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# Participatory Multistakeholder Mental Models of Rice Value Chains in Nigeria: a Comparison of Farmers, Processors and Traders' Perspectives

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**Abstract**

System model is increasingly viewed as a tool to understand the dynamics of rice value chains (RVC) and therefore to gain insights into RVC adaptability and resilience to global change. This paper applies stock and flow system mapping tools to explore farmers, rice processors and traders' mental maps of RVC in Benue State, Nigeria. Six participatory workshops were conducted with rice farmers, processors and traders in two locations. Each workshop followed a three-step procedure. In the first phase, individual participants' mental maps were elicited. In the second phase, participants reached consensus on collective mental maps of RVC. In the third phase, participants discussed the mental map to gain insights into the resilience of RVC to climate change and market pressures. We found that different types of actors (e.g. farmers and processors) had distinct mental maps, hence understandings of RVC in each of the two locations. These differences also highlight that farmers, processors and traders generally lack an overview of the whole RVC, which hinders their ability understand tensions between systems' components and identification of measures to build resilience of the RVC. For example, in both locations, participants failed to include branding, advertisement and promotion of milled rice on their maps, whereby rice marketing has been shown to be crucial for the ability to respond to market shocks. Furthermore, the mental maps of all actors in Makurdi revealed an ongoing transformation of RVC system as new system components such as programme farming and industrial milling are emerging in response to pressures such as price crashes, persisting consumer demand for high quality domestic rice, and competition from imported rice. The participants identified rice production, milling and trading as weak spot in RVC. Provisions of stress resistance seeds, irrigation, mechanisation, small-size modern milling technologies and increase access to credit schemes were suggested as possible actions to build resilience of the RVC. This paper shows how participatory mental modelling can help build a shared (multistakeholder) understanding of complex systems such as RVC and identify measures to build resilience.

**Keywords:** Mental models, Nigeria, participatory modelling, resilience, rice value chain, system thinking

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