



World Health  
Organization

Regional Office for South-East Asia

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PROTECTING HEALTH FROM CLIMATE CHANGE

# How is CLIMATE CHANGE affecting Our HEALTH?

*A Manual for Teachers*



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Protecting Health from Climate Change

# How is CLIMATE CHANGE affecting **Our HEALTH?** *A Manual for Teachers*



*Photo: A. Shinde; [www.who.int](http://www.who.int)*



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# Introduction

Climate change is often associated with ecosystem destruction and disappearing species. This is all true, but climate change affects our lives in a more direct way: our health. Unfortunately, the impact of climate change on human health isn't generally acknowledged. The fact that human-made changes in climate affect human health, in an indirect or direct way, needs to be disseminated among our communities, particularly among the youth who hold in their hands the power to change the future.

This manual is an attempt to sensitize growing adults about the importance of the linkages between climate change and human health. The students will learn the reasons behind the changes going on, how they affect each one of us in one way or other, the current and future effects and how we can respond to them. The complete resource material consists of two manuals: one for teachers and one for students.

The teachers' manual is a training resource to support spreading the information via interactive classroom activities. The student's manual is for them to take home, study and share information about climate change and its impact on human health with their families.

The manuals were field tested with 300 children and 15 teachers in several schools before printing of the final version. WHO wishes to thank all those who collaborated in developing the manuals, notably Paula Alvarado, Angela Rey, Dr. Jonathan Patz, Dr. Jenny Pronczuk and Dr. Andy Reisinger.



# 1

## Climate Change in Our Region

### Did you know that...?

- Eighteen heatwaves were reported in India between 1980 and 1998. A heatwave in 1988 caused 1300 deaths, while another one in 2003 caused more than 3000.
- In 2001, heatwaves in Bangladesh caused deaths among metal workers and rickshaw pullers due to heat stroke.
- In 2005, there were floods in Rajasthan and droughts in northeast India.
- In 2006, Bhutan reported loss of life from more frequent flash floods and landslides due to melting of glaciers.
- In 2007, four monsoon depressions double the normal number caused severe floods in Bangladesh, India and Nepal causing death, loss of livelihood and displacement of millions.
- Twelve of the last thirteen years (1995–2007) rank among the warmest years since 1850. The years 1998, 2005 and 2007 were the warmest on record.
- The glaciers in the Himalayas, the “Water Towers of Asia”, are melting rapidly. They are receding at an average rate of 10 to 50 meters per year. The Himalayas contribute crucially to the water supply of 1.3 billion people, feeding into nine of Asia’s greatest rivers.
- The Sunderbans in Bangladesh and in India face threats from the rise in sea level. The Sunderbans are the only mangrove tiger habitat and they support the largest tiger population in the world.
- In 2001, over 45% of tourist resorts in the Maldives reported Beach Erosion. Tourism is a major source of revenue for Maldives.
- In Indonesia, cases of dengue fever have risen by close to 50% between 2006 and 2007, likely due to temperature increases during and after the annual rains.



Photo: Basuki; [www.who.int/phe](http://www.who.int/phe)

- Indonesia's Environment Minister said global warming was to blame for the devastating floods that hit the capital Jakarta in November 2007, forcing thousands of people to flee homes.

### It appears that the phenomenon of global warming is upon us all! What's happening?

We first need to realize that there is a difference between weather and climate.

- Weather consists of those meteorological events, such as rain, wind, and sunshine that can change day by day, even hour by hour.
- Climate is the average of all these events over a period of time, like a year or several years.

### ... and what is climate change?

Our planet's climate is always changing. In the past it has altered following natural causes but at the present the changes have accelerated as a result of human behavior.

Nowadays the term "climate change" is generally used when referring to changes in our climate, which have been identified as occurring since the beginning of the mid-19<sup>th</sup> century.

The major mechanism behind climate change is the increased "greenhouse effect", by which the Earth's atmosphere traps energy from the sun just like a greenhouse.

The natural greenhouse effect which warms our planet to support life—is being heavily disturbed.

The energy from the sun warms land, water, and air. In turn, the warmed-up land, water, and air give off heat, which rises up towards the sky. Gases, such as water vapor, present in the Earth's atmosphere capture some of that heat and prevent it from escaping into space. This heat trap keeps the Earth warm, and like a warm blanket makes our planet a habitable world for all the various animal and plant species to survive in.

Without this heat trapping system, the Earth's surface would be about 15 degrees Celsius colder than it is now.

This process is known as the **greenhouse effect**. It is a natural phenomenon mainly driven by water vapor, and other **greenhouse gases** (or **GHGs**) present in the atmosphere. Adding more greenhouse gases increases the warming effect to the point that it is no longer beneficial but has negative consequences for life on Earth.

Figure 1: The Greenhouse Effect



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