"Flood Mitigation, Climate Change Adaptation and Technological Lock-In in Assam"

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Climate change adaptation requires communities and policymakers to be flexible in order to cope with high levels of uncertainty in climate projections, particularly of precipitation, flood magnitude and frequency, and changing human exposure and vulnerability to floods—which are even less predictable than the climate. Most of the world's major rivers are embanked to "protect" communities from floods. Embankments—which represent a significant investment largely of public funds—are a manifestation of the professionalism of engineers and hydrologists. They are also the result of professional and political entrapment and a technological frame that grows in strength (probably non-linearly) by positive feedback to produce technological lock-in. This results in inertia in large socio-technological systems, with little incentive to adopt more adaptive and flexible solutions, including non-structural measures—such as land-use zoning—even in the face of evidence that structural measures do not always reduce damage and, in some cases, actually make it worse. Where embankment breaches are common, damage is likely to increase as climate change induces larger floods, and lock-in and path dependence increase risk. Therefore, there is an urgent need for the mitigation of floods through non-structural measures that complement embankments. The phenomena described in this paper are common in many countries. (Abstract)

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