Integrated approach to analyse the total flood risk for agriculture: the significance of intangible damages – A case study in Central Vietnam

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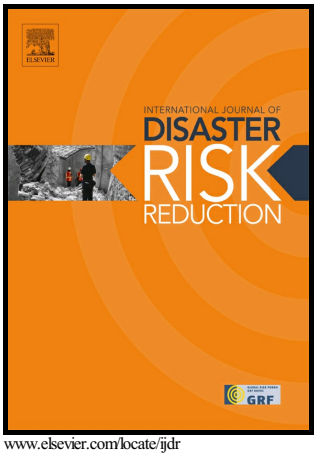

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Integrated approach to analyse the total flood risk for agriculture: the significance of intangible damages – A case study in Central Vietnam

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Abstract

Although agricultural production is highly vulnerable to climatic disasters as being located in low-lying river deltas, the data and information about its damages caused by flooding are far limited and scattered. Therefore, this study proposes an integrated approach, combining 1D simulation, GIS based land use analysis, intensive household survey and Contingent Value Method to estimate Flood Risk Curve and Average Annual Risk (in monetary value) for rural agricultural production. The selected study area is located in the floodplain of Vu Gia-Thu Bon (VG-TB) basin, one of the largest and most complex basins in Vietnam with dense population. The key finding shows that although the local agricultural practice is well adapted to the flooding season to reduce direct damage, the calculated Annual Average Risk is still as high as 6% of total agricultural production every year, of which indirect and intangible risk accounts for 62%. Therefore, this result is believed to produce complete understanding about the total risk that need to be coped with. The managers, local communities and other stakeholders can also use Annual Average Risk as a clear, strong and quantitative indicator for a certain area showing how vulnerable it is to flood risk and which measures would be effective and worth to be invested from cost-effective point of view.

Keywords

Intangible damage; Flood Risk Curve; Average Annual Risk; rural floodplain; Vu Gia-Thu Bon basin

1. INTRODUCTION

Floodplains have traditionally supported dense population mainly engaged in intensive agriculture as a result of advantage of fertile soil and irrigation. However, the