Climate change, scientists conclude, entails not only an upward trend in temperatures but also volatile weather patterns. Weather disasters such as hurricanes, cyclones, deluges and droughts, which are likely to intensify, already produce shocks that can paralyze LDC economies as surely as manmade disasters like recession or armed conflict.

The UN Conference on Trade and Development (UNCTAD) finds that there have been five times as many intensive weather events occurring in the LDCs from 2000 to 2010 as during the 1970s [LDC Report 2010]. The number of people affected in these countries has almost doubled, from about 100 million in the earlier period to 193 million in the 21st century. During the latter period, LDCs suffered economic losses totalling $14.1 billion due to these events, with Bangladesh and Myanmar losing $5.8 billion and $4.5 billion, respectively.

Climate change presents huge challenges for water management systems, so crucial to health and agriculture. It can be expected to change the consistency, volume and distribution of rainfall in regions and over the face of the planet. In Ethiopia, where the increase or decrease in gross domestic product follows in lockstep with high or low levels of annual rainfall, the World Bank estimates that hydrological variability costs the country more than one-third of its growth potential.

Also at risk are glaciers, upon which mountainous countries such as Bhutan and Nepal and downstream nations such as Bangladesh depend for fresh water resources during spring melting.

With agriculture considered a primary economic priority for the LDCs, and access to fresh water and sanitation two major areas of concentration in achieving the Millennium Development Goals, the stakes are tremendous.

Water security in low-income countries, according to economists, follows a simple but deadly calculus: these countries have remained poor in part because they have been unable to make the large investments necessary to achieve water security - in large measure because water insecurity constrains economic growth and savings.

Irrigation is likely to be a major force in contending with climate change. Studies indicate that rain-fed farms lose productivity and income under the impact of higher average temperatures as well as lower rainfall, but warming may actually increase crop value in irrigated soil.

As the timing of planting and harvest seasons may be changing due to changes in the climate, improved meteorological services will help farmers to adapt.

The tremendous diversity of plant and animal life in the 48 least developed countries — spread across two continents and island chains in three major seas — is a substantial economic asset to countries, as well as an invaluable global public good. Biodiversity is threatened by climate change.

Natural ecosystems provide a range of vital but often overlooked services to human inhabitants: regulating water flows, decontaminating air and water, harbouring species that contain the key to new medicines, maintaining diversity in seeds and plant varieties, and protecting reefs and fisheries.
Coral reefs, for example, are a habitat for fish and marine life and a magnet for tourism. They also serve as barriers to natural disasters in island LDCs, absorbing the impact of ocean storms. Forests serve similar functions inland, protecting wildlife, fostering livelihoods and mitigating the effects of greenhouse gas emissions. The least developed countries in the Congo basin of central Africa are areas requiring global support to sustain the world’s forest resources.

UNCTAD contends that while the private sector will have an important role to play in confronting climate change in the LDCs, private sources cannot deliver the initial funding in sufficient amounts.

Climate finance could be used for climate-proofing existing infrastructure; adding new dams or dikes; improving communities’ capacities to respond to climate-caused emergencies; and mainstreaming adaptation into national Poverty Reduction Strategy Papers and government policies.

The Least Developed Country Fund (LDCF) is the main source of LDC climate adaptation finance provided through the United Nations Framework Convention on Climate Change Global Environmental Facility. As of May 2010, 22 donors had pledged contributions to the LDCF equivalent to $221.5 million, according to the World Bank; the total amount deposited was $169.1 million.

Data from the Organisation for Economic Co-operation and Development show that LDCs as a group received $358 million in climate change-related (mainly greenhouse gas emissions reduction) official development assistance (ODA) in 2008, constituting only 0.8 per cent of LDC-bound ODA in 2008.

But UNCTAD estimates the annual cost of climate change adaptation facing the LDCs at $4 billion, rising to $17 billion by 2030. Even this figure may be low, in the context of other estimates.

The UN Framework Convention on Climate Change in 2008 estimated annual worldwide adaptation costs of between $50 billion and $170 billion by 2030. The 2007/8 Human Development Report of the UN Development Programme said annual adaptation investment needs would reach $86 billion globally by 2015. Given that the least developed countries comprise one-eighth of the world population, and that they are certain to suffer proportionately greater adverse effects from climate change, while possessing proportionately fewer governmental and private sector resources, their need for adaptation support may rise higher than indicated by the UNCTAD estimates.

Speaking at the December 2009 climate change meeting in Copenhagen, and representing the least developed country group, Lesotho Prime Minister Pakalitha Mosisili said that “adaptation is a matter of life and death to the LDCs.”