Entry No. IRRC-0459

Category	: International Rice Research Conference
Select Theme	: Climate change and environmental sustainability
Endorsement email	:
Keyword 1	: Water-energy nexus
Keyword 2	: Multidimensional sustainability (environment, economic, social, governance)
Keyword 3	: Research-policy nexus
Title of Entry	: Water footprint in a value chain model of global rice production, consumption and trade
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Investigation of the international dimensions of the rice footprint is becoming increasingly important because of climate change and the dynamics of the global rice economy. The objective of this paper is to develop a detailed direct and virtual water footprint of rice in the major rice exporting countries. Previous research has assessed the water footprint of rice trade using an aggregated GTAP model. This study uses a value-chain modeling framework--RiceFlow, which differentiates rice by type (long, medium, and fragrant) and degree of milling (paddy, brown, and milled). The model captures resources (land, water, energy) use and costs, rice production costs and paddy output, transportation, rice storage and milling, final use and trade or a large set of countries. We use the framework to evaluate major rice exporting countries to develop a baseline 10-year forecast. Scenario analyses evaluate climate change, changing resource availability, and policy changes to assess potential responses of global rice trade to increasing water scarcity, climate change and alternative trade policies. For this study, the RiceFlow framework distinguishes between surface water, rain-fed, and upland rice production systems. The water-energy nexus is very different by production system in terms of water use and water/energy resource costs. We evaluate the sustainability and competiveness among the production systems and among exporting nations. As international rice trade expands, the study examines the competitiveness and consequences of production subsidies and trade liberalization on the sustainability of rice production systems. This study represents an important step in incorporating country specific information on water use, impacts of climate change and production and trade policies. The results reveal useful insights on the sustainability and competitiveness of rice exporting countries, their policies, and water footprint.

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