

# Climate risk assessments India

Conceptual approach and application experiences

Global Programme Risk Assessment and Management for Adaptation to Climate Change  
(Loss & Damage) | 30.10.2019

# Agenda

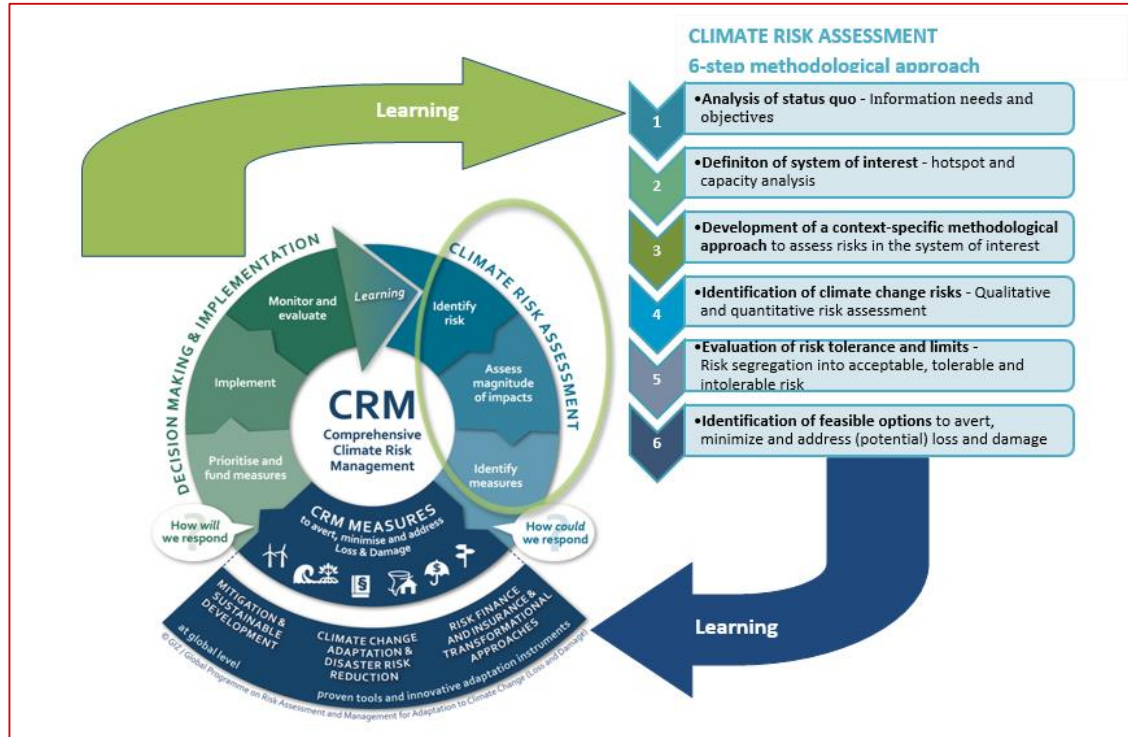
1. **Presentation of conceptual approach**
2. Context of application in India
3. Implementation of 6 step approach in India
4. Conclusion

# Comprehensive Climate Risk Management

Climate Risk Assessment as part of comprehensive climate risk management:

Climate risk assessment builds the foundation for successful CRM. By identifying risk, assessing the magnitude of impacts on people, assets and ecosystems CRM shows possible options for action and answers the question: **How could we respond?**

For more information, please scan:



# Application experiences from India

2018: Development of Climate Risk Management Framework in India with application experience in **Tamil Nadu**

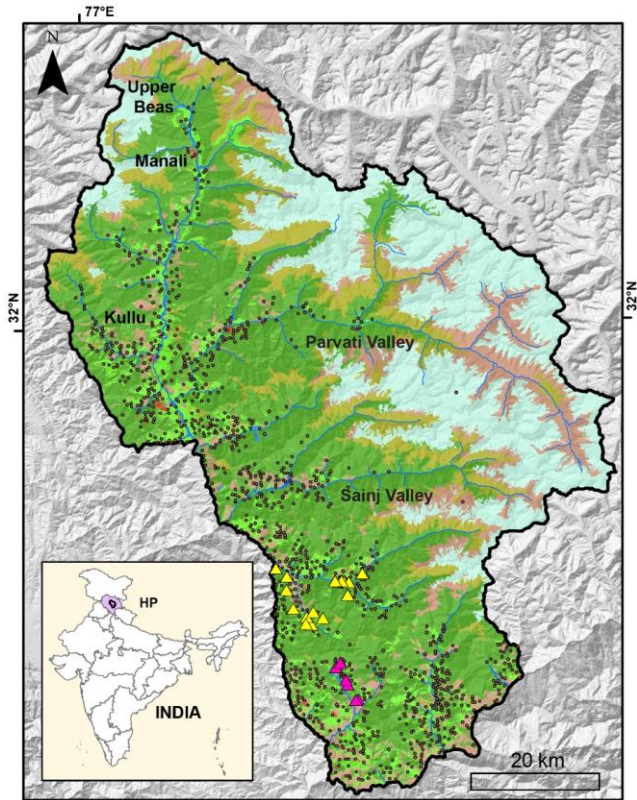
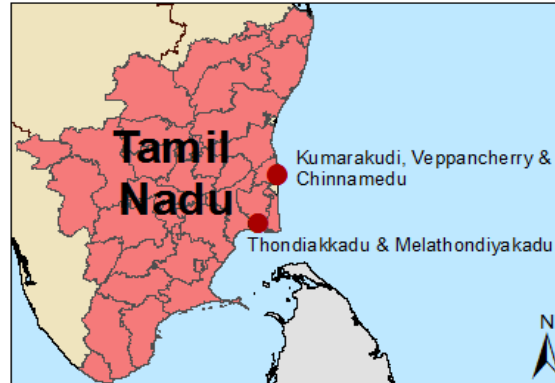
2019: Climate Risk Assessment in Himachal Pradesh

mandated by: **Indo-German Environment Programme in Rural Areas**

Implemented by:



INRM Consultants  
Private Limited



- |  |   |   |
|--|---|---|
| Community surveys:                           | <span style="color: green;">■</span> Agriculture        | <span style="color: brown;">■</span> Wastelands       |
| <span style="color: yellow;">▲</span> Banjar | <span style="color: green;">■</span> Forest             | <span style="color: cyan;">■</span> Snow and glaciers |
| <span style="color: magenta;">▲</span> Anni  | <span style="color: olive;">■</span> Grass land/Grazing | <span style="color: blue;">■</span> Water bodies      |
|  | <span style="color: red;">■</span> Major urban area     | <span style="color: brown;">●</span> Habitations      |

# Analysis of status quo

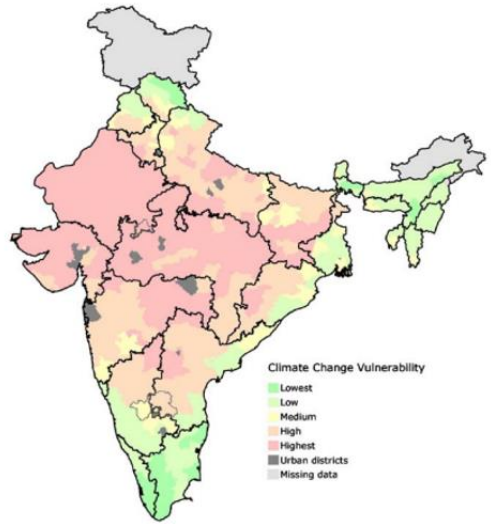


Figure 2: District-level mapping of climate change vulnerability, measured as a composite of adaptive capacity and climate sensitivity under exposure to climate change

Identification of climate and water related risks

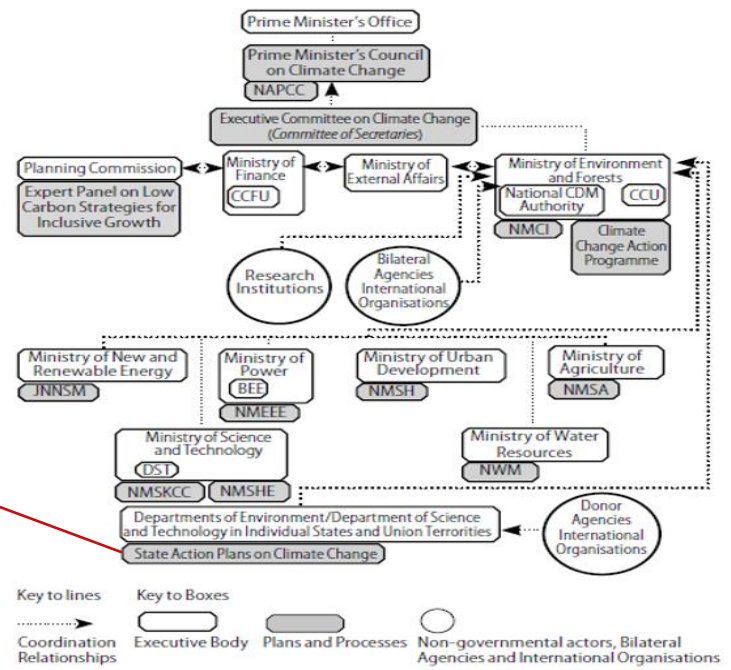


Figure 3: National Climate Change Institutional Framework

Source: Final report on CRM framework India (2018)

## Definition of system of interest (SOI)

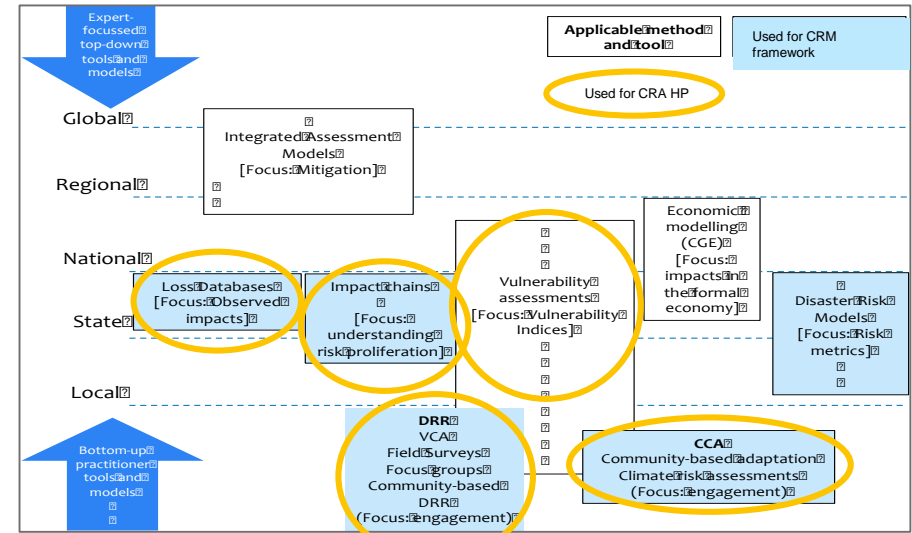
- Criteria based choice of district:
  - data availability;
  - accessibility of regions;
  - existing knowledge on climate risk and vulnerability in the region;
  - stakeholder engagement and motivation
- Presentation and discussion of selected district in stakeholder workshop ensuing support of CRA.
- Stakeholder mapping was undertaken to identify a range of actors and institutions from state-district-local levels
- Blocks of Anni and Banjar chosen for primary data collection due to high vulnerability in agricultural sector



Source: Draft Report on Integrated Climate Risk and Vulnerability Assessment (2019)

## Context specific methodological approach

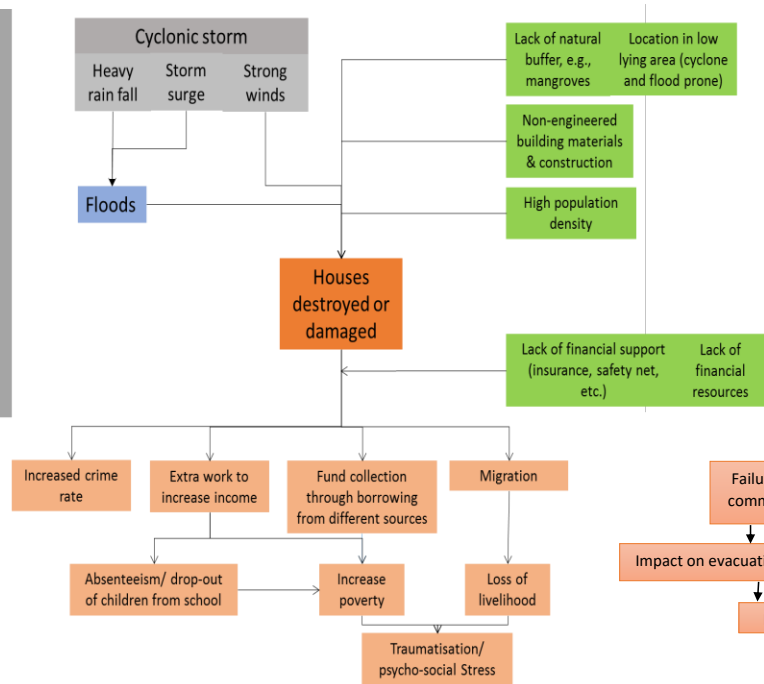
- Decision during stakeholder inception meeting and refined during steps 1 and 2
- forward looking, detailed climate scenario-based risk analysis
- Both top-down and bottom-up approaches
- Focus on rural livelihoods (agricultural land and related earnings, demography, and standard of living) and infrastructure (roads, hospitals, and education facilities)
- Consideration of entire risk continuum: From **drought, extreme heat, and water stress, with related impacts on crops up to floods and landslides**



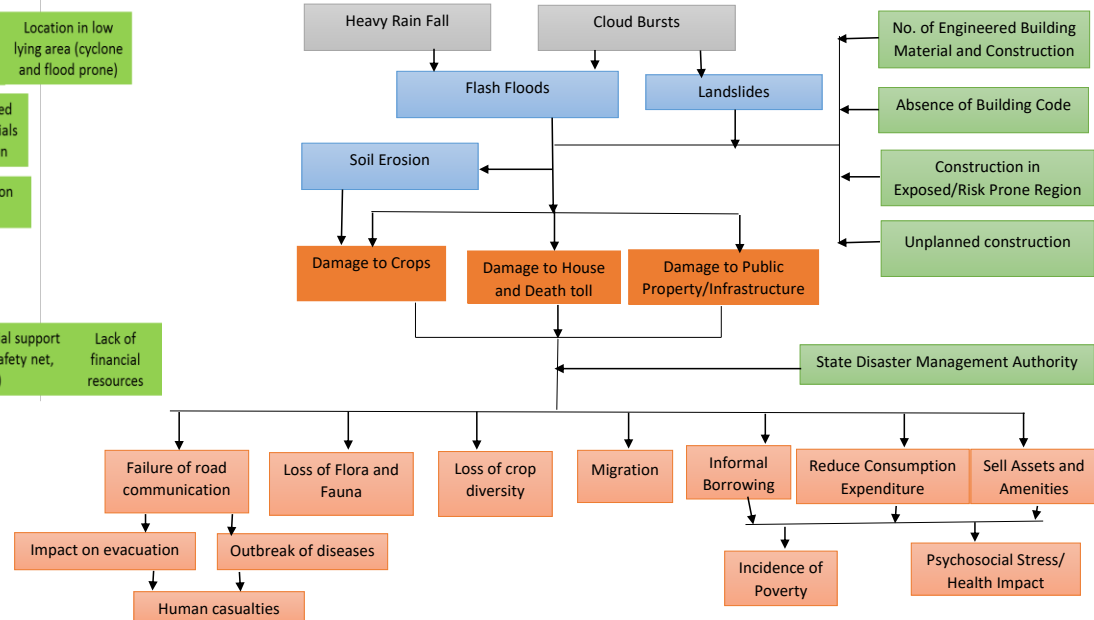
Source: Final report on CRM framework India (2018)

# qualitative and / or quantitative assessment

- Impact chain developed for Tamil Nadu



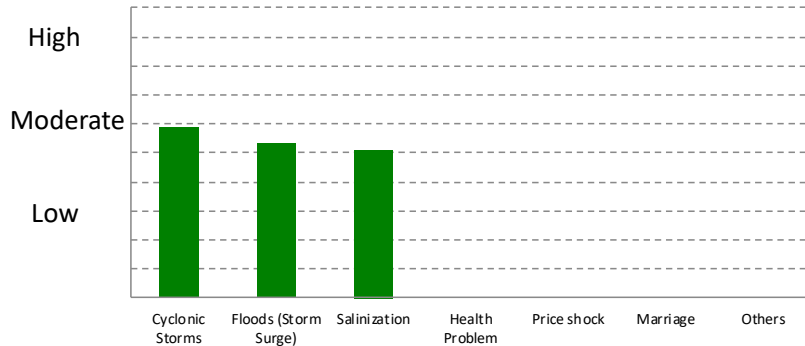
- Impact chain developed for Kullu District, Himachal Pradesh





## Evaluation of risk tolerance

Risk perception for Tamil Nadu as evaluated from household responses



➤ Consideration of other (non-climatic) risks

Categorization of current risk management

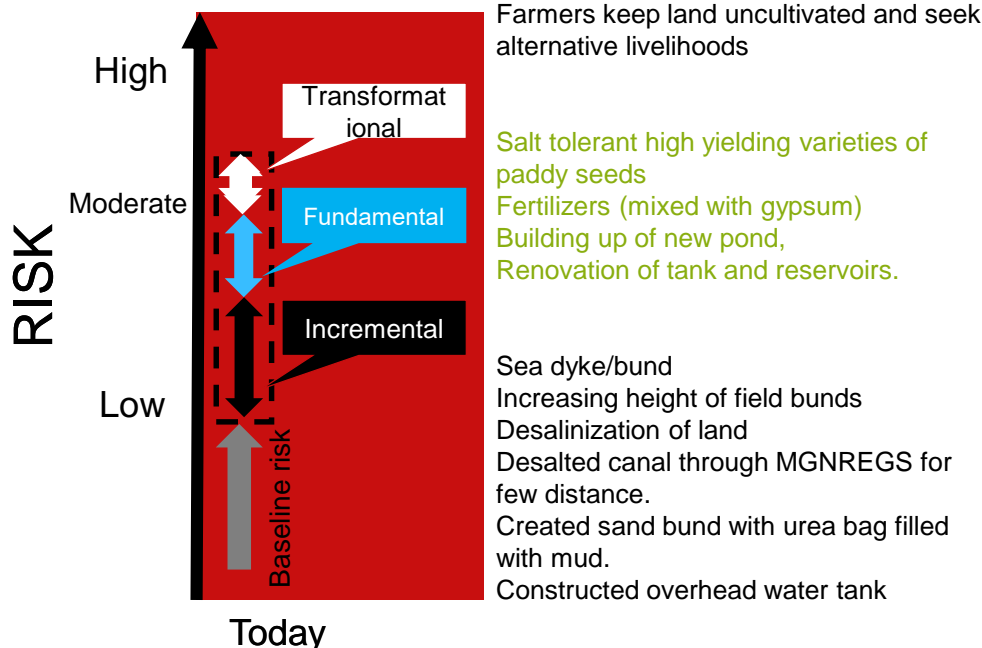
- **Acceptance:** personal savings and loans are sufficient to cope with and respond to disasters (up to 20% of annual household income)
- **Tolerance:**
  - Reduction in expenses
  - Earnings from alternative sources of income
  - Selling of assets
  - Switching from crops to livestock
- **Intolerance:**
  - Reduction of annual income of households by more than 80%
  - Duration interruption / Unavailability of critical infrastructures (dynamic in time)

Source: Final report on CRM framework India (2018)



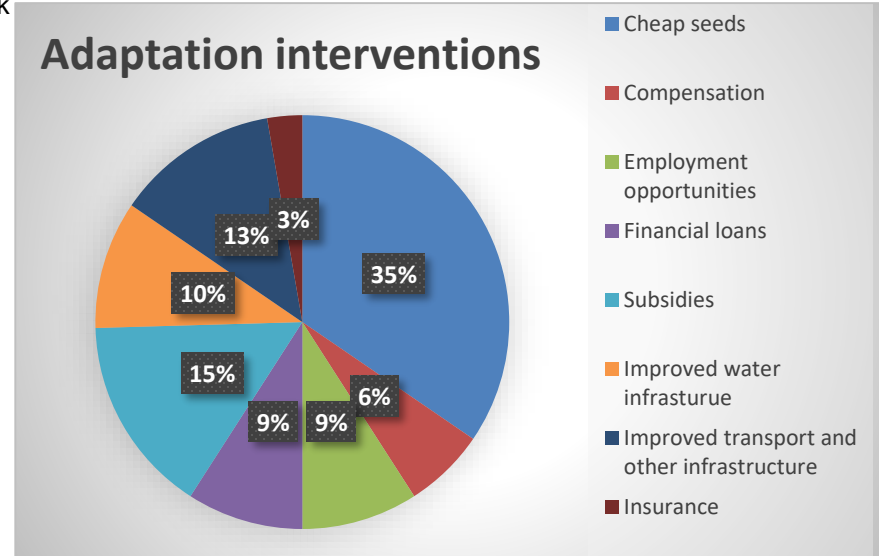
# Identification of feasible options

Risk and options space in Tamil Nadu as identified from household responses (farm level)



Source: Reinhard Mechler (2019)

Community expectations for government support in climate adaptation, Kullu district

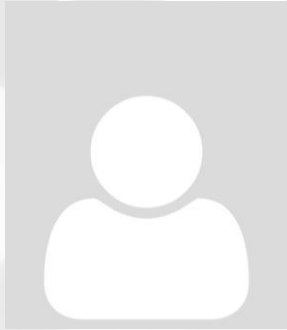


Source: Draft Report on Integrated Climate Risk and Vulnerability Assessment (2019)

# Conclusions

- Importance of
  - Comprehensive approach tailored to scope of assessment,
  - Combination of methods, especially when secondary data is not sufficient
  - Inclusion of population's perspective / perceptions
  - Coverage of entire risk spectrum (slow onset to extreme weather events)
- Challenge to consider economic and non-economic losses and damages in the same assessment
- Challenge of resource intensiveness

# Contact

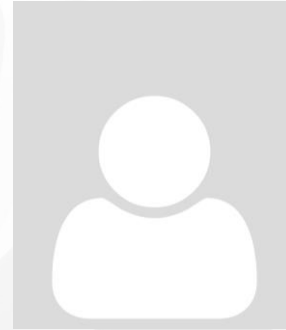


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