ABSTRACT

Climate change has significantly intensified pressures on coastal agricultural systems through increased salinity, seawater intrusion, coastal flooding, and disruptions in water management. In the northern coastal region of Central Java, these environmental stressors impact not only agricultural productivity and farmers' livelihoods, but also influence patterns of vulnerability, adaptation strategies, and adaptive behaviour among farming communities in response to climate-related risks. This dissertation aims to comprehensively analyse the interrelationships between socio-economic characteristics, vulnerability, adaptation strategies, and farmers' behavioural responses to climate change within the coastal agricultural systems of northern Central Java. This research adopted a sequential mixed-methods design, conducted in Pemalang and Kendal Regencies. Data collection involved a survey of 233 farmers, in-depth interviews, and field observations. Vulnerability was assessed using the Livelihood Vulnerability Index (LVI) grounded in the Intergovernmental Panel on Climate Change (IPCC) framework, while adaptive behaviour was examined through Partial Least Squares Structural Equation Modelling (PLS-SEM) by integrating multiple behavioural theories.

The findings reveal that coastal farmers experience a relatively high degree of vulnerability, especially within the dimension of adaptive capacity—financial capital and human resources emerge as predominant constraints. Pemalang Regency exhibits a higher overall vulnerability compared to Kendal Regency. Notably, the study finds that heightened vulnerability does not automatically translate into adaptive action. Instead, subjective norms, attitudes toward adaptation, perceived vulnerability, and adaptation efficacy are identified as primary factors shaping farmers' intentions to adapt. These results highlight a gap between experienced vulnerability, capacity to act, and the actual adaptive responses of farmers to climate change.

This dissertation concludes that coastal farmers' adaptation is shaped by the dynamic interplay of socio-economic conditions, vulnerability, behavioural factors, and broader contextual determinants. The Integrated Nexus-Based Adaptation Framework (INAF) is proposed as a comprehensive analytical tool linking vulnerability, adaptation strategies, behavioural responses, and adaptive outcomes. The practical implications underscore the necessity for adaptation policies that extend beyond technical interventions to also strengthen adaptive capacity, promote adaptive behaviour, enhance social capital, and foster collaborative governance within coastal agricultural communities.

Keywords: climate change, vulnerability, adaptive behaviour, adaptation strategies, coastal agriculture, salinity, Integrated Nexus-Based Adaptation Framework