

# HOW DO WE ASSESS VULNERABILITY TO CLIMATE CHANGE IN INDIA? A SYSTEMATIC REVIEW OF LITERATURE

The outcomes of vulnerability assessments are often a result of the tools and methods used in the assessments. Past vulnerability assessments that have been carried out in India, often fall short in reflecting the true extent of vulnerability to climatic and non-climatic risks.

## KEY IMPLICATIONS FOR POLICY, PRACTICE AND RESEARCH

Current government vulnerability assessments were all indicator based and followed outdated definitions of vulnerability. There is a need for assessments at different scales, in conjunction with more disciplines (i.e., beyond GIS mapping and disaster management), and at different time periods. There is also a particular need to conduct assessments in urban and peri-urban settings at national and state levels.

Vulnerability assessment is often a first step that informs adaptation interventions and fund allocation. We argue that funders and implementers in India need to update vulnerability assessment methodologies to match newer definitions, and undertake assessments over longer time periods to capture changes in vulnerability over time. This is critical to assess whether adaptation interventions are effective. Finally, while practitioners are already using participatory methods to assess vulnerability, they need to harness the strengths of different methodologies, and also understand the climatic and non-climatic drivers of vulnerability.

Further research is needed for vulnerability assessments in peri-urban India, to better understand temporal vulnerability, and assess vulnerability in non-coastal contexts. In addition, to improve the usability of assessments, researchers should focus on assessments which offer policy recommendations or tie their findings to practice.

## KEY FINDINGS

Our findings emphasise that methods to assess vulnerability to climate change are embedded in the disciplinary traditions, methodological approaches, and often-unstated motivations of those designing the assessments. Current vulnerability assessments in India tend to focus on coastal regions, while significant gaps exist for vulnerability assessments in semi-arid regions and peri-urban regions. We also found that most vulnerabilities fail to integrate the social, household, and temporal scales of vulnerability, with 35% of assessments using snapshot indicators of single time frames, and only 1% considering gender.

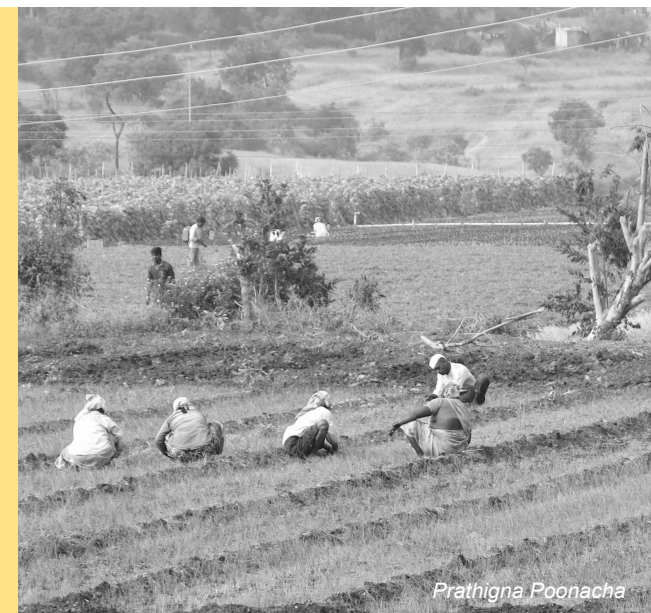
In general, vulnerability assessments poorly integrated the components of risk management, and often applied outdated framings. Less than 20% of the studies that we examined considered vulnerability to both climatic and non-climatic stressors, demonstrating the poor integration of the different risks which produce vulnerability. We argue that the different conceptualisations of vulnerability are predisposed to certain methodological approaches and thus have significant implications on who and what is rendered vulnerable. In short, how you assess vulnerability determines who is identified as vulnerable.

## WHAT WAS DONE, AND WHAT WAS NOVEL?

Vulnerability assessments are critical tools for informing the prioritisation of vulnerability assessments in highly vulnerable countries with multiple risks and varying socio-economic contexts. While several vulnerability assessment tools have been created in India, the conceptual, methodological, and disciplinary underpinnings, and the implications of these tools has yet to be investigated.

We performed a systematic literature review of 120 vulnerability assessments conducted within India, including peer-reviewed journal articles (78) and grey literature (42).

Our review revealed how vulnerability assessments in India tend to be skewed towards regions facing external pressures (such as sea level rise) rather than regions which face various structural conditions which produce vulnerabilities (such as arid and semi-arid regions).



Prathigna Poonacha

