



Assessment of livelihood vulnerability in the riparian region of the Tista River, West Bengal, India

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Abstract The Tista floodplain is one of the major food baskets of North Bengal and is sensitive to a multitude of issues regarding vulnerability. The riparian areas and the river island or charland of the lower Tista River basin in India, specifically from Sevoke to the Indo-Bangladesh border, generally suffer due to flood-prone, river course shifting, limited livelihood activities, low adaptive capacity, and poor accessibility. The present work is conducted to assess the livelihood vulnerability based on the livelihood vulnerability index (LVI) framework of the agriculture-dependent riparian villages and the charlands of the River Tista in the Jalpaiguri district. Total 337 households of five villages from the Mal and Maynaguri block at the left bank of the Tista River were selected to conduct the field survey. The livelihood vulnerability was assessed based on eight major components (viz., socio-demographic profile, health condition, livelihood strategies, food support, water support, climatic variability, flood hazards, and social safety) and 42 sub-components. The three contributing factors, i.e., adaptive capacity, sensitivity, and exposure,

have been combined to calculate the livelihood vulnerability employing the LVI and LVI-IPCC methodologies. The outcome of the study exhibit that LVI scored highest in Premganj Majhiali (0.436), followed by Basusuba (0.403), Uttar Marichbari (0.349), Domohani (0.335), and Chat Rarpur village (0.328). According to the LVI-IPCC results, Basusuba has the most vulnerability (0.015), whereas Domohani has the least (0.007). In terms of flood hazard, variations were noticed based on increasing distance from the river. Lack of adaptive capacity prevailed in the villages with significant flooding events. Building awareness of the inhabitants will be an effective way to improve the adaptive capacity of the rural villagers. Therefore, giving priority to the policies depending on the natural environment of the active flood-prone region would make long-term sustainability.

Keywords Flood hazard · Livelihood vulnerability index (LVI) · LVI-IPCC · Riparian villages · Jalpaiguri district

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Introduction

Climate change is a severe issue of concern worldwide (Cramer et al., 2018; Dietz et al., 2020; Huong et al., 2019). Variations in climatic parameters have led to vulnerability in the social and ecological systems. Livelihood is one of the crucial parameters to determine the lifestyle of the people. The ability to