EXECUTIVE SUMMARY

Arab Environment: Climate Change

Impact of Climate Change on Arab Countries

2009 REPORT OF THE ARAB FORUM FOR ENVIRONMENT AND DEVELOPMENT (AFED)

The world is once again at a crossroads; as the scientific basis behind climate change is becoming more solid, the imperative for strong and collective action is becoming increasingly urgent. This urgency is one shared by all countries and regions of the world, as all will be affected. The Arab region is by no means an exception; in fact, given the very high vulnerability of Arab countries to the projected impacts of climate change, it cannot afford inaction on either the global, regional, or national scales.

Based on the findings of the Intergovernmental Panel on Climate Change (IPCC) and hundreds of references quoted in the 2009 Report of the Arab Forum for Environment and Development (AFED), we can categorically state that the Arab countries are in many ways among the most vulnerable in the world to the potential impacts of climate change, the most significant of which are increased average temperatures, less and more erratic precipitation, and sea level rise (SLR), in a region which already suffers from aridity, recurrent drought and water scarcity.

Water resources are dwindling. Regardless of climate change, the already critical situation of water scarcity in the Arab world will reach severe levels by 2025. A report recently published in Japan has warned that what is known as the Fertile Crescent, spanning from Iraq and Syria to Lebanon, Jordan and Palestine, would lose all traits of fertility and might disappear before the end of the century because of deteriorating water supply from the major rivers. Man-made problems, mainly the widespread construction of dams and unsustainable irrigation practices which waste about half of the water resources, and rates of human water consumption which are well above international standards in some Arab countries, are making the situation worse. The expected effects of climate change are likely to exacerbate this deterioration. With continuing increases in temperatures, water flow in the Euphrates may decrease by 30% and that of the Jordan River by 80% before the turn of the century. If this is the case in the Fertile Crescent, how will the situation be in other arid Arab countries? Water management is therefore an urgent issue. We need to improve efficiency, especially in irrigation, and to develop new water resources, including innovative desalination technologies.

Sea level rise (SLR) is likewise a big risk, since the bulk of the Arab region's economic activity, agriculture and population centres are in the coastal zone, which is highly vulnerable to sea level rise. This can be in the form of both coastal region inundation and increasing salinity of soil and available freshwater resources such as aquifers.

A simulation carried out for AFED by Boston University's Center for Remote Sensing revealed that a sea level rise of only 1 metre would directly impact 41,500 km2 of the Arab coastal lands. The most serious impacts of sea level rise would be in Egypt, Tunisia, Morocco, Algeria, Kuwait, Qatar, Bahrain, and the UAE. The effects on the region's agricultural sector would mostly be felt in Egypt, where a 1 metre rise would put 12% of the country's agricultural land at risk. It would also directly affect 3.2% of the population in the Arab countries, compared to a global percentage of about 1.28%.

Human health would be adversely affected by higher temperatures, mainly due to changes in geographical ranges of disease vectors like mosquitoes, waterborne pathogens, water quality, air quality and food availability and quality. Incidence of infectious diseases like malaria and schistosomiasis will increase, mainly in Egypt, Morocco and Sudan. Malaria, which already infects 3 million people annually in the Arab region, will become more prevalent and enter new territories as higher temperatures reduce the incubation period, spread the range of malaria-bearing mosquitoes and increase their abundance. Higher CO2 concentrations and fiercer and more frequent sand storms in desert areas will increase allergic reactions and pulmonary diseases all over the region.

Food production would face an increased threat, affecting basic human needs. Harsher and expanding aridity and changes in the spans of seasons may cut agricultural yields in half if no alternative measures are applied. Urgent adaptive measures are required, including changes in crop varieties, fertilizer and irrigation practices. Higher temperatures, lower rainfall and alteration in the span of seasons will require developing new varieties that can adapt to the emerging conditions. Crops which need less water and can withstand higher levels of salinity should be developed and introduced on a large scale.

Tourism, an important sector of the economy for a number of Arab countries, is highly vulnerable to climate change. An increase of between 1-4°C in average temperature will cause a drastic decline in the index of tourism comfort all over the region. Areas classified between "good" and "excellent" are likely to become "marginal to "unfavourable" by the year 2080, mainly because of hotter summers, extreme weather events, water scarcity and ecosystems degradation. Bleaching of coral reefs will affect tourism in countries in the Red Sea basin, mainly Egypt and Jordan. Beach erosion and sea level rise will affect coastal tourist destinations, mainly in Egypt, Tunisia, Morocco, Syria, Jordan and Lebanon, especially in locations where sandy beach stretches are narrow and buildings are close to the shoreline. Options for alternative tourism, which are less vulnerable to climatic variability, should be explored, such as cultural tourism. Countries with coastal areas highly vulnerable to sea level rise should develop alternative inland tourist destinations.

Biodiversity in the Arab countries, already deteriorating, will be further damaged by intensifying climate change. A 2°C rise in temperature will make extinct up to 40% of all the species. The Arab countries have many unique formations that are especially vulnerable to climate change risk, such as the cedar forests in Lebanon and Syria, the mangroves in Qatar, the reed marshes of Iraq, the high mountain ranges of Yemen and Oman, and the coastal mountain ranges of the Red Sea.

Land use and urban planning regulations in the Arab region largely ignore basic adaptation requirements to climate change. An estimated 75% of buildings and infrastructure in the region are at direct risk of climate change impacts, mainly from sea level rise, higher intensity and frequency of hot days and storm surges. Reliability of transportation systems, water supply and wastewater networks, and energy generation stations will be at risk. At a time when 42 small island-states have established the Alliance of Small Island States (AOSIS) to defend their common interests in the face of the damaging effects of climate change, we see artificial islands being built in some Arab countries and others being planned. These islands will be among the first to be swallowed by the rising sea level due to their small size and low elevation. Planning requirements specifying a minimum distance between permanent structures and the shoreline should take into account the threat of rising sea level. Choices of construction materials used for buildings and roads should consider the risk of rising temperatures. Plans for making infrastructure and buildings resilient to climate change are needed.

This AFED report has found that virtually no work is being carried out to make the Arab countries prepared for climate change challenges. Specifically, no concerted data gathering and research efforts could be traced regarding the impacts of climate change on health, infrastructure, biodiversity, tourism, water and food production. The economic impact seems to be totally ignored. Reliable records on climate patterns in the region barely exist.

Policymaking in the region has displayed, in many respects, deficiencies that need to be urgently remedied if Arab countries are to prepare for the potential negative impacts of climate change. Those range from sustainable management of natural resources to risk planning. The Maldives, for instance, has plans to save funds as an insurance policy to relocate its entire population in case of sea level rise.

In the face of these urgent challenges and vulnerabilities, this report addresses the key areas at stake and hopes to serve as a basis upon which informed decision-making, planning, and diplomatic efforts can be built.