

Evaluating 'Expert Opinion Method' During Development of Climatic Hotspots

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ABSTRACT

Bangladesh faces multitude threats of climate change related hazards events. This study assessed identification of climatic hotspot by considering hazard related vulnerabilities in the southeast and southwest region of Bangladesh including the Sundarban. The study area is threatened by storm surges, fluvio-tidal flooding, salinization and river bank erosion. Impact of a particular hazard varies spatially for the study area. At the same time, the hazards in the region are mutually exclusive. For this reason it is very important to give proper weights for each of the hazard. During preparation of hotspot maps for multiple hazards, individual hazards needs to be given relative weights. To assign weightage for individual hazard, different sets of weights are used considered as 'expert opinion' for analyzing the sensitivity of the parameters. But the hotspots do not show any regular pattern based on which the weight can be selected. It is found that a quantitative method needs to be the next step while evaluating the 'expert opinion' method.

INTRODUCTION

- The severity of climate change impacts depends on
 - ✓The nature of climate hazards
 - ✓The resilience of natural ecosystems
 - ✓Factors of social and economic condition
- Vulnerability represents the sensitivity and exposure of climate hazards along with its adaptive capacity.
- For the study area (Figure 1), Storm Surge, Fluvio-tidal Flood, Soil Salinity and River Erosion hazards are considered.

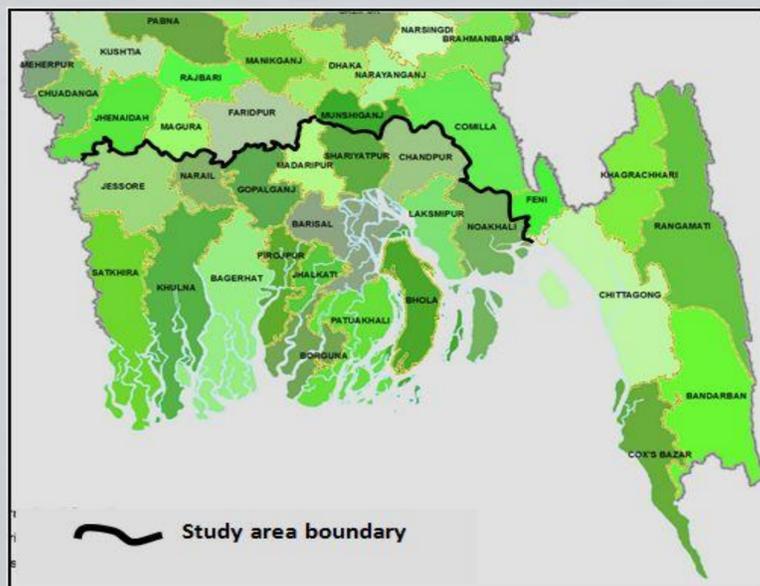


Figure 1: Study Area

METHODOLOGY

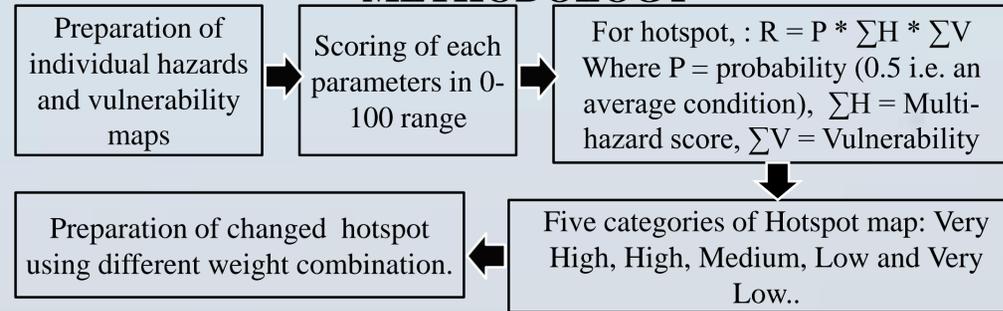


Table 1: Multi-hazard Weightage

Multi-hazard	Initial Weightage
Storm Surge	0.4
Fluvio-Tidal Flood	0.25
Soil Salinity	0.25
River Erosion	0.1

RESULTS

Table 2: Vulnerability Indicator Weights

Vulnerability Pattern	Indicators	Weight
Exposure	Population Density	1
Sensitivity	Proportion of Cropped Land	1
Adaptive Capacity	Road Density	1

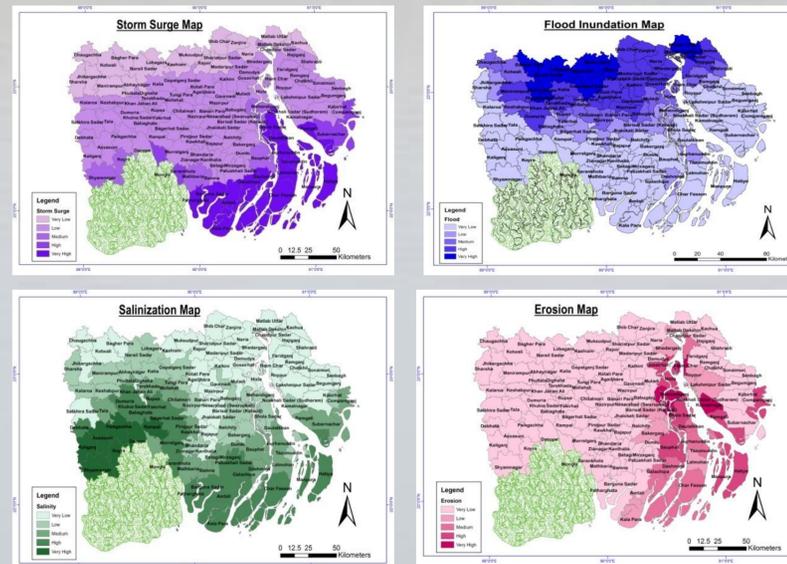


Figure 3: Individual hazard map

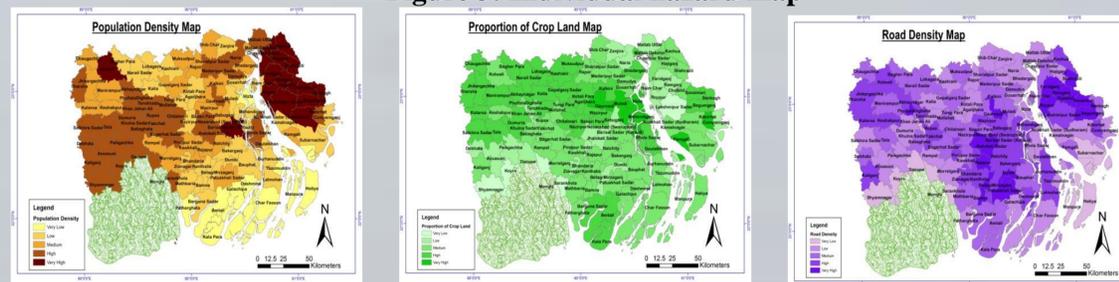
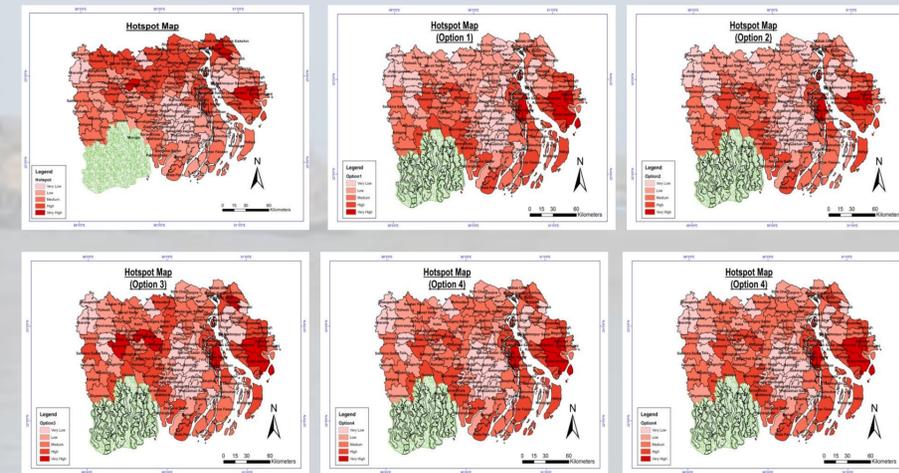


Figure 4: Individual vulnerability map

Table 3: Changing weightage options

Multi-hazard	Weightage (Initial)	Option 1	Option 2	Option 3	Option 4	Option 5
Storm Surge	0.4	0.4	0.3	0.25	0.4	0.5
Fluvio-tidal Flood	0.25	0.1	0.1	0.25	0.2	0.1
Soil Salinity	0.25	0.2	0.2	0.25	0.2	0.1
River Erosion	0.1	0.3	0.4	0.25	0.2	0.3



As shown in Figure 5, initial hotspot widely varies when changing weightage options are used. This shows that when different experts give different opinions about the hazard weightages, spatial variation of hotspots will be drastically change. This will create confusion in selecting the appropriate weightage and thus creating representative climatic hotspots. So, instead of using expert opinion blindly, it is better to 'compute' weightages by any acceptable analytical method.

Conclusion

- It is recommended to use quantitative approach where weights are computed analytically.
- The weights obtained in this way may be used as a starting point in selecting widely varied opinions of experts during selection of multi-hazard weightages.

Acknowledgement

