

Biodiversity, Climate Change, and the Millennium Development Goals (MDGs)



BIODIVERSITY AND CLIMATE CHANGE: LINKS WITH HEALTH

Climate change is threatening biodiversity, compromising the achievement of the United Nations Millennium Development Goals (MDGs). Biodiversity conservation and maintenance of ecosystem integrity are essential to the reduction of people's vulnerability to climate change and to the achievement of the MDGs.

MDG 4: REDUCE CHILD MORTALITY

The fourth MDG aims to reduce by two thirds the mortality rate among children under five by 2015.

MDG 5: IMPROVE MATERNAL HEALTH

The fifth MDG aims to reduce by three quarters, the maternal mortality ratio by 2015.

MDG 6: COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES

The first target of the sixth MDG is to halt and begin to reverse the spread of HIV/AIDS by 2015. The second target is to halt and begin to reverse the incidence of malaria and other major diseases by 2015.

Role of biodiversity in achieving health goals

Human health is highly dependent on a healthy environment, and the maintenance of functioning ecosystems. This has been highlighted by recent reports of the World Health Organization (WHO) and the Millennium Ecosystem Assessment¹ which also reveal that Biodiversity resources provide the necessary food to combat malnutrition and undernourishment, an important cause of child mortality. Other ecosystem services provided by biodiversity promote health by filtering toxic substances from air, water and soil, and by breaking down waste and recycling nutrients.

In addition to enhancing ecosystem services, biodiversity also provides a unique and irreplaceable source for medicines. The World Health Organization² estimates that up to 80% of the population of Africa uses traditional medicine for primary health care³. To a very large extent this medicine is derived directly from endemic plants. Plants, animals and microbes are also of immense value to modern medicine. Substances derived from them are used as drugs in the treatment of many



Baby in mother's arm receiving polio vaccine. Photo courtesy of UNEP.

diseases. These drugs include for example quinine, the cancer drug Taxol, and antibiotics such as tetracyclines and erythromycin⁴. Many more such substances await discovery.

Impacts of climate change on the achievement of MDGs 4, 5, and 6

Climate change, through geographic changes in weather patterns, rainfall and temperature, is predicted to

1 Millennium Ecosystem Assessment. Biodiversity Synthesis. 2005
2 Chivian, E., 2002. Biodiversity: Its Importance to human health. A Project of the Center for Health and the Global Environment. Harvard Medical School.
3 WHO, 2003. Traditional medicine. Fact sheet no.134.

4 Roe, D., 2004. The Millennium Development Goals and Conservation – Managing Nature's Wealth for Society's Health. IIED.



Mosquito in the process of feeding. Photo courtesy of Reino Meriläinen.

increase dramatically the extent and prevalence of some vector borne diseases such as malaria and dengue fever. Extreme weather events may also increase vulnerability to water, food or person-to-person borne diseases such as cholera and dysentery and lead to increases in heat-related mortality and illness.

Floods and droughts may result in declining quantity and quality of drinking water, which is a prerequisite for good health and prevention of child mortality. Climate change may exacerbate malnutrition by reducing natural resource productivity.

The increased prevalence of climate-related diseases would add new stresses to health systems already overwhelmed by HIV/AIDS. People from developing and least developed countries living with HIV/AIDS are particularly vulnerable as they are more affected by food shortages and infections⁵. This vulnerability is being impacted by the currently observed shift of HIV/AIDS from urban to rural areas. Estimates show that 80% of the people living in the countries most affected by HIV/AIDS rely on agricultural-based livelihoods, which are also likely to be threatened by climate change⁶.

Biodiversity and climate change considerations for the achievement of MDGs 4, 5, and 6

A key step to integrating biodiversity and climate change considerations in the health-related MDGs is the development of an improved understanding of the expected im-



Periwinkle is touted as a miracle plant in the medicinal world as it contains chemical properties used to treat diabetes and cancer. It is native to Madagascar but is now widely cultivated around the world. Photo courtesy of adamgaston/www.flickr.com.



Rainforests are a major source of medicine derived from its rich biological diversity. Photo courtesy of Derek J. Bell.

pacts and potential adaptation strategies. Understanding the impacts of climate change on medicinal plants and disease-carriers is necessary for health planning under changing climatic conditions.

Improving health and sanitation requires healthy, functioning ecosystems to supply clean water, genetic resources for medicines, and natural resources to meet nutritional needs. Activities that are aimed to adapt to climate change by maintaining a healthy and safe environment can promote people's health.

A project taking place in the drought-prone Tonk district in Rajasthan, India⁷, provides examples of climate change adaptation activities that can benefit both biodiversity and health. The adaptation practices undertaken build on existing knowledge about water, agriculture and livestock management. Activities include: growing new crops such as vegetables, fodder and medicinal plants; improved water conservation and harvesting techniques; and use of environmentally sound fertilizers. Such biodiversity-related activities improve people's capacity to cope with climate change while ensuring food security and reducing health threats.

⁷ Chatterjee, K., 2005. Vulnerability, adaptation and climate disasters: Case study 2: Community adaptation to drought in Rajasthan. Institute of Development Studies. IDS Bulletin, Vol. 36, No. 4.

⁵ FAO. HIV/AIDS and Food Security. Online at www.fao.org/hivaids/
⁶ FAO. HIV/AIDS and Food Security. Online at www.fao.org/hivaids/