



CLIMATE CHANGE

Climate change and disaster risk reduction are closely linked. More extreme weather events in future are likely to increase the number and scale of disasters, while at the same time, the existing methods and tools of disaster risk reduction provide powerful capacities for adaptation to climate change. For most people, the expression “climate change” means the alteration of the world’s climate that we humans are causing, through fossil fuel burning, clearing forests and other practices that increase the concentration of greenhouse gases (GHG) in the atmosphere. The official definition by the United Nations Framework Convention on Climate Change (UNFCCC) is that climate change is the change that can be attributed “directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”¹.

Causes of Climate Change²

Climate is the average weather conditions experienced over a long period. This includes temperature, wind and rainfall patterns. Recent scientific findings clearly point to the very significant impacts of climate change on our planet. Historically, the earth’s climate has been very dynamic, and changes followed natural cycles. With the progress of civilization, however, human impact on the earth’s climate has become more and more significant. Aside from natural drivers of climate change, such as volcanic eruptions and ocean currents, human industrial activities, land use patterns and deforestation account for much of the change in earth’s climate.

The energy sector is responsible for about 75 per cent of carbon dioxide emissions, 20 per cent of methane emissions and a large quantity of nitrous oxide. Almost everybody in industrialized countries is contributing to the change in climate through their everyday activities.

Climate Change Impacts^{3,4}

Current global climate change is understood to be the result of human activities since the Industrial Revolution—such as the burning of fossil fuels and land use change (for example, deforestation)—resulting in a significant increase in greenhouse gases such as carbon dioxide.⁴ While greenhouse gases are a natural part of the Earth's atmosphere and serve to maintain temperatures to support life, excessive emission of these is causing more heat to be trapped in the atmosphere, leading to rising temperatures.

Projected changes in the climate include temperature increases on land and at sea, sea-level rise, melting of glaciers and ice caps, and changing and irregular rainfall patterns. These changes affect almost every aspect of human life and the ecosystems on which it depends.

Climate change will result in increases in the frequency and intensity of extreme weather events, as well as significant impacts from more gradual changes. The nature, extent and duration of climate change effects on regions vary. Efforts to reduce the impacts of climate change are known as climate change adaptation.

Climate Change will affect all countries but those poorest will be hardest hit. The population in these countries tends to live in high risk areas and many of them are highly dependant on the climate sensitive sectors such as agriculture and have very limited means to cope with climatic changes. The changes in the climatic sector are expected to reduce income and affect life. The sustainable development is likely to be challenged as climatic changes are to compound the pressures that rapid urbanization, industrialization and economic development have placed on the resources. The continuous melting of glaciers can result in floods in the rising of sea levels.

Climate Change Adaptation³

Climate change adaptation is a practice covering actions by a range of actors to manage and reduce the risks associated with changes in the climate. Varying technical and scientific definitions exist to best serve the purposes of different

actors involved in the climate change sphere. The following simplified working definition of climate change adaptation is used here:

- Adapting development to gradual changes in average temperature, sea-level and precipitation; and,
- Reducing and managing the risks associated with more frequent, severe and unpredictable extreme weather events.

People have always adapted to climate variability through a variety of means including, for example, planting late-transplant rice or switching to other, faster growing crops. However climate change is pushing at-risk populations beyond their capacity to cope and adapt to the changes they have traditionally dealt with, as well as making more people vulnerable due to their increased sensitivity and exposure to climate change impacts.

Governments and institutions are coming to realize that security, poverty reduction and prosperity will depend on the integration of climate change adaptation strategies in all sectors, and their implementation at all levels. Development and humanitarian practitioners also have an important role to play in terms of advocating for the rights of the women, men and children at greatest risk to be prioritized, and incorporating climate change adaptation strategies into their own programs.

Climate Change and Disaster Risk Reduction²

Climate change will generally increase disaster risks – not only through the increased frequency and magnitude of extreme weather events and sea level rise. As water becomes scarcer, agriculture is strained, ecosystems are degraded, and societies will become more vulnerable to hazards. It is important to keep in mind that other forms of environmental degradation, unrelated to climate change, can also exacerbate or alter existing threats. Climate change adaptation is defined as adjustment in natural or human systems to actual or expected climatic stimuli or their effects, in order to moderate harm or exploit beneficial opportunities.

Disaster risk reduction (DRR) and climate change adaptation share the common goal of managing uncertainty, reducing vulnerability and building resilience for communities at risk. The main overlap between the two is the management of hydro-meteorological hazards, where DRR seeks to take account of changing hazards, and adaptation seeks to build resilience to their impacts. There are two key distinctions between DRR and adaptation. First, DRR tackles the risks of geophysical hazards (like volcanoes and earthquakes), whereas adaptation does not. Second, adaptation considers the long-term adjustment to changes in mean climatic conditions (e.g., loss of biodiversity, changes in ecosystem services and spread of climate-sensitive disease), whereas DRR predominantly deals with extremes.

Disaster risk reduction has been conceptualized as the first line of defence against climate change. Its relationship with adaptation, however, is very dynamic. Adaptation policies can benefit from proven DRR frameworks and methodologies. Simultaneously, adaptation can support DRR by reducing long-term vulnerability and influencing development potential. In the face of climate change and variability, DRR programmes need to take a long-term perspective to prepare communities for not only current, but also projected climate-related risks. A good illustration of this is capacity development. ‘Traditional knowledge’ is an important starting point for developing DRR strategies. However, its effectiveness may be limited when dealing with an exacerbation of existing problems, or with ‘non-traditional’ problems, such as those experienced for the first time owing to climate change.

Cost-effectiveness of Disaster Risk Reduction as an Adaptation Measure¹

Disaster risk reduction offers cost-effective approaches to reduce the negative impacts of flooding, landslides, heat waves, temperature extremes, droughts and intense storms. The benefits can be calculated not only in money saved, but also in more secure livelihoods and saved lives. Some examples include:

- China spent US\$3.15 billion on flood control between 1960 and 2000, which is estimated to have averted losses of about US\$12 billion.

- The Rio de Janeiro flood reconstruction and prevention project in Brazil yielded an internal rate of return exceeding 50%.
- The disaster mitigation and preparedness programmes in Andhra Pradesh, India yielded a benefit/cost ratio of 13.38.
- A mangrove-planting project in Vietnam aimed at protecting coastal populations from typhoons and storms yielded an estimated benefit/cost ratio of 52 over the period 1994 to 2001.
- Property-owners in the US Gulf States who implemented hurricane protection methods employed at nearly 500 locations avoided US\$500 million in property losses from Hurricane Katrina, after customer investments of only US\$2.5 million. These customers sustained eight times less damage than those who choose not to implement the protection measures.²⁶

References

¹ http://www.unisdr.org/files/4146_ClimateChangeDRR.pdf

² <http://www.unicef.org/cfs/files/UNICEF-ClimateChange-ResourceManual-lores-c.pdf>

³ <http://reliefweb.int/sites/reliefweb.int/files/resources/ECB-toward-resilience-Disaster-risk-reduction-Climate-Change-Adaptation-guide-english.pdf>

⁴ http://www.saarc-sadkn.org/theme_env_climat.aspx