Climate Change in the NENA Region: Challenges and Opportunities for Reducing Vulnerability of Agriculture and Food Security

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Outline

• What we know about CC in NENA
• Threats and Gaps
• Proposed Collaborative Framework for NENA Adaptation
18 countries, Sudan, PA
< 5% world CO2 emissions
Mostly arid, semi-arid climate

380 million inhabitant

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What we know about CC in NENA

Tunis, Tunisia, September 2003

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NENA Exposed to 4 key climate change hazards:

- Long-term climatic desiccation
- Increased variability, extremes & uncertainty
- Sea-level rise
- Rising temperature

Vulnerability to each of these hazards varies between countries depending on socio-economic situation and technology development
High Sub-regional variations

Exposure to Climate Desiccation

• Most affected region - N. Africa countries (Algeria, Mauritania, Morocco, Tunisia)

• Large projected reductions in rainfall

• Largest increases in temperature
High sub regional variations

Projected increases in rainfall (but high uncertainty)

- Southern Arabian Peninsula & Horn of Africa (Yemen, Sudan and Djibouti)
- Egypt: Negligible rainfall, Nile - E. African source
- Iran: projected drying (weaker) significant warming
High sub regional variations

Economic capacity to withstand hazards

- Some countries are among the LDCs: Mauritania, Djibouti, Yemen and Sudan.

- High economic/human development’ countries, e.g. Bahrain, Israel, Kuwait, Libya, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

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Threats and Gaps to address them

Oman, 6 June 2007: Cyclone Gonu kills at least 49

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Threats to agric., food security related sectors

• Water Resources
  • Water shortage, already a problem in many countries, will be exacerbated by CC.
  • A study on “Climate Change and its Impact on the NER” forecasts that by 2050, most of the region “will suffer from a decrease in water availability at an average rate of 40 mm/year”
  • Water availability could increase by up to 40 mm/year in southern Egypt, most of Sudan, Somalia and southern Algeria in Africa, the southern Arabian Peninsula and in the south of southern-western Asia.
Human Health

- Heat stress will affect human comfort levels
- Possible spread in vector-borne diseases are likely to result from changes in climate
- Decreases in water availability and food production would lead to indirect impacts on human health.
Threats to agric., food security related sectors

Agriculture

• Changes in temperature, rainfall, climatic extremes and SLR will increase vulnerability of the sector

• Rainfall variability (shifts in patterns and distribution) will affect crops in most countries

• Unreliable rainfall will shift rainfed agric. to irrigation exacerbating overexploitation of groundwater

• SLR and intrusion of salty water in agricultural land, e.g. Nile Delta, will further impact agricultural production

This, in addition to traditional problems of land degradation, desertification, arid and semi-arid conditions, high population growth

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Threats to agric., food security related sectors

Agriculture (livestock and rangeland)

Grasslands and livestock likely to be the most vulnerable to CC as they are located mostly in marginal areas

- The nomadic system, spread over a wide area with low and erratic rainfall in ME, NA, Arabian Peninsula, to be impacted by decline in soil moisture and overall productivity.

- Livestock pest and disease distribution and their transmission patterns will be changed with increasing probability of epidemics outbreak (Rift Valley Fever, Avian Flu etc..). Potential appearance of new diseases. Heat stress likely to have negative impacts on animals.
Threats to agric., food security related sectors

Forestry

- Soil moisture depletion likely to cause the productivity of major species to decline and the extinction of sensitive species, to increase fire risks and to change the spread patterns of pests and diseases

- Resulting changes in habitats will subsequently induce changes in wildlife population
Threats to agric., food security related sectors

Fisheries

• According to IPCC, effects on macrophyte communities and spread of warmer water species due to increased temperatures already have been observed in the Mediterranean, as have changes in populations, trophic interactions and migratory patterns of fish populations.

• These patterns are likely to be exacerbated in the future and to result in fisheries production and quality decline.
Ecosystems

- Many valuable ecosystems could be lost as species fail to keep up with the shift in climate boundaries.
- Desert Oases would face the threat of drying, salinization and desertification.
- Wetland sites will face the dual threats of drying out and sea level rise.
Threats to agric., food security related sectors

Human Security

- Climate change will pose major threat to security of NENA

  e.g. A recent EU report "Climate change and international security“, presented to a European Summit in Brussels in March 2008, warned that "existing tensions over access to water in the Middle East are almost certain to intensify in this region."

- Competition for water within the region and across its borders may grow, carrying the risk of conflicts

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Gaps

1. Regional dimension of CC adaptation ignored
2. High level of uncertainty in CC projections
3. CC-unrelated factors exacerbate the problem
   some specific to some countries, others common across region:
   - Weak institutional and human capacities
   - Complex political situations and conflicts
   - Endemic poverty
   - Complex governance
   - Limited access to capital, incl. markets, infrastructure, technology
   - Ecosystem degradation; and
4. Weak adaptive capacity.

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Gaps

Low adaptive capacity

- To assess CC impacts & adaptation
- In knowledge and data (availability, reliability, analysis, ...)
- Lack of expertise (methodology, economic valuation of impacts and adaptation modeling)
- Poor observation and monitoring
- Poor communication and networking
- Lack of awareness among policy makers and communities on CC issues and strategies to address adaptation needs
- Lack of knowledge on synergies between adaptation and sectoral development
- Weak human and institutional capacity
- Inappropriate policy context – fragmented role of ministries & lack of coordination
- Lack of experience in planning & implementing adaptation measures

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Proposed Collaborative Framework for NENA Adaptation

Salinization, seawater intrusion

Drought

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Framework for Action

Goal
To assist NENA countries to build and maintain a knowledge base, adapt to CC impacts, contribute to mitigating its causes and achieve sustainable development

Main Pillars

• Strengthening scientific assessment
• Observation and monitoring
• Capacity-building and education
• Support to policy planning and national development
• Effective public information and awareness-raising
Framework Strategy and Approach

- **Dimension:** A regional and sub-regional approach for tackling CC related issues
  
  - **Multidisciplinary:** adopt collaborative strategy among natural and social scientists, stakeholders and decision-makers to build and develop an *integrated* approach that enables effective response
  
  - **Collaborative:** FAO, IFAD, WB, WFP, Others
Framework Strategy and Approach

- Build on past and on-going CC-related initiatives in the region through e.g. Mapping of on-going initiatives
- Review progresses, gaps and opportunities identified through earlier research on natural resource management, sustainable development, and information systems in the region
- Consider creating an institutional framework for climate change adaptation in the region
Framework Strategy and Approach

- Building capacities at different levels, particularly at policy makers level
- Assessment of available capacities related to CC in the region
- Assessment of policies and development plans to see to what extent has climate change been incorporated
- Support to policy planning and national development; and effective public information and public awareness-raising

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Framework Strategy and Approach

- Scientific cooperation in data generation and use, assessment and monitoring, capacity-building and education

Due to the global nature of the climate change problem, regional and international cooperation within and between countries will be essential in assessing and managing climate change associated risks.
Framework Strategy and Approach

- Link climate change impacts to other environmental issues characterizing the region such as desertification and soil degradation, biodiversity loss, poverty, conflicts
- Coordinate with related efforts and initiatives e.g. disaster reductions and preparedness
Link CC to Rural Development and Energy

In some countries, main source of GHG emission is from deforestation and land degradation. Reducing deforestation and controlling desertification could have co-benefits, e.g. increased energy security, soil fertility, reduced pressure on natural ecosystems.

Promotion of subsistence use of NTFP provides income and employment for rural people, especially women.

Mobilizing financial resources to provide alternative energy sources.

Supporting biofuel policy on country by country basis.
Framework Strategy and Approach

- Due consideration be given to gender disparities
- Gender-related differential impacts of and adaptation to climate change
- Gender consideration in conflict-affected areas and between IDPs refugee camps and temporary settlements
Framework Strategy and Approach

• **Expected Outputs**
  • Improved capacity of NENA to respond and adapt to CC impacts on Agr. and FS
  • NENA EW and MS and mechanisms to prepare for and respond to extreme climatic events established
  • Local institutions strengthened, community participation enhanced, and IK incorporated
  • Institutional and policy frameworks necessary for decision-making, planning adaptation, networking and coordination are established
  • Effective information and awareness-raising achieved at all levels

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Financial support for CC adaptation measures

Various UNFCCC designated funds available to support countries’ adaptation measures, including three administered by GEF:
- Least Developed Country Fund (LDCF),
- Special Climate Change Fund; and
- Adaptation Fund.

Climate Investment Fund (CIF)

NENA countries’ own resources

Other
## Framework Financial Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>US$ 1000</th>
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<tbody>
<tr>
<td>Component 1: Capacity Building</td>
<td>25,000</td>
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<tr>
<td>Component 2: EW and Monitoring</td>
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<tr>
<td>Component 3: Institutional Support</td>
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<tr>
<td>Component 4: Policy reform, networking</td>
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<tr>
<td>Component 5: Information, awareness</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>125,000</strong></td>
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Thank you

Merci

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