Flood of injustice

On the back of a period of exceptional heat earlier in the year much of Pakistan is now, or has recently been, underwater following record-breaking monsoonal rainfall and resultant flooding over around a third of the country. The sheer scale of the crisis is hard to fathom with some 33 million people displaced, over 1300 people killed and another approximately 1600 injured by the floodwaters. In addition, more than 1.2 million houses, 5000 kilometres of road and 240 bridges have reportedly been destroyed. With such extensive flooding it’s no surprise that many farms have also been badly affected with an estimated 735,000 livestock lost and more than two million acres of crops damaged. 1800 schools and over 1460 health facilities have also been affected. With such extensive damage, disruption, and displacement there is great ongoing risk to public health by water- and vector-borne diseases. UN chief Antonio Guterres estimates that economic losses to Pakistan could be as much as USD 30 billion, which will hit Pakistan’s already ailing economy particularly hard struggling as it is with its balance of payments, debt, and soaring inflation.

Localised monsoon related flooding crises are not uncommon in Pakistan, but the scale of this disaster poses important questions about this and future events. The unusual heatwave that Pakistan experienced earlier in the summer likely contributed to the high rainfall, since warmer air holds more moisture meaning there is more to fall as rain. Warm conditions also speed up glacial melt, increasing the volume of water flowing from the mountainous north through tributary rivers into the Indus River, this may have had a role is raising its baseline river levels ahead of the monsoon.

Flooding was primarily caused by a series of “monsoonal depression systems—low atmospheric pressure systems. These started earlier than usual, and all tracked over the southern provinces of Sindh and Balochistan which received 726% and 590% of their normal August rainfall, respectively. Heavy rainfall over southern Pakistan allowed less time to prepare for the ensuing floods than more typical northerly rainfall.

An event attribution study designed to investigate the extent to which the rainfall patterns were influenced by anthropogenic climate change focussed on the annual maximum of the mean 60-day precipitation (June–Sept 2022) over the Indus river basin, and the annual maximum of the mean 5-day precipitation in (June–Sept 2022) over the worst hit provinces. The study concludes that five-day maximum rainfall was about 75% more intense than it would have been without climate heating. Meanwhile, the 60-day rain across the basin was up to 50% more intense. Although there are significant uncertainties in the analysis, particularly over the 60 day period the authors conclude climate change “likely increased the intense rainfall” that contributed to the flooding. They further warned that “for a climate 2°C warmer than in pre-industrial times [scenario], models suggest that rainfall intensity will significantly increase further for the five-day event”, suggesting that unless the international community reduce emissions much more rapidly than is currently happening extreme rainfall events like this could become even more severe in the coming decades.

The scale of flooding would challenge any country but flooding and resultant impacts on people are not only the result of environmental exposures such as very heavy rainfall or even geographical factors like flood basin topography but also infrastructure and planning and associated choices about what to prioritise. A report published after severe flooding that affected the country in 2010 concluded that flooding was exacerbated by dam and barrage infrastructure that reduced water and sediment conveyance capacity together with multiple failures of irrigation levees. A legacy of infrastructure that prioritises flood barriers, reservoirs, canals and barrages, often at the expense of social and environmental considerations needs to be addressed. Surely reconsidering these priorities must now be a political priority as the country rebuilds.

Events like this exemplify the injustice of climate change being driven primarily by high income nations emissions but having the worst effects in low- and middle-income countries. That climate change likely intensified these extreme monsoon rains should reignite discussions over climate finance, the timely provision of which could have helped minimise these floods and their impacts. It will also likely reignite discussions about loss and damage and the potential need for compensation mechanisms ahead of the next UN climate Conference.

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