

## EDITORIAL

# Challenge of climate change

In the recent past, countries the world over, including Sri Lanka, have experienced a heavy toll on human lives and property resulting from extreme climatic events such as floods, droughts, cyclonic storms and land slides. These adverse events are expected to increase in the future due to global warming, induced by the emission of greenhouse gases, particularly from uncontrolled combustion of fossil fuels. In view of the gravity of the situation the world is facing, the UN bodies, in particular the World Meteorological Organization (WMO) and the UN Environment Programme (UNEP) jointly have taken the initiative to establish two bodies - the Intergovernmental Panel on Climate Change (IPCC) and the UN Framework Convention on Climate Change (UNFCCC). The IPCC is mandated to assess available scientific information on climate change, assess the impacts of climate change and formulate response strategies necessary to arrest the situation from becoming worse in time to come. The main function of UNFCCC is to facilitate achieving of consensus among the nations to stabilize the greenhouse gas concentration in the atmosphere at a level that would not cause global warming.

An increase in extreme climatic events is one of the adverse impacts predicted by climate change modelling studies. An increase in the surface temperature, changes in the rainfall pattern and a rise in the sea level taking place within a time frame of several decades are some of the other changes that have been forecasted by these models as given in IPCC Assessment Reports. Despite thousands of scientists from both the developed and developing countries are working on climate change studies, their findings are not definitive. Although the predictions regarding temperature rise show the same trends in different models, the extents vary with the model. However, in the case of rainfall change predictions, there is no agreement even in the trends.

The projections from global modelling interpolated to Sri Lanka indicate that the ambient temperature will increase by a few degrees everywhere in the country while the rainfall changes will manifest differently in

different seasons and different parts of the country, with a probability of the wet regions becoming wetter and dry regions becoming drier. However, it should be borne in mind that different models forecast different extents of change, both in temperature and rainfall. Further, records in Sri Lanka show that extreme climatic events of recent past far exceed what had taken place during previous times.

Being an island nation in the tropics with a very high population density, Sri Lanka will be severely affected by the anticipated climate change. Sri Lanka's food production depends largely on its rainfall pattern and an ambient temperature conducive to crop growth. Energy generation also depends on the country receiving an adequate annual rainfall to drive its hydroelectric plants. A large population lives in low lying areas, which are vulnerable to regular floods and an equally high population lives in hilly areas vulnerable to land slides whenever there is heavy rainfall. Hence, Sri Lanka should be highly concerned about climate change and take immediate steps to address this issue.

Sri Lanka is unique in that it had addressed the inadequacy of natural water availability in certain parts of the country to sustain an agricultural economy even more than a millennium ago. Our forefathers had built large reservoirs to store rain water received during the rainy season and a system of canals to take the stored water to fields during the dry season, and these are still in operation today. In addition, Sri Lanka has planned and implemented a massive irrigation scheme to take water to water-deficit areas by diverting the water-rich Mahaweli River long before the issue of climate change was spoken about internationally.

However, achievements of the past alone are not sufficient. Sri Lanka is known to be highly vulnerable to climate change since we lack adequate adaptive capacity. It is important that Sri Lankan scientists address the problems of how climate change within the country could affect the livelihood of people, agricultural

production and the economy in general, and how such adverse impacts could be minimized by undertaking relevant research. These studies should contribute to ensuring food and energy security and the creation of an environment safe from floods, land slides and other hazards. A glance at local research journals and agendas of scientific meetings does not indicate a significantly adequate number of studies being reported by the local scientific community.

There are opportunities for natural scientists, agricultural scientists, physical scientists, engineers,

social scientists, economists and policy makers to initiate studies to understand how climate change would affect Sri Lanka and develop adaptation measures for the short term as well as the long term. We need scientists working both in the field and at the desk to develop simulation models based on data collected in the field. Since climate change research is essentially multi-disciplinary in nature, we need teams of scientists all working together towards a common goal to provide policymakers with more definitive findings and recommendations to develop future strategies including adaptation measures to meet the challenge of climate change.

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