

# Climate Change and Environment in the Arab World

February 2009



**George J. Nasr**  
 Professor of engineering at the Lebanese University, and consults on civil engineering and information technology applications. He is interested in the complexity of sustainable development issues, where technical topics of hydrology, engineering, climatology, and economics intersect with political and social factors.

Research and Policy Memo #3

**The Issam Fares Institute for Public Policy and International Affairs (IFI) at the American University of Beirut (AUB)** was inaugurated in 2006 to harness the policy-related research of AUB's internationally respected faculty and other scholars, in order to contribute positively to Arab policy-making and international relations. IFI is a neutral, dynamic, civil, and open space that brings together people representing all viewpoints in society. It aims to: raise the quality of public policy-related debate and decision-making in the Arab World and abroad; enhance the Arab World's input into international affairs; and, enrich the quality of interaction among scholars, officials and civil society actors in the Middle East and abroad.

## Multi-faceted mitigation can reduce risk of complete collapse of Arab world's water, food, and land systems

Shifts in trade and transport patterns due to global warming may cut off Arab countries from food and water, affecting them more than developed countries. This is only one of many urgent implications of climate change on food, water, and land in the Arab world - as outlined by George Nasr during a lecture at the American University of Beirut.

"Cross-border mobilization and immediate investment in research and development would mitigate these effects," said Nasr, who is an engineering consultant, a specialist in IT applications, and professor at the Lebanese University.

"We have to apply some new technological innovation and follow integrated management," he said. His lecture was a part of the Climate Change Forum at the Issam Fares Institute for Public Policy and International Affairs (IFI), which has brought scholars, experts, and policy makers to AUB to share research and policy experience in climate change.

IFI Director Rami Khouri said Nasr's research is defined by "its integration among different approaches and disciplines to evaluate environmental issues across various key sectors."

"Humans can adapt to climate change," said Nasr, "but the complexity of modern society means that it cannot afford the time lag between when the effects are observed and when their solution is implemented."

"Because our societies are so complex, the effect of climate change is likely to be magnified," adding, "the Arab region will feel an indirect shock-wave of effects from other regions, as well as suffering its own effects, particularly in water supply problems and food supplies."

## Indirect shock-waves of climate change

Studies show that the earth's warming is not new. This phase of extreme effects is comparable only to pre-Medieval times, when environmental changes caused the decline of empires. Nasr outlined the fall of Rome and the collapse of the Egyptian civilization due to an inability to adapt to changes in climate, noting that adaptation is even more difficult in today's more complex society.

"What we are seeing today," he said, "is something our grandfathers never saw, but something their ancestors had witnessed." Because the modern world consists of specialized urban centers that rely heavily on trade, increases in weather extremes due to climate change risks ruining food, water, and land systems. "Any trade disruption could cause a collapse in our society," said Nasr.

Lebanon depends on trade to import food and water. It imports two cubic kilometers of

**“ Arab countries must mobilize cooperation across borders, develop an integrated management plan, and urgently invest in research and development ”**

**The Research and Policy Forum on Climate Change and Environment in the Arab World** provides a mechanism that brings together AUB professors, other academics and researchers, civil society, the private sector and policymakers. By promoting close interaction between researchers and policymakers, it aims to help formulate more effective environmental policies in the Arab World, and to mitigate the impact of expected climate change scenarios and other environmental challenges. The AUB-IFI Climate Change Forum comprises lectures, research, publications, comprehensive regional databases of scholars and research, and regular workshops, seminars and conferences.

Rami G. Khouri *IFI Director*  
Dr. Nadim Farajalla *Faculty Research Director*  
Sarine Karajerjian *Program Coordinator*

You can listen and watch the lecture on Youtube on IFI website:  
<http://staff.aub.edu.lb/~webifi/>

  
**Issam Fares Institute for Public Policy and International Affairs**  
**American University of Beirut**  
  
408 Diana Tamari Sabbagh  
(DTS) Building  
PO Box 11–0236, Riad el Solh  
Beirut 1107 2020, Lebanon  
Tel: 961–1–350000, x 4150  
Fax: 961–1–737627  
e-mail: [ifi@aub.edu.lb](mailto:ifi@aub.edu.lb)

  
**Issam Fares Institute Website**  
[staff.aub.edu.lb/~webifi/](http://staff.aub.edu.lb/~webifi/)  
**AUB Youtube Channel**  
[www.youtube.com/AUBatLebanon](http://www.youtube.com/AUBatLebanon)  
**AUB website:**  
[www.aub.edu.lb](http://www.aub.edu.lb)

water in the form of virtual water - water content in key foods such as wheat. Egypt imports twice the volume of the Aswan Dam in virtual water. In addition, Arab countries rely only on a few countries to import food, due to an evolution in their diet patterns for a more water-hungry Western diet.

Food and water are traded “just in time,” said Nasr. “Nobody stocks food anymore. Big merchants don’t do big warehousing - they rely much more on just-in-time importing. Any disruption in trade risks cutting off entire countries in the region from food and water.”

## Direct impacts, losses, and interesting incentives

More localized effects of climate change include water loss, soil degradation, seawater intrusion - and rises in sea level that may, in extreme weather, wipe out entire islands in the Gulf.

“Egypt will have to redesign its water policy entirely,” said Nasr, “due to precipitation changes around Ethiopia - from which 80 percent of the water that flows into Egypt is generated. Syria depends on sources outside of its borders for 80 percent of its water, while Jordan and Israel already consume more than 100 percent of their available water.”

“Agricultural self-sufficiency is not projected,” said Nasr, due to water loss and land degradation. Irrigation techniques “better adapted to the Soviet area instead of our region” have caused severe land degradation in the Euphrates Valley of Syria.

A rise in sea level, projected at a one meter rise in 50 years, will cause salt intrusions in Iraq well into the north beyond Basra; weaken the Nile Delta, which is heavily inhabited and used for agriculture; and intrude into water aquifers in Lebanon, as far as downtown Beirut and Dbayyeh areas.

A minor sea level rise also intensifies extreme weather: an unlikely but extreme event like a typhoon would increase sea levels for a very short period of time - up to one hour - by 50 centimeters to two meters, destroying Dubai’s manmade islands. The damage to expensive property could create “an interesting incentive for urban development.”

“The varied and extreme effects of climate change across vital sectors presents a multi-faceted challenge that can only be managed with a multi-faceted approach,” said Nasr. “Arab countries must mobilize cooperation across borders, develop an integrated management plan, and urgently invest in research and development.” ■

“Any disruption in trade risks cutting off entire countries in the region from food and water”

  
**Lectures in the Research and Policy Forum on Climate Change and Environment in the Arab World 2008 Lecture Series:**  
  
“Climate Change and Carbon Emissions Trading in the Arab World: A Realistic Answer to the Dangers Ahead?” Jad Chaaban, Assistant Professor of Economics, AUB and Souheil Abboud, Middle East Regional Director, EcoSecurities Group plc.  
  
“Post- Kyoto Policies: How Can Arab Countries Meet Climate Change Challenges after 2012?” Wael Hmaidan, Executive Director of IndyAct - The League of Independent Activists  
  
“Are Changes in Insect Patterns in the Lebanese Mountains Evidence of Climate Change?” Nabil Nemer, Research Associate at the Faculty of Agricultural and Food Sciences, AUB  
  
“Seawater Intrusion in Greater Beirut: Current Situation and Early Signs of Climate Change” Mark Saadeh, Instructor of Oceanography, Geology Department, AUB  
  
“The Tripod of Academia, Government and Private Sector: From Science to Policy Making” Berj Hatjian, Director-General of the Directorate General of the Lebanese Ministry of Environment