Nations
Projections and challenges

• Rising and evolving food demand
• Scarce land and water resources
• Low productivity and limited diversity
• Increasing import dependence for basic food commodities
• Food security threatened by conflict and political instability
Projections and challenges
Diversity and productivity

- Low-yield agriculture in the MENA region is characterized by low diversity.
- Cereals occupy 65% of the crop area.
- They account for only 15% of the farm output value, the rest is contributed by livestock products and horticulture.

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<tbody>
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<td>Western Europe</td>
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<td>111</td>
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Agriculture remains dominated by crop production, particularly cereals.

Total production is projected to recover and resume growth.

Cultivated land is projected to remain unchanged.

Meat production is projected to grow, with poultry production increasing faster.

Aquaculture production to increase by another 50%.
Projections and challenges

- Rising and evolving food demand
- Scarce land and water resources
- Low productivity and limited diversity
- **Increasing import dependence for basic food commodities**
- Food security threatened by conflict and political instability
Outlook for agricultural net trade

- Region remains largely dependent on global markets to secure domestic consumption.
- Cereals imports reach about 30% of global trade.
- Meat and fish imports go mostly into the Gulf region.
- North Africa dominates cereals, sugar and vegetable oil imports.
Outlook for agricultural net imports

**Crops**
- Wheat
- Maize
- Other Coarse grain
- Rice
- Oilseed
- Veg Oil
- Sugar

**Livestock and Fish**
- Meat
- Dairy
- Fish

Million T

North Africa | Gulf | Other Western Asia | LDC
Projections and challenges

- Rising food demand
- Scarce land and water resources
- Low productivity and limited diversity
- Increasing import dependence for basic food commodities
- **Food security threatened by conflict and political instability**
Projections and challenges
Undernourishment and conflict

• Food security driven mainly by conditions that affect families’ ability to access safe food.

• The largest disrupter in the region is conflict, which divides the region into two distinct categories.

### Prevalence of undernourishment in the MENA region

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<td>6.5</td>
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Note: Conflict countries are Sudan, Libya, Yemen, Syria and Iraq.
Climate Change Uncertainty

- Extreme events could become more frequent in the future
- Observed past yield variation could not only increase, but be more extreme because of climate change
- Yield losses could not only more frequent, but more severe
Climate Change
Changes on market balance through yield changes

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<th>Yield (ton/ha)</th>
<th>Baseline</th>
<th>Min (RCCP 4.5)</th>
<th>Average (RCCP 4.5)</th>
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**Scenarios**

**Main effect on Net Trade**

- Production and food demand response to the shocks are low in comparison with net trade effects.
- Offsetting effects on the different policy options.
- Stocks serve as a buffer, these results are conditional to the stocks levels.
Scenarios
World price will impact directly import bill

- Scenarios:
  - Open Trade
  - Price Spike
  - Price Spike - No Trade Restriction
  - Price Spike - Trade Restriction
  - Extreme Event

- World Price:
  - $200
  - $220
  - $240
  - $260
  - $280
  - $300
  - $320
  - $340
  - $360
  - $380
  - $400

- Import Bill Changes:
  - Open Trade
  - Price Spike
  - Price Spike - No Trade Restriction
  - Price Spike - Trade Restriction
  - Extreme Event
Summary and conclusions

- Medium-term trends for food demand, supply and trade in the region will generally follow past patterns, with dependency of world markets increasing

- Climate change in combination with policies could affect negatively the import bill in the region

- Policies should promote healthier eating habits and at the same time provide incentives to the agricultural sector to make the necessary investments to produce them efficiently.

- It is of great concern that conflict has drastically affected food security and caused hunger to rise in the Near East.
Thank you for your attention

See the full OECD-FAO Outlook at www.agri-outlook.org

For more details on the MENA region see: www.unescwa.org