Research Paper Economics

The Economic of Climate Change: "Issues and Challenges"

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ABSTRACT

"Climate change is a long-term change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. It may be change in the average weather conditions or change in the distribution of weather events with respect to an average, for example, greater or fewer extreme weather events. Climate change may be limited to a specific region, or may occur across the whole Earth. In recent usage, especially in the context of environmental policy, climate change usually refers to changes in modern climate. It may be qualified as anthropogenic climate change or anthropogenic global warming (A GW). The most general definition of climate change is a change in the statical properties of the climate system when consider over periods of decades of longer, regardless of cause."

KEYWORDS

"The socio-economic institutional and geographical features of Latin America and the Caribbean make climate change a particularly pressing issue in the region. The acute sensitivity to climate shifts of some of its economic activities, such agriculture and tourism, the potential loss of biodiversity or of human life or even the exposure to extreme weather events show how important it is to conduct an economic analysis of climate change in order to construct a sustainable long term development strategy that is based on sound science and backed by broad social consensus. The global scope of climate change, its impact as negative factor in economic development, the high levels of uncertainty surrounding the subject and the need for an effective risk management scheme are fuelling a heated debate encompassing the ethical aspects and equity, the size of the phenomenon across different period of time, the channels through which the damage are transmitted, the economic costs involved and the best options for confronting them.

The private sector the public sectors and citizens in general must in their own ways actively contribute to the adjustment that will have to be made to secure a more viable future. Innovative solutions to the problems brought about by climate change will involve redirecting the economy towards low-carbon growth that is compatible with sustainable development. The atmosphere must viewed as a public good and its preservation for future generation as an ineluctable duty of the generation of today."

Cause

Factors that can shape climate are called climate forcings. These include processes such as variations in solar radiation. Variations in the Earth's orbit, mountain-building and continental drift and changes in greenhouse gas concentrations. There are a variety of climate change feedbacks that can either amplify or diminish the initial forcing. Some parts of the climate system, such as the oceans and ice caps, respond slowly in reaction to climate forcing, because of their large mass. Therefore the climate system can take centuries or longer to fully respond to new external forcing

Human influences

Increase in Atmospheric CO2 levels. In the context of climate variation, anthropogenic factors are human activities that change in environment. In some cases the chain of causality of human influence on the climate is direct and unambiguous. While in other instances it is less clear. Various hypotheses for human – induced climate change have been argued for many years. Presently the scientific consensus on climate change is that human activity is verily likely the cause for the rapid increase in global average temperatures over the pas several decades Consequently, the debates ha largely shifted onto way to reduce further human impact and to find ways to adapt to change that ha already occurred. Of most concern in these anthropogenic factors is the increase in CO2 levels due to emissions from fossil fuel combustion, followed by aerosols (particulate matter in the atmosphere) and cement manufacture. Other factors, including land use, ozone depletion, animal agriculture and deforestation, are also of concern in the roles they play – both separately and in conjunction with other factors – in affecting climate microclimate, and measures of climate variables.

Historical and archaeological evidence

Climate change in the recent past may be detected by corresponding changes in settlement and agricultural patterns. Archaeological evidence, oral history and historical documents can offer insights into past changes in the climate. Climate change effects have been linked to the collapse of various civilizations

Glaciers

Variations in CO2, temperature and dust from the Vostok ice core over the last 450,000 years Decline in thickness of glaciers worldwide. Glaciers are considered among the most sensitive indicators of climate change their size is determined by a mass balance between snow input and melt output. As temperatures warm, glaciers retreat unless snow precipitation increases to make up for additional melt; the converse is also true. Glaciers grow and shrink due both to natural variability and external forcings. Variability in temperature, precipitation, and englacial and subglacial hydrology can strongly determine the evolution of a glacier in a particular season. Therefore, one must average over a decadal or longer time-scale and/or over a many individual glaciers to smooth out the local short-term variability and obtain a glacier history that is related to climate. A world glacier inventory has international reporting. He adds.

Scientific strategies can save dry land agriculture

Analysts sometimes describe India's agriculture as a gamble with monsoons. About 60 per cent of India's farms depend on these rains, making them crucial for India's agriculture, which accounts for a sixth of the country's economic output. But rainfall patterns are likely to shift with climate change. The monsoons may be delayed and unpredictable rains and heavy downpours are likely to be the rule rather than the exception. India is already feeling related effects, including warmer temperatures for longer periods and long dry spells during the cropping season. The World Bank has suggested that

India will see a fall in major dryland crop yields from Andhra Pradesh and that rice production in Orissa's flood-prone coastal regions could drop by 12 per cent due to climate change. These changes will affect everyone but particularly the poorest of the poor. Yet the perennial gamble can still be weighted in farmers' favour. Science-based strategies being developed by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and its partners can greatly help vulnerable dryland farming communities cope with the impacts of climate change, including drought.

Four steps to security

First is developing drought-tolerant and climate change-ready crops to match available growing seasons and low soil moisture. ICRISAT's genebank, with almost 120,000 germplasm samples collected from 144 countries, is the world's biggest repository for the genetic traits required to develop drought-tolerant crops. Supported by the Indian government, ICRISAT has created an advanced biotechnology laboratory to enhance breeding on drought tolerance in key crops. And, with the Indian Council of Agricultural Research (ICAR) and state university partners, ICRISAT has developed and released varieties of sorghum, pearl millet, chickpea, pigeonpea and groundnut that are all more drought-tolerant than currently-grown varieties. Second is pre-emptive action to replace vulnerable crops with more drought-tolerant ones. Fast-growing crops thrive and yield well even when water may become scarce, as they mature before soil moisture gets depleted. Farmers in sorghum growing areas, for example, could plant pearl millet to escape the onset of drought. Third is efficiently managing natural resources to arrest land degradation, conserve soil moisture and harvest water during the rainy season for supplemental irrigation. Fourth is empowering stakeholders by building capacity. Enabling rural institutions and formulating policies that support dryland agriculture. Capacity building, in the form of knowledge sharing and strategic partnerships, lets people accumulate valuable 'social capital'. But institutional mechanisms for accessing markets and credit, rural infrastructure and other support services are also needed. ICRISAT also recommends farmers grow an array of crops, together with rearing livestock and having other activities that generate income.

Points for policymakers

In particular, policymakers must:

1. Significantly increase public investment in dry land agricul ture, including agriculture research and rural infrastructure.
2. Develop sophisticated techniques for predicting and forecasting the monsoons in the context of climate change;
3. Enable collective action and rural institutions for agriculture and natural resource management;
4. Rehabilitate degraded lands and diversify livelihood system for landless and vulnerable groups;
5. Recharged depleted groundwater aquifers and enforce strong regulations on groundwater extraction;
6. Clearly define and enforce water rights in watershed communities;
7. Roll out the community watershed management model;
8. Price water and power to more accurately reflect their opportunity costs;
9. Support water-saving options such as drip irrigation and dryland crops; and
10. Include dryland crops in the minimum support price scheme.

Substantial investments in improved water management and new technology, along with appropriate policy and institutional innovations, can significantly increase agricultural productivity. India should start investing now for the long-term sustainability of its farming sector, particularly in dryland agriculture. Doing so will enable India's farmers to win their gamble with the monsoons for good. And Indian dryland agriculture would become a beacon for the rest of the world.

Effect of global warming on India.

The effect of global warming on the Indian subcontinent vary from the submergence of low-laying islands and coastal lands to the melting of glaciers in the Indian Himalayas, threatening the volumetric flow rate of many of the most important rivers of India and South Asia. In India, such effects are projected to impact millions of lives. As a result of ongoing climate change, the climate of India has become increasingly volatile over the past several decades; this trend is expected to continue. Elevated carbon dioxide emissions from industries, factories, vehicles etc. have contributed to the greenhouse effect, causing warmer weather that lasted long after the atmospheric shroud of dust and aerosols had cleared. Further climatic changes20 million years ago, long after India had crashed into the Laurasian landmass, were severe enough to cause the extinction of many endemic Indian forms. The formation of the Himalayas resulted in blockage of frigid Central Asian air, preventing it from reaching India; this made its climate significantly warmer and more tropical in character than it character than it would otherwise have been. Several effects of global warming, including steady sea level rise, increased cyclonic activity, and changes in ambient temperature and precipitation patterns, have affected or are projected to affect India. Ongoing sea level rises have already submerged several low-lying islands in the Sundarbans, displacing thousands of people. Temperature rises on the Tibetan Plateau, which are causing Himalayan glaciers to retreat.

Environmental

Increased Landslides and flooding are projected to have an impact upon states such as Assam. Ecological disasters, such as a 1998 coral bleaching event that killed off more than 70% of corals in the reef ecosystems off Lakshadweep and the Andamans, and was brought clean development. Mechanism established under the Kyoto Protocol, or in a future market based on expectations that future global policies will impose more stringent GHG restrictions. provided that credits could be banked and sold.

Conclusion

The main message is that we can do quite a lot about climate change. It's too late to stop it altogether but we can limit global warming to no more than about 2 C and we can cope with the damage that will cause. What is more, we can do both at a price we can afford, say 1 percent of the worlds current total consumption. But we have no time to lose. The longer we put it off, the harder it will be, the more it will cost, the less it will achieves, and the higher the risk that the effect will be both irreversible and so great that we will not be able to deal with the consequences in any reasonable ways. Keeping climate change within bounds is going to require governments to act quickly and decisively. It will also required international cooperation on an unprecedented scale. Countries are going to have to pay a bigger share of the costs, including a major contribution to helping the developing countries to adapt to those change that do take place, but not to the extent that it will have a significant effect on their own economics. As for the individual citizen in the developed world, the good news is that our own quality of life need not suffer. The estimated 1 percent of GDP will mean not that our standard of living will fall but only that it will rise more slowly than if we were ignoring the problem. We'll find ourselves doing less of some things, like flying to faraway countries for the weekend. We'll do other things in different ways: we'll heat water using solar energy and we'll probably go to work on efficient public transport instead of driving alone in an SUV on a crowded road. But on the whole we'll live just as well asif we weren't doing anything about climate changes.

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