



# Climate Change Vulnerability Assessment of Kuttanad Rice Farmers

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## Introduction

### Kuttanad Wetland Rice Ecosystem:

- Unique in the world for below-mean sea level rice farming and a part of the global agricultural heritage
- Known as the “Rice bowl of Kerala”
- One of the areas most threatened by climate change
- In the 2018 flood, 14,000 ha of paddy has destroyed

## Objectives

To develop a Climate Change Vulnerability Index (CVI<sup>AEU</sup>) for the *Kuttanad* Agro-Ecological Unit (AEU 4) and compare the dimensions of climate vulnerability: *Adaptive Capacity*, *Sensitivity*, and *Exposure*.

## Methodology

- Study Area : *Kuttanad* AEU  
 Tool : Farm household survey  
 Sampling : Multistage proportionate sampling  
 Sample Size : 224 farm households  
 References : CVI<sup>RFT</sup> (Sathyan *et al.*, 2018); LVI (Hahn *et al.*, 2009)

### Climate Vulnerability Index

$$CVI^{AEU} = \frac{\sum_{i=1}^n W_{mi} M_{wi}}{\sum_{i=1}^n W_{mi}}$$

## Household survey



Fig 1: Interacting with a Farmer.

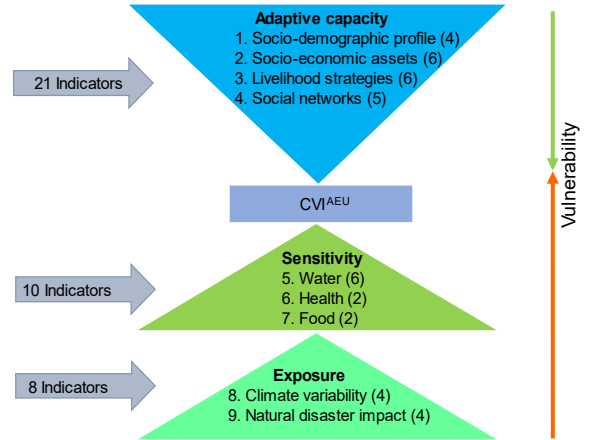


Fig 2: Adaptation Strategy.

## References

- Sathyan, A.R., Funk, C., Aenis, T. and Breuer, L., 2018. Climate vulnerability in rainfed farming: Analysis from Indian watersheds. *Sustainability*, 10(9), p.3357.
- Hahn, M.B., Riederer, A.M. and Foster, S.O., 2009. The Livelihood Vulnerability Index: A pragmatic approach to assessing risks from climate variability and change—A case study in Mozambique. *Global environmental change*, 19(1), pp.74-88.

## Conceptual framework



## Results

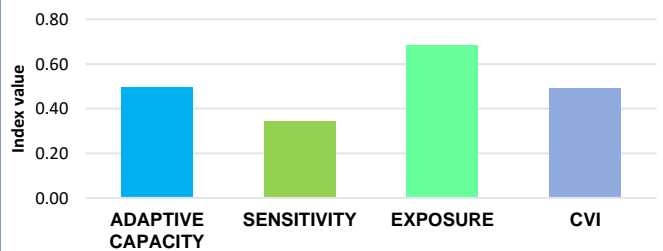


Fig 3. Dimensions of Vulnerability and CVI<sup>AEU</sup>.

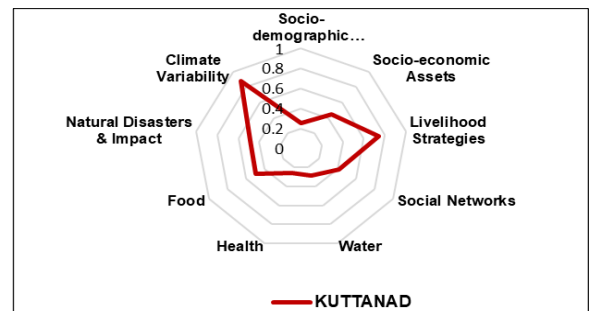


Fig 4. Index Values for Major Components of Vulnerability.

## Recommendations

1. Schemes: Promote crop and livestock diversification and integrated farming
2. Farmer Organisations: These can be linked to cooperative institutions
3. Training: Offer sessions on flood risk management and technology adoption
4. Drinking Water: Ensure a consistent and safe supply
5. Insurance: Include 'crop loss due to salt water intrusion' in natural calamities insurance coverage