

Climate change and health Implications for SEAR countries; Bhutan takes action to mitigate impact

Climate change is probably one of the most severe problem we are facing today, perhaps even more serious than the threat of terrorism. UN Secretary General, Mr Ban Ki-Moon, said in a recent Security Council meeting, "According to the most recent assessments of the Intergovernmental Panel on Climate Change (IPCC), the planet's warming is unequivocal, its impact is clearly noticeable and it is beyond doubt that human activities had been contributing considerably to it."

Human activities like overuse of fossil fuels, agricultural activities and deforestation have lead to a build up of carbon dioxide and methane gases in the atmosphere. These reflect the infrared waves back to earth and this "green house effect" results in warming of the earth's atmosphere. In the last 100 years, the CO₂ level in the atmosphere have increased by about 30% and the average global temperature has increased by 0.74 ± 0.18°C (1.33 ± 0.32°F). Eleven of the last 12 years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature.

According to the IPCC 2007 report projections surface warming for the end of the 21st century (2090-2099) will rise by between 1.1 and 6.4 degrees Celsius, greater than anything humans have experienced in the last 10 000 years; the global mean sea level is projected to rise by 9.88 cm by the year 2100.

15 Asian countries that met at a recent WHO consultation on climate change in Kuala Lumpur concluded that diseases such as cholera, typhoid, malaria and dengue could rise due to climate change. The warming and changes in rainfall patterns now provide habitats more conducive to these diseases previously prevalent in tropical climate. Country reports showed the increased health risks, including from extreme weather events, e.g. heat waves, storms, floods, droughts,



Costly measures would be needed to protect communities downstream from glacial lake outbursts.

Mountain countries like Nepal and Bhutan could face disasters of flash floods resulting from glacier melting and spread of vector-borne disease diseases at higher altitude. According to a vulnerability assessment carried out by the Royal Government of Bhutan in 2005, temperatures in Bhutan during 1998-2002 were above the 1990-2003 mean value. On average, air temperatures in the Himalayas are 10°C higher now than in the 1970s, rising by 0.06°C per year.

According to the Department of Geology and Mines and the International Center for Integrated Mountain Development (ICIMOD), the average annual glacial retreat has doubled in recent years from 15-20 metres in the 90's to 35-40 meters in 2004-2006. Bhutan has an estimated 2,674 glacial lakes with an area of 107 square kilometres. Based on the condition of the lake and topographic features, 25 lakes are considered to be potentially dangerous. Major glacial lake outbursts



Increasing number of DHF and malaria cases are being reported at altitude above 4000'

glacial lake outburst and floods), vector-borne disease (e.g. dengue and malaria), water-borne disease (e.g. cholera and other diarrhoeal diseases), respiratory diseases due to air pollution, allergen and dust storms, food and water security and psychological concerns from displacement and disruption of bio-diversity.

Implications for SEAR countries: The Gangotri Glacier, one of the largest in the Himalayas is currently 30.2 km long and between 0.5 and 2.5 km wide. It has been receding since 1780, although studies show its retreat quickened after 1971. Over the last 25 years, it has retreated more than 850 meters, with a recession of 76 meters from 1996 to 1999 alone. This would have a vast negative impact on water availability for large populations in the northern Indo-Gangetic plains.

Climate change is showing increased health risks from extreme weather events, vector borne diseases, water borne diseases respiratory disease and psychological concerns from displacement and disruption of bio-diversity.

occurred in 1957, 1960, and 1994. It would need extremely costly measures to build spillways to protect the downstream riverine communities and ecosystem from future glacial lake outbursts.

In both Nepal and Bhutan increasingly there are reports of dengue hemorrhagic fever (DHF) and malaria being found at altitude higher than 4000'. In Bhutan, Dengue fever is an important emerging infectious disease. Although the vectors for dengue, *Aedes aegypti* and *Aedes albopictus* have been known to exist in the southern region, the disease was not reported until July 2004, when an epidemic occurred. In 2006 over 2500 dengue cases were reported. Dengue is now endemic during the monsoon period. While there is empirical evidence linking a rise in temperature and higher humidity to an increase in vector borne diseases, as yet, scientific evidence to prove this link has not been established.

Bhutan's' response

For this reason, RGoB has considered it imperative for the country to prepare the country for disaster mitigation in relation to climate and human health. As a result, four priority areas for action have been identified by them:

- 1) Controlling the expansion of vector-borne diseases
- 2) Reducing the risks of diarrhoeal disease outbreaks by ensuring the provision of safe drinking water
- 3) Strengthening the response capacity of the health sector by preparing for medical emergency response and
- 4) Obtain stakeholder engagement by advocating and creating awareness, notably at the level of local communities.

These aspects will be considered by the Ministry of Health, RGoB, which is a part of the next Five-Year Plan, (2008 to 2013).

Under Global GEF aegis, WHO/Bhutan is facilitating a proposal to address Bhutan's impending problems associated with climate variability. This local project is part of a global GEF initiative carried out in seven countries selected on the basis of different health vulnerabilities to climate change. The countries are Bhutan and Kenya (highland areas), Jordan and Uzbekistan (water-stressed areas), Barbados and Fiji (low-lying developing areas), and China. The project



Mountain countries could face flash floods from glacial melt.

is currently in a one-year design phase, later to run a three to five year implementation phase with a 700 000 USD contribution from GEF.

WHO estimates that the warming and precipitation trends due to anthropogenic climate change of the past 30 years have already claimed over 150,000 lives annually.

In 2000, of the 166,000 deaths occurring globally attributable to climate change, about 82,000 of them occurred in SEAR countries. During the same period of 5.5 million DALYs lost globally, SEAR countries lost 2.2 million DALYs. (WHO, 2002)

Most SEAR countries have set up national bodies to study their national vulnerability and assess the potential impacts from climate change. Some national committees are already established and are developing actions plans to reduce greenhouse gas emissions and to select adaptive measures.

WHO has assembled critical evidence and is now increasingly focused on raising awareness and supporting policy responses. This includes highlighting the health dimensions of climate change in major international meetings (annual UN conferences and Ministerial meetings), working with other UN agencies on new initiatives and partnerships (UNDP and GEF-Piloting health adaptation to Climate Change, with Bhutan as a pilot country in SEAR), and holding advocacy meetings and workshops.

WHO is supporting all SEAR member countries to understand the linkages between climate change and health and to help develop policy responses. WHO is also working in partnership with other agencies such as the World Meteorology Organization (WMO), the UN Environmental Program (UNEP), and the UN Development Program (UNDP). In recent years three Regional workshops have been held on 'Climate Change and Health in South-East and East Asian Countries' (2007; the 'Inter-regional Workshop on Human Health Impacts from Climate Variability and Climate Change in the Hindu Kush-Himalaya Region' (2005) and 'Climate Variability, Climate Change and Health in Small Island States' (2003).

High level international agreements alone are not going to stop dangerous climate change; it will need changes in lifestyle and behavior across all sectors, by individuals and communities and management practices aimed at reducing greenhouse gas emissions and achieving higher energy efficiency. ■

Contd. from pg 11

Working towards control of Al....

WHO Technical Assistance. Close consultation with Ministry of Health is being held to plan for the detailed activities under this plan.

The European Commission (EC) has also committed some funding which is expected to be effective in September 2007 and will cover strengthening of surveillance and case management, healthy food markets and essential researches. So far the EC fund is the largest contribution made through WHO for implementing the National Strategic Plan for Avian Influenza.

It is important to recognize however that there are challenges to controlling the disease in Indonesia. The disease response needs to be tailored to fit local traditions and way of life. This is a huge undertaking in the world's fourth largest nation with over 300 million chickens in the traditional backyard setting. Despite this, major milestones have been achieved in developing provincial and national capacity in surveillance, laboratory testing and outbreak response—all integral aspects of the Indonesian government's short and long term avian influenza control strategy. Indonesia continues to work on its pandemic preparedness and is a key front for a disease that could potentially pose a great threat to national and international health, social and economic systems. ■

Contd. from pg 12

Health workers in Nepal.....

aid training of peripheral health workers and reached out to ambulance drivers via the B P Koirala Institute of Health Sciences (BPKEHS). Collaboration with the most important health institution in the Eastern part of the country contributed significantly to strengthening mass casualty management in the three Eastern target zones. Based on BPKIHS' skills and competencies, WHO supported important pre- and in-hospital training courses such as Hospital Preparedness for Emergencies and Primary Trauma Care training.

One of the ways to minimize the threat of outbreaks of diseases after a disaster is to ensure a well managed and running health care system. Although there is still a long way to go before the health system is capable of confronting a major earthquake, local health authorities and WHO have taken important steps to create a safer health system in times of crisis. Sustained efforts during several years and good collaboration with partner organizations are prerequisites for having made this modest beginning. ■