



Fact Sheet – Climate Change

- Climate change will have global impact, but developing countries will suffer the most, particularly Bangladesh.
- In Bangladesh – monsoon rain will increase and flash floods will occur more frequently; a rise in sea levels will displace a large proportion of the population and increase coastal flooding and saline intrusion into aquifers and rivers across a wide belt in the south of the country; droughts will intensify (particularly in the north-western region); each of these events will significantly affect agriculture and food security.
- Climate change will increasingly affect the health and wellbeing of Bangladesh (affecting sanitation and reducing safe drinking water)
- Ecosystems and biodiversity may be the most vulnerable sector to climate change, which not only refers to a few endangered species. What is at stake is the environment as a whole - despite efforts of protection, the overall system may be losing its flexibility and resilience to adapt to changes.
- Higher salinity in the coastal belts could alter the entire ecosystem of the Sundarbans and affect the rich biodiversity of the forest. A 25cm rise in sea level is predicted to result in a 40% mangrove loss, and a 45cm rise, combined with other forms of anthropogenic stress on the Sundarbans, could lead to the destruction of 75% of the Sundarbans mangroves.
- Climate change can lead to a loss of biodiversity and productivity
- The concentration of greenhouse gases in the atmosphere has now become so large that, even if further emissions of greenhouse gases can be stopped today, global temperature and sea-level will continue to rise.
- Action is needed on 2 fronts: adaptation (to limit and manage climate change impacts) and mitigation (to permit continued economic growth by reducing its carbon content).

How human activity affects climate change

Global warming is caused by greenhouse gases (GHGs) such as carbon dioxide (CO₂) which are produced by burning fossil fuels and by deforestation. GHGs trap solar radiation, causing the earth's surface temperature to rise. During the past 15 years scientists have reached a consensus that the earth is warming and that this warming is the result of human activities. Eleven of the last 12 years are

among the warmest recorded since 1850, and temperatures in the Arctic are rising twice as fast as the rest of the world.

The CO₂ concentration in the atmosphere has increased from about 277 parts per million volume (ppm) in 1744 to 384 ppm in 2007. (CDIAC 2008, NOAA 2008). Without serious attempts to reduce GHG emissions, the CO₂ concentration in the atmosphere could reach 650-750 ppm or more by 2100 (IPCC2007).

If the world reaches 650-750 ppm of CO₂ equivalents, there is a serious risk of mean global warming of 5° C, resulting in catastrophic heat waves, heavy precipitation in northern latitudes, drought in subtropical areas and melting of ice and snow cover.

IPCC projections show that climate change is not a “future” problem

Climate change is often seen as a future problem but from 2020-29, just 12 years from now, there may be major temperature changes in Africa, Asia and Latin America.

Avoiding the risk of large temperature changes in 2090-99 requires changes now. The Intergovernmental Panel on Climate Change (IPCC 2007) notes that world GHG emissions would have to decline by 50 to 85 percent of their 2000 levels by 2050 to stabilize concentrations at 450 ppm, depending on the mitigation path chosen.

To stabilize at 550 ppm, world GHG emissions would have to decrease by as much as 30 percent from 2000 levels by 2050, depending on the mitigation path chosen.

How climate change affects the poor

The largest agricultural losses due to climate change will occur in parts of South Asia, including Africa and Latin America.

Climate change will affect human health both directly - increasing the risk of cardiovascular disease in heat waves and accidental deaths and injuries in climate-related natural disasters - and indirectly increasing risk of diarrheal disease in young children, food insecurity and malnutrition, and the incidence of malaria and other vector-borne diseases.

A one-meter rise in sea level could result in the displacement of millions of “environmental refugees” from coastal regions in Bangladesh. Another example is that Vietnam would lose 28 percent of its wetlands and Egypt 13 percent of its agricultural land. In per capita terms, Bangladesh is over three times as affected as India (Weather Damage Index, Buys & others, 2007).

Adaptation to climate change

Achieving the MDG targets for poverty reduction, improved nutrition, a lower malaria and child mortality rate will help adapt effectively to the most adverse health risks of climate change.

Economic growth and a shift to manufacturing and services-based employment will reduce the vulnerability of poor people in agricultural economies. In agriculture, adaptation involves selecting the right weather-resistant crops. For example, farmers in Orissa, India grow *champeswar* rice, which is flood-resistant.

Early warnings can help people to adjust to adverse weather. For example, the national meteorological service could transmit information about rainfall and soil moisture through a network of farmers' organizations and local governments.

Defensive infrastructure includes sea walls to protect against storm surges, irrigation systems that store monsoon rains and flood control measures.

Mitigating GHG emissions

To stabilize GHG emissions as countries grow, emissions per unit of GDP must fall. This can occur by reducing the energy used per unit of their output, the fossil fuel used per unit of energy, or the amount of carbon in a unit of fossil fuel. There is scope for improving energy efficiency in manufacturing and in the power sector in Eastern Europe and Central Asia, China, and India.

There is also scope for developing renewable energy sources (solar, wind and hydro power; geothermal energy; and biofuels), especially in Sub-Saharan Africa and Latin America (Buys & others, 2007).

Financing for low-carbon growth could come from a carbon market in which developing countries sell emission reduction credits to countries that would find it more expensive to reduce carbon emissions themselves. "No regrets" options for improving energy efficiency—ones that would pay for themselves in fuel savings—may exist if subsidies for energy consumption and production are removed (World Bank 2006).

Using carbon markets to stop deforestation

A new carbon credit program – Reducing Emissions in Deforestation and Forest Degradation (REDD) – under negotiation within the UN Framework Convention on Climate Change (UNFCCC) could provide the right incentives to avoid forest loss.

Clearing a hectare of dense rainforest in the Brazilian Amazon for crop or pasture land could release 500 tons of CO₂.

The present value of the cleared land is \$100-\$200. At a carbon price of \$10/ton of CO₂, forest worth \$5000 is being destroyed for land use 1/20th as valuable.

[For more information please view our E-newsletter \(Edition 1\)](#)

Resource – Global Monitoring Report 2008, Asian Development Bank