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

CBD

BIODIVERSITY AND CLIMATE CHANGE: LINKS WITH POVERTY AND HUNGER

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 1: ERADICATE EXTREME POVERTY AND HUNGER

The first Millennium Development Goal aims to eradicate poverty and hunger by 2015. Specific targets within MDG 1 include reducing by half the proportion of people (i) living on less than a dollar a day and (ii) suffering from hunger.

Role of biodiversity in eradicating poverty and hunger

People with subsistence-based livelihoods often depend heavily and directly on biodiversity to support their livelihoods. For example, in rural Zimbabwe wild products provide 37% of total household income, and in dryland India, where wild products normally provide 14-23% of the rural poorest income, in times of drought this rises to 42-57%[1] . The means by which a poor family gains income and meets its basic needs are often met by livelihood activities related to the natural environment. For example, exploiting common property resources such as fish, grazing land or forests can provide income, food, medicine, tools, fuel, fodder, and construction materials. Poor people are therefore severely affected when the environment is degraded, biodiversity is lost, or their access to it restricted[2]. Biodiversity resources are also increasingly coming into focus through micro-credit programmes, many of which are based on alternative livelihoods that rely on the sustainable use of reeds, grasses and non-timber forest products.

Biodiversity is also critical for the maintenance and enhancement of food security[3]. Conserving and maintaining healthy soil, clean water, a variety of genetic resources, and ecological processes are essential ingredients of a sustainable and productive agricultural system and the subsequent eradication of hunger.

Variation in genetic diversity is particularly important in marginal lands, where genetic adaptations to conditions such as water scarcity and poor soil fertility are critical to the maintenance of local agricultural and grazing livelihoods.

Beyond terrestrial agricultural resources, other components of biodiversity that need to be protected to ensure food security include fisheries, which depend on the maintenance of ecosystems, such as wetlands, mangroves, and coral reefs, that provide fish with habitat and sustenance[4].

Photo courtesy of Parc Cruz

1 IUCN/DFID/EC. Biodiversity Brief 1: The links between biodiversity and poverty. Online at http://www.undp.org/biodiversity/biodiversitycd/BioBrief1-poverty.pdf

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

3 Scherr, S. J. Biodiversity and Food Security. Online at http://www.undp.org/biodiversity/biodiversitycd/biodev3.htm

4 UNDP. Biodiversity and the Millennium Development Goals. Online at http://www.undp.org/biodiversity/mdgandbiodiversity.html

Impacts of climate change on the eradication of poverty and hunger

Climate change is projected to reduce poor people's livelihood assets, such as access to water, homes, and infrastructure. Climate change is also expected to have a negative impact on traditional coping mechanisms thereby increasing the vulnerability of the world's poor to perturbations such as drought, flood, and disease. The impacts of climate change on natural resources and labour productivity are likely to reduce economic growth, exacerbating poverty through reduced income opportunities.

Climate change is also projected to alter regional food security. Changes in rainfall patterns and extreme weather events are likely to diminish crop yields in many areas. Rise in sea level, causing loss of coastal land and saline water intrusion, can also reduce agricultural productivity[5]. Coral bleaching and increased calcification of coral are likely to reduce fisheries, further threatening food security[6]. Changes in habitat are already negatively impacting protein available from hunting, especially in the Arctic region.

Inuit fishing for Tom Cod. Photo courtesy of US Fish and Wildlife Service

Biodiversity and climate change considerations for the achievement of MDG 1

The conservation of biodiversity, including restoration and rehabilitation, can be a key adaptation strategy to help vulnerable people cope with climate change. For example[7], mangroves provide coastal protection against rising sea levels and storm surges. Since 1994, the Vietnam National Chapter of the Red Cross has worked with local communities to rehabilitate mangroves. Approximately 12,000 hectares of mangroves were planted and although planting and protecting the mangroves cost approximately US$ 1.1 million, it saved US$ 7.3 million per year in dike maintenance. During the devastating typhoon Wukong in 2000, project areas remained unharmed while neighbouring provinces suffered huge losses in lives, property and livelihoods. The Vietnam Red Cross estimates about 7,750 families have benefited from mangrove rehabilitation and are also able to earn additional income from selling crabs, shrimps and mollusks while increasing the protein in their diets.

The maintenance of traditional crop varieties is an important tool in adapting to climate change, ensuring that varieties suitable for different conditions are available. Tribal communities in the Jeypore Tract of Orissa (India), with the support of the M.S. Swaminathan Research Foundation, have started working to conserve the genetic diversity of their agricultural crops to ensure a sustainable food supply[8] by establishing community seed and grain banks. The project also encouraged cultivation of overexploited medicinal plants in community gardens, to reduce dependence on, and damage to local forests. Work to increase the market for traditional varieties of rice and medicinal plants also provided income benefits.

Child carrying fish, Mauritania.
Photo courtesy of Domi/UNEP/Alpha Presse

In addition to biodiversity playing a central role in many climate change adaptation strategies, climate change is threatening biodiversity that is central to livelihoods especially amongst rural populations and indigenous people. For example, invasive alien species are already changing species composition in grazing lands from the African Savanna to Northern reindeer pastures. These changes in species composition are negatively impacting the health of livestock and threatening livestock-based livelihoods. The Inuit people in the Arctic region and inhabitants of small island developing States are feeling the loss of species as it is affecting their hunting and fishing-based livelihoods.

As biodiversity resources become increasingly central to the achievement of MDG 1 under changing climatic conditions, these same resources are facing increasing threats from climate change. Integrated management of biodiversity and climate change within poverty reduction strategies and food security planning is therefore critical if MDG 1 is to be met.

5 Pisupati, B. and E. Warner, 2003. Biodiversity and the Millennium Development Goals. IUCN/UNDP.

6 Climate Change Action Network Australia (CANA). Social Impacts of Climate Change: Impacts on Millennium Development Goals. Online at http://www.cana.net.au/socialimpacts/global/millennium-development-goals.html

7, 8 Dharmaji, B., Raban, A., Pisupati, B., and H. Baulch, 2005. A guiding frame for mainstreaming biodiversity and development into National Adaptation Programmes of Action (NAPAs). IUCN.