

DECISION-MAKING IN THE FACE OF UNCERTAINTY

THE CASE OF CLIMATE CHANGE

By:

Mohamed El-Ashry

Senior Fellow, UN Foundation

Former CEO & Chairman, Global Environment Facility

INTRODUCTION

Civilization was built around the climate we have--along coastlines that may be washed away by severe storms and rising sea-level, and around farmland and forests that may become less productive as water supplies diminish. Changing the climate puts the very organization of modern civilization at risk.

Climate change is one of humanity's most pressing and difficult challenges. Its effects are already being felt and will only worsen over time, impacting current and future generations. Without urgent and concerted action, climate change will seriously affect the way of life in all countries. It will reduce agricultural productivity, heighten water insecurity, increase exposure to extreme weather events, and threaten global security through migratory pressures and resource conflicts.

Over the last century, atmospheric concentrations of carbon dioxide have increased from a pre-industrial value of 278 parts per million to 379 parts per million in 2005, and the average global temperatures rose by 0.74 degree C. According to scientists, this is the largest and fastest warming trend they have been able to discern in the history of the earth.

Scientists also believe that a temperature rise above 1.5 - 2 degree C risks serious and intolerable impacts. With rising temperatures, the United Nations' Intergovernmental Panel on Climate Change (IPCC) predicts the frequency of heat waves, droughts, and heavy rainfall events will very likely increase, adversely affecting agriculture, forests, water resources, industry, human health and settlements. Developing countries, where greater poverty and vulnerability limit the capacity to act, will be the most

seriously harmed, particularly their poorer segments.

The challenge of climate change is global--the earth's atmosphere does not differentiate greenhouse gases by country of origin. One ton of greenhouse gases from China or Egypt carries the same weight as one ton from the U.S. Because climate change confronts all parts of the world and all sectors of society, governments, corporations, and civil society must become part of the solution.

While countries must make concerted efforts to mitigate greenhouse gas emissions to ward off destructive long-term impacts from climate change, some degree of climate change has already occurred. Adaptation is necessary because even the most stringent climate mitigation efforts cannot avoid further climate change. Adaptation to climate impacts must be considered as an integral element of development and poverty alleviation efforts. Developing countries, having contributed the least to climate change, are the most vulnerable to its effects. Failure to adapt will increase the economic and human impacts of extreme events and set back poverty alleviation efforts. Therefore, future efforts to deal with climate change must address adaptation as well as mitigation.

EGYPT & THE ARAB REGION

Recent reports by the United Nations Development Programme (UNDP) and The Arab Forum for Environment and Development highlight potential impacts of climate change on Egypt and the Arab Region. Statistics show that Arab countries contribute about 1.2 % of total world

greenhouse gas emissions. Saudi Arabia is contributing the highest percentage, followed by Egypt and Algeria. This relatively small contribution of emissions by all Arab countries does not correspond to the much larger projected impacts of climate change in the region. The low annual rainfall and the high aridity of North Africa and the Middle East make the region highly vulnerable to climate change. According to modeling studies, the Arab region will face an increase of 4.0 - 7 degrees C by the end of the century. As a direct consequence of climate change, and with current trends of population growth, Egypt, Algeria, Morocco, Syria, and Tunisia are expected to experience severe water shortages by 1.40. The shortage of water resources is aggravated by pollution and overuse of water. Given that 90-100% of water in the region is being used for agriculture, and that the frequency and severity of droughts will increase, agricultural productivity will be hit hardest.

Another consequence of climate change is sea level rise which results from the thermal expansion of sea water and widespread melting of land ice. River deltas and low lying coastal areas have the highest vulnerabilities to sea level rise and Egypt is one of these highly vulnerable countries. A one meter sea level rise would affect 1 million people where 10-12% of land in the Nile delta would be lost. The high risk areas include parts of Alexandria, Behaira, Port Said, Damietta, and the governate of Suez.

UNCERTAINTY & DECISION-MAKING

Much complexity and uncertainty surround climate change. Despite significant gains in the scientific understanding of climate change, uncertainties remain. Climate models are not usually designed to tell us anything about the evolution of the climate system in the short-term; rather, they are designed to simulate the long-term (30-100 years) behavior as accurately as possible. Also, while climate models can make reliable projections about change in global climate, their projections about change in regional climate are less reliable.

The key question, however, is no longer whether climate

change is already happening and should be a central global concern. The key question is how climate change will manifest itself regionally and locally and what can be done about it. As governments prepare to meet the challenge of climate change they need to address the tradeoffs between near-term economic development and long-term sustainable development. They also need to devise effective strategies for dealing with climate change in the absence of full knowledge of regional impacts and the unsettling prospect of reaching irreversibility or tipping points of no return. The uncertainty associated with climate change projections is often cited as the reason for people's failure to accept the need to adapt to climate change. In the face of urgent short-term priorities such as hunger, poverty and disease, poor countries and communities find it particularly challenging to focus on adaptation measures when the predictions of impacts from climate change are not unequivocal. Uncertainty should not, however, be an excuse for inaction. Decisions are regularly made in the face of uncertainty (e.g. investment decisions). Water-resource managers are accustomed to planning and operating water facilities under conditions of uncertainty about future availability, weather variability, and projected water demand. In the face of documented evidence of long-term global climate change, water-resource managers have begun revising their long-term planning. Deciding on the need for, and type of, adaptation to climate change should be approached in a similar manner, and can involve using appropriate risk management approaches.

To respond to the climate change issue, governments at various levels must make a range of decisions about the appropriate level and design of mitigation and adaptation, and the funding level of research across many related disciplines. An "Adaptive Strategy" is one way of guiding decision-making.

An Adaptive Strategy evolves over time in response to new information. A key feature of adaptive strategies is that the policy makers learn about the problem they

face and then make decisions or choices based on best assessments. Flexible, or adaptive, management can be an effective way of making decisions in the face of uncertainty. This approach recognizes that our understanding of the risks, the range of adaptation measures available, and the efficacy of a particular adaptation measure will change with time as our understanding evolves. As a result, adaptation measures can be implemented in a phased manner with steps being taken immediately to address obvious risks (e.g. coastal erosion along the Nile delta) , and measures to address less certain risks, being delayed. This adaptive decision-making process will be aided by carefully tracking how uncertainties change with new knowledge. Accordingly, carefully assessing the risks of future climate change impacts is a critical task as a component of scientific support for decision makers. Adaptive capacity, particularly in developing countries, including the Middle East, is often limited by one or more of the following: a lack of resources, a poorly educated public, ineffective governance, weak or non-existent institutions and inadequate infrastructure. Although climate change is projected to have serious impacts on natural and human systems in the Arab region, including Egypt, only modest efforts and steps are taken in scientific research related to mitigation and adaptation. Unfortunately, governments and the scientific community in most Arab countries still harbour suspicions regarding global climate change, and remain hesitant to acknowledge the risks. As a result, while a small and scattered number of research studies in the region were published, there are many gaps, especially related to the vulnerability of water resources, agriculture, and the health sector. In order to enhance the planning of adaptation and mitigation strategies, improving the scientific capacity in the various fields related to climate change, and ensuring political and financial support, should become a top priority.

CONCLUSION

Humanity is threatened by both direct and indirect consequences of climate change. Unlike other species, humans have the ability to plan for the future and invest in technology and learning to mitigate and adapt to future changes. Scientists have presented a compelling portrait of what is happening and have convincingly outlined what may unfold in the future. But society must ultimately shoulder responsibility for the next steps. Of course there is a price to pay and the question is do we pay now or pay later. As many studies by prominent economists have shown, if we choose to pay later, we will pay a great deal more.

In a political world where decisions are often short-term and where leaders cherish a clear roadmap for action, the 'uncertain certainty' of climate change has hampered the translation of scientific findings into policy actions. In some countries, like the United States under the Bush presidency, uncertainty regarding climate change is used as a basis for postponing action, which is usually identified as being "costly." But this idea is almost unique to climate change. In other areas of public policy such as terrorism, inflation, or vaccination, an "insurance" principle seems to prevail. In other words, if there is sufficient likelihood of significant damage, we take some measured anticipatory action.

As the Nobel Prize economist, Thomas Schelling said: "In responding to such uncertainty, we should neither wait until the uncertainty has been completely resolved before we take action nor act as if it's certain until we have assurance that there's no danger. These two extremes are not the only alternatives."

