

Chapter 8

Conclusions

Supply and demand models for rice in Laos, Cambodia, Thailand, and Vietnam which can analyze production and water supply impacts for each province and region was developed for use in analyzing the impacts of changes in the regional water cycle. Furthermore, the supply and demand models in Laos and Cambodia are modified with stochastic models using simulated ET fluctuations to investigate how changes in variation of the environmental characteristic of ET impact producers. These supply and demand models can analyze changes in yield and planted area independently and consider supply responses and demand changes to the market price while equating supply and demand. While many previous researches have considered only yields, the inclusion of area and demand response to price changes makes the results more realistic than those based on yield function analyses alone. The baseline analysis, to be used in a subsequent water cycle scenario, indicates that production of wet and dry season rice steadily increases and prices rise modestly throughout the projection period. This deterministic projection is then used as the starting point for comparison, and increased variation in the water cycle is then introduced into the system.

Results of stochastic analyses, with increased variation in the ET variable, show that the production of dry season rice is more influenced by climatic change than is wet season rice, and thus adequate

water management is required for dry season rice to reduce production risk faced by producers.

However, when considering price risk alone, the wet season rice cultivation is more vulnerable to water supply changes. Rice farmers producing wet season rice in high yielding regions with sizeable production will incur financial damages under a scenario where the variation in the water supply expands.

Productions of rice in the four countries are steadily increasing. The average yield of rice in Cambodia in 2005 was 2.48 t/ha and the harvested area was 2.44 million ha, achieving their stated targets. However, Murshid (1998) suggests that a scarcity of rice for self-sufficient food needs will immediately threaten regional food security because markets are undeveloped in these border regions. The distribution of the farm price is negatively skewed and the probability of a higher price is greater than that of a lower price. It indicates that if the fluctuation of water supply expands, consumers, such as rural poor are most vulnerable as they may face a higher price of rice which is a staple of their diet. The regions or provinces which suffer from highly variable production and higher price risk may need to consider water management and alternative cultivation methods, among other potential policies, to minimize the impacts on both producers and consumers from increased variation in the water supply.