

# Climate change report predicts devastating worldwide impacts

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By examining in detail the impact on a range of six developing countries, a research program led by Professor Rachel Warren at the University of East Anglia has confirmed the serious and rapid consequences of global warming on an international scale.

The scientific consensus on climate change is undeniable. The latest Intergovernmental Panel on Climate Change (IPCC) report released in 2022, synthesised tens of thousands of research papers and represents the most comprehensive overview of climate science.

It stated with high confidence that “human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming.” The IPCC warned that this had already “led to widespread adverse impacts and related losses and damages to nature and people.”

A 2021 analysis from Cornell University demonstrated a more than 99.5 percent consensus among the peer-reviewed literature on human-caused contemporary climate change. This fact was “no more in contention among scientists than is plate tectonics or evolution,” it concluded.

Climate change denial has never been a more untenable position than it is now.

Despite this widespread consensus, some knowledge gaps relating to climate change risks have remained. Specifically, a methodologically consistent approach to how climate change will impact different countries has been lacking. This is because research on global climate risks that uses consistent models and methods does not normally consider the differing effects between individual countries.

By contrast, national climate change studies will differ in their modelling methods from country to

country. There is thus a need for a consistent approach to assessing climate change risk between nations.

The latest report addresses this knowledge gap through eight research papers produced from June 2021 to February 2024. The researchers chose six developing countries to analyse: Brazil, China, India, Egypt, Ethiopia and Ghana.

These countries were chosen to assess both different levels of development and different geographies. The six countries span 67th (China) to 134th (Ethiopia) on Inequality Adjusted Human Development Index from 2022 and are spread out over three continents.

In each of the papers, the same set of climate models was used for each country that was analysed, to provide a consistent risk projection across countries for each increment of global warming. Each paper covers a different topic relating to climate change risk, including droughts, flooding, crop yields, biodiversity and economics.

The combined findings of the eight studies were compiled in a synthesis report published in the journal *Climatic Change* on February 29. The results are in line with the consensus on climate change. “With a few exceptions, increasing warming leads to greater exposure to drought, fluvial and coastal flooding, and greater declines in biodiversity and crop yields,” the report stated.

While the scope of the research in this collection is far too large for one article to cover comprehensively, some of the key findings from this synthesis report can be outlined here, as well as how it relates to previous climate change research.

For all six countries, the study found major risks from climate change in terms of increases in drought frequency and severity. Specifically in Brazil, China, Egypt and Ethiopia, 3 degrees Celsius of warming

could expose more than 80 percent of the agricultural area in each country to droughts of longer than one year.

Crop yields subsequently will be affected by such droughts. For all countries besides India, the study found major climate risks of decreased crop yields. Egypt, for example, is “projected to suffer impacts to welfare due to negative impacts of climate change on rice and wheat yields, subsequent production, and increasing crop prices.”

While more severe and frequent droughts are expected in some regions, others will be subjected to coastal flooding. The researchers found that climate change poses major flooding risks for China, Egypt and Ghana.

In Egypt, one of the papers in this collection estimated a shocking 50-fold increase in potential human exposure of fluvial flooding at 4 degrees Celsius of warming. This was a conservative estimate as it kept population constant. Using a population projection associated with a “middle of the road” scenario of 9 billion people globally by the year 2100, the study projected a potential 12,000 percent human exposure increase in Egypt to flooding at 4 degrees Celsius of warming.

Risks will vary between countries, but the global picture is grim. A 2016 paper cited by the IPCC report mentioned earlier found a 20-fold increase of flood risk in India and Bangladesh for 4 degrees Celsius warming.

On a global scale, the average risk of flooding from climate change corresponds to an additional 24 million people per decade at risk of flood impacts due to 4 degrees Celsius warming.

While 4 degrees Celsius of warming is on the higher end of climate change projections, it is certainly not ruled out in the absence of serious climate mitigation efforts, and could be reached by the 2070s.

Biodiversity is also at major risk from climate change in most of these countries. Climate change increases the exposure of many species to extreme conditions. The report stated that in countries such as Brazil, 3 degrees Celsius of warming would leave “very few climate refugia for plant biodiversity.” In India, only 17 percent of the country is projected to “act as a safe refuge for biodiversity” at 3 degrees Celsius of warming.

The lack of natural refuge from climate change in a warmer world will inevitably lead to biodiversity loss

above pre-existing rates. According to the International Union for Conservation of Nature (IUCN), over 1,600 threatened or near-threatened species are already being impacted by climate change. The IPCC noted in its latest report: “As warming levels increase, so do the risks of species extinction or irreversible loss of biodiversity in ecosystems.”

In an editorial introduction to the collection of studies comprising the new report, climate scientists Daniela Jacob and Tania Guillen Bolanos remark that “widespread and escalating climate change risk” is the future that awaits humanity if immediate reduction of greenhouse gas emissions is not implemented.

They add that “the risk of severe impacts increases with every additional increment of global warming,” highlighting the necessity to limit the degree of warming as much as possible.

This is not happening under the capitalist system. The 3 degrees Celsius of global warming that researchers have warned about is exactly the trajectory that the earth is headed toward given current policies.

In the words of a recent study, “current midcentury net zero goals are insufficient to limit global warming to 1.5°C above preindustrial temperatures. The primary barriers to the achievement of a 1.5°C-compatible pathway are not geophysical but rather reflect inertia in our political and technological systems.”

Fossil fuel companies and the ruling classes who defend their profit interests are sending these six countries and the rest of the world into climate catastrophe.



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