

CSE dossier

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FOURTH
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CONVENTION
ON
CLIMATE
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IMPACTS OF GLOBAL WARMING

Possible effects on country like India

There is growing evidence that the Earth is heating up. The 1990s have seen some of the hottest years in the world since the Industrial Revolution began. Nine of the hottest years since 1860, when scientists first started taking measurements, have in fact taken place in the last 11 years. When the global average temperature of 1997 is compared with the estimates that scientists have made of world temperatures over the last 600 years, it turns out to be the hottest year on record with 1995 and 1990 following 1997. The year 1997 was some 0.43°C hotter than the average temperature for the period 1960 to 1990. And now 1998 is likely to break the record of even 1997^{1, 2}.

The Intergovernmental Panel on Climate Change, an international committee of scientists set up the United Nations to track global warming says that the average global surface temperature has already increased by 0.3-0.6°C in the last one hundred years which is beginning to alter the climate². Scientists are reporting that the spring is now coming a week earlier in the northern hemisphere, the treeline in the northernmost forests of the world are moving towards the pole, the level of the atmosphere at which the temperature reaches 0°C has been rising by five metres annually, and ice shelves on Antarctica's northern fringe are disintegrating².

Unfortunately, though we know that the heating up of the Earth will definitely change the global climate, scientists cannot yet forecast with any precision how a particular region like South Asia or a particular country like India will be affected. But scientists are already pointing out to several possibilities that are of great concern to India:

1. Studies show that the heating up of India will not be uniform across the country. While the average annual increase will be about 1°C, the winters of north and northwest India may be more than 2°C warmer by the middle of the next century and there could be a cooling of over 1°C in the Northeast. The monsoon season is likely to about 1°C warmer on average³.

2. Some studies have also indicated a decline in monsoon rainfall over the north and central plains of India in the decades ahead because of the general weakening of the monsoon. This is because there will be a decrease in the land-sea thermal gradient. No significant rainfall decrease is expected during the winter season. But the average annual levels and monsoon season levels of soil moisture could decline significantly in the central plains. There will also be a significant decline in surface runoff in these plains leading to less water in the rivers. Thus, global warming could have a significant impact on the country's water resources³.

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3. Yet another study has calculated that rice yields could drop by as much as 15 to 42 per cent and wheat yields by 1.8 to 3.4 per cent and agricultural prices in relation to non-agricultural prices could increase by 7-18 per cent. Even if the increased carbon dioxide in the atmosphere stimulates plant growth, because of an effect known as carbon fertilisation, there would still be reductions in yields⁴. Other experts argue that the carbon dioxide concentration in the atmosphere has grown by 25 per cent in the period between 1900 and 1980 but no noticeable change in productivity of several crops has occurred, except due to improvements in varieties and new management practices. Therefore, carbon fertilisation may have no or very limited effect. A 2°C increase would be intolerable in India⁴.

4. The heating up of the Earth will melt the polar ice caps and thus raise the level of the world's seas. This could drown the entire country of the Maldives and nearly one-third of Bangladesh resulting in unmanageable migrations into the higher lands of India. The worst affected areas in India are likely to be the low-lying areas of Goa, West Bengal and Gujarat⁴.

5. The heat will also lead to glaciers melting and becoming smaller in the Himalayas and thus there will be reduced water flows in Indian rivers during the summer period. There are more than 5218 glaciers in the Himalayan mountains which occupy nearly 9 per cent of its total area or about 3.822 million hectares. Already, there is evidence that several Himalayan glaciers are receding. Between 1977 and 1990, the Gangotri glacier retreated by as much as 364 metres or about one-third of a kilometre⁵.

6. Scientists believe that extreme weather events will increase when the world warms up. In other words, there could be even more intense cyclones, more intense rainstorms and more intense drought periods. All of these weather-related problems already exist in India and but if they intensify, they could lead to havoc. This will have serious economic and political impacts on the Indian subcontinent. We must not forget that the political process leading upto the creation of Bangladesh was triggered off by a cyclone which ultimately led to nearly ten million people fleeing to India. More than 1,000 people died in the Andhra Pradesh cyclone in 1996. According to M B Lal of the Indian Institute of Technology, Delhi, preliminary results suggest more

frequent heavy rainstorms over the Northeast which could mean even more flash floods in that region.

7. The World Health Organisation has warned that several diseases like malaria, dengue and cholera will become more intense in tropical countries like India because breeding conditions for mosquitoes and various other germs will improve.

8. The United Nations Inter-governmental Panel on Climate Change (IPCC) has warned that, in economic terms, the consequences of climate change will be far more severe for developing countries because they will have less financial resources to deal with its ill-effects. If the carbon dioxide concentrations in the atmosphere were to double, the IPCC has calculated that the resulting economic damage would wipe out only 1-2 per cent of GDP for industrialised countries whereas developing countries could see 2-9 per cent of their GDP wiped out.

Why is there so little investment in research on impacts?

Compared to the research that has gone into understanding the process of climate change, little effort has been made to understand how different countries and regions will be affected by climate change. At a few international conferences, some scientists have even murmured that there appears to be a 'conspiracy of silence' on this count because it may show that most damage will take place in the developing world whereas it is the Western world which has largely caused the problem. If this turns out to be true, there is a danger that public pressure in Western nations may become so low that these countries may not want to do much about the problem.

But we do know for certain that the heating up of the Earth will be maximum towards the polar regions. This does mean that whereas agriculture will become more prone to pests and water shortages in the developing world, there will be greater scope for agriculture in the Northern countries because their winter will become shorter and less intense. The northernmost forests of Siberia and Canada are already said to be extending further towards the North Pole. A US economist has, in fact, publicly stated that the US should not worry too much about global warming as it will suffer only a very small impact. Unfortunately, there is very little researcher impacts of global warming in developing countries.

1 1998 European Parliament Resolution, September.
2 Draft Green Global Document on Global Change for Buenos Aires, *mimeo*.
3 M B Lal 1995, Working Paper, Paper presented to the South Asian Regional Workshop on Science and Climate Change,

Centre for Science and Environment, New Delhi, *mimeo*.
4 Jyoti Parikh and Kirit Parikh u.d., Free Ride through Delay: Risk and Accountability for Climate Change, *mimeo*.
5 Ajay Naithani 1998, Retreat of The Himalayan Glaciers, *mimeo*.