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## **Drivers of adoption and impacts of the improved gem parboiling technology for rice value chain upgrading on livelihood of women rice parboilers in Benin**

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### **Abstract**

Rice is a staple food for more than half of the world population and second cereal in terms of land area and third in terms of production. However, the simple rice grain is poor in nutrients, while the African country’s malnutritional level is among the highest in the world. AfricaRice has developed and introduced a new energy-efficient and women-friendly parboiling system called ”GEMto improve the quality of rice for better nutrition and income generation. This paper used endogenous switching regression model to assess the impact of the GEM technology on livelihood of women rice parboilers in Benin. The Foster, Greer and Thorbecke (FGT) poverty measure was used to compare poverty levels between households using GEM parboiling equipment against those households using traditional equipment. A total of 822 rice parboilers were randomly sampled and interviewed in Benin, in regions where the technology was introduced. Results showed that women parboilers have expressed high interest in the use of the GEM technology and have reported that it helps to increase the quality of their final rice despite the relatively high cost of the equipment. Parboilers have not only adopted improved parboiling method but also have innovated by coping the design of GEM technology to adapt traditional equipment. Parboiling activity was a profitable business for different equipment used but the GEM technology is the most profitable. Adoption of GEM increased women parboilers rice recovery rate and income. Based on the FGT poverty measure’s specifications, a significantly lower poverty status of 26 % was found among households using the GEM technology. These results are supported by women perception that output rate, quality of milled rice and labour reduction are major advantages of GEM technology. Policy actions such as training of local fabricators and credit options are required to out-scale th GEM technology and contribute to post-harvest mechanisation in Africa for income generation and poverty reduction among women parboilers.

**Keywords:** Benin, GEM equipment, impact, nutrition, profitability, rice parboiling