Addressing Nexus Between Water-Food-Climate-Human Wellbeing Considering Water as an Entry Point: Case from Vulnerable Coastal Region from South Asia

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Abstract:

The probability of environmental migration depends on a range of environmental, social, economic, political, and cultural issues. Diverse migration decisions may arise from identical objective conditions, as individuals evaluate environmental hazards through varying perspectives. Recent investigations of environmental migration emphasize the significance of perception for climate change and its associated multipliers and related subjectivities to mobility, such as people's views on their own agency, risk tolerance, and personal migration-decision thresholds. These critical factors must be accounted for meaningfully evaluating households' future mobility decisions. In addition, how the social and non-social determinants affect migration-decision, especially in disaster-prone coastal areas, need further investigation to comprehend the effects of diverse perceptions on mobility decisions, along with the potential effects of extreme/catastrophic events in terms of their type, scope, and frequency. Considering Bangladesh as one of the most climatic vulnerable countries, and the frequent climatic extreme events in Bangladesh's coastal region significantly affected the local agricultural system and socio-economic well-being. Moreover, water plays as a focal point for these vulnerability as it is facing various challenges such as salt-water intrusion, drinking water availability, flooding etc. especially in coastal region of southwest coastal region of Bangladesh. Many of the places in this region remained submerged around the year. With above mentioned information, this study strives to address two objectives: a) to evaluate the social, demographic, economic, environmental, and political drivers that affect the mobility decision of the households at risk in southwest coastal Bangladesh; b) to evaluate the role of floating farming as one of the climate change adaptive measures to optimize human well-being. Integrated approach of quantitative (multi-stage sampling technique, and Endogenous Switching Regression (ESR) model) and qualitative analysis was employed. Using a multi-stage sampling technique, we selected more than households in rural and urban areas, who had moved from

their current locations due to climatic extremes. We applied relevant regression models to analyze the complex interplay of socioeconomic, environmental, and institutional factors shaping migration decisions. Empirical results suggest that, despite having greater access to services in cities, migrants reported lower levels of well-being than their rural counterparts, which could be attributed to reduced social cohesion and limited opportunities for participation in decision-making. Disaster preparedness, early warning access, and prolonged exposure to environmental hazards significantly influence migration decisions and well-being. Prolonged disaster suffering increases the likelihood of migration to urban slums, emphasizing the vulnerability of rural populations. Men are more likely than women to migrate to urban areas, possibly due to perceived employment opportunities. Surprisingly, while slum dwellers have better service access, their well-being scores are lower than rural residents. Access to education, healthcare, safe drinking water, and early warning systems are all crucial determinants of well-being. Policy recommendations include improving disaster preparedness and early warning systems in rural areas, developing targeted interventions for urban slum migrants focused on social cohesion and income diversification, and implementing gender-specific support programs.

To evaluate the effect of adopting floating farming as an adaptation strategy on farm households' profitability of floating farming, we used Endogenous Switching Regression (ESR) model. Our findings suggest that 79% of sampled farm households used floating farming to adapt to extreme climatic events like waterlogging, hazard effects, and erratic rainfall. Results exhibit that age, education, religion, cultivation season, hazard effects, training, previous knowledge of floating farming, and technical support were the determinants of adopting floating farming. Adopting farm households had a 60% higher farm profit than non-adopters, and cooperative membership, technical, credit, and training positively affected farm profits.

Moreover, to meet the growing food demand in these challenging situations, coastal regions must adopt climate-smart agricultural practices such as floating farming to sustain food production. This research contributes to understanding environmental migration dynamics in Bangladesh and informs policymakers about sustainable resettlement strategies.

Keywords:

Environmental migration; floating farming; climate change; vulnerability, well-being, rural-urban dwellers, water.