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# Does rice commercialisation in Mngeta, Kilombero, Tanzania impact livelihoods?

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## Key messages

- Several drivers have interacted in the past to facilitate increasing rice commercialisation by area expansion and farm intensification.
- Medium-scale farmers, record the highest rice commercialisation index, but they receive lower prices due to added transport costs. They also score low on livelihood indicators.
- Rice intensification is happening, but at a slow pace, limited by capital and labour constraints, hence contributing only marginally to rice commercialisation and poverty reduction.
- Commercialisation by intensification is expected to be more inclusive than by area expansion.

## Introduction

Rice is Tanzania's third most important staple crop, after maize and cassava. It is produced by more than 1 million agricultural households and involves many more actors and service providers along the value chain. Tanzania is second after Madagascar for rice production in East, Central and Southern Africa and is the leading rice producer and consumer in East Africa (Kilimo Trust 2014). In all producing areas, rice serves as a food and cash crop for farming households. About 70 percent of the rice produced by small-scale farmers (SSF) is sold, hence the underlying importance of supporting inclusive commercialisation.

Although rice production in Tanzania has increased in recent years (7.3 percent per year from 2001–2011), supply still falls short of demand; the deficit was projected to be 2.84 million tonnes by 2020 and is growing (Wilson and Lewis 2015). This supply gap presents a huge opportunity for rice commercialisation among rice value chain actors. Since 2009, the government of Tanzania has identified rice as a priority crop and has undertaken several national and regional initiatives to promote rice commercialisation.

## Analysing the pathways to commercialisation

This policy brief draws from research on rice commercialisation in Mngeta division, Kilombero district, which is being implemented under the Agricultural Policy Research in Africa (APRA) consortium. APRA's main objective is to assess commercialisation pathways and their impacts on livelihoods, food security and nutrition within households. APRA envisages that commercialisation and livelihood outcomes will differ depending on the choices of economic activities, technologies and marketing made by different people. APRA research is therefore striving to identify the commercialisation pathways linked to different outcomes to identify factors for successful engagement, as well as impediments, in order to derive policy recommendations for inclusive and sustainable commercialisation processes.

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Yoked Zebu cows ploughing a farm

In Tanzania, APRA's study on rice commercialisation was conducted within the Morogoro region (Isinika *et al.* 2020). The study area was selected because it fits well with the government's ambition, under the Southern Agricultural Growth Corridor of Tanzania (SAGCOT)<sup>2</sup> framework, for smallholder farmers to benefit from technology transfer and market linkage with large-scale farmers. The analysis was based on research conducted with a randomly-selected sample of farm households across ten villages located 30km from Kilombero Plantation Limited (KPL), a large-scale rice farm in Mngeta division.

KPL, in collaboration with other development agencies and government extension services, has promoted the System of Sustainable Rice Intensification (SRI) through training, credit facilitation and monitoring implementation; by 2017, more than 8,000 farmers had received training. However, initial SRI adoption rates by SSFs was low due to the perceived high costs of using purchased improved inputs and for being labour intensive. However, successful early SRI adopters are now attracting other farmers, who often begin by selecting only some components of the SRI approach (such as seed selection and line planting) that are deemed to be more affordable (Mlay *et al.* forthcoming).

## Key findings

### Increasing production

The rice commercialisation index (RCI) – defined as the proportion of rice that farmers sell – has been increasing over time. This is attributed to:

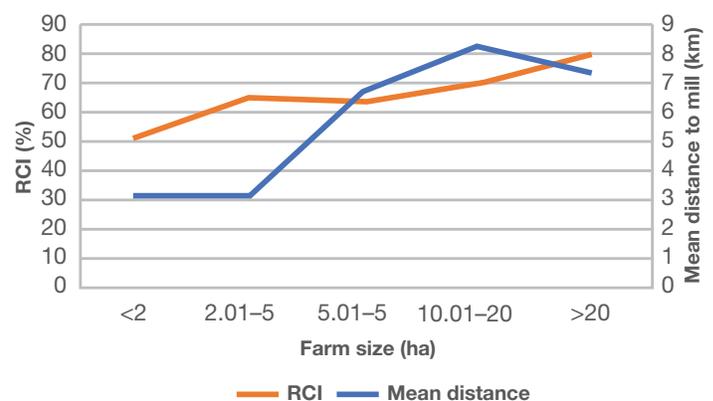
1. Seasonal road improvement making them passable year-round, which has increased trader numbers coming into the Kilombero valley. As a result, competition among the traders has raised farm gate prices.
2. Rural electrification, especially since 2015, has improved rice milling efficiency. Rice mill owners have been able to replace diesel-operated Engleberg processing machines with more efficient electric models, which has improved milling quality and the price for milled rice. Between 2017 and 2019, the number of large electric mills in the study villages increased by nearly 67% (from 18 to 30). As a result, more farmers sell milled rice than paddy. Improved milling and rising demand for rice, mainly

from increasing urban consumption, has resulted in farmers increasing production. At the national level, production has been growing at an estimated at 9 percent per annum (Kilimo Trust 2014).

### Area expansion

Area expansion for rice production in Kilombero valley has been facilitated by the rising use of animal drawn technology and tractors. The use of oxen has been particularly important in rice production in flood-prone areas where tractors cannot operate. The use of animal drawn technology, tractors, or a combination, has therefore significantly influenced rice commercialisation, which is increasing the mean area cultivated, total rice production and hence the proportion of rice sold (Mdoe *et al.* forthcoming).

Farm size is positively related to rising RCI scores (Figure 1). The mean farm holding is 11.6ha for medium-scale farmers (MSF), 3.4ha for farmer groups practising SRI, and 1.9ha for SSFs, while corresponding mean RCI values are 66.6, 65.4 and 55.5 percent, respectively (Isinika *et al.* forthcoming). However, it is important to note that farm expansion in Kilombero valley also has negative consequences for protected wetlands and other water users downstream.



**Figure 1 RCI, farm size and mean distance from large rice mill**

Larger farms that are located further from the electricity powered milling centres recorded higher RCI levels (Figure 1), but they fetch

2 SAGCOT is a public private partnership initiative that was launched in 2010 to link large international investors with smallholder farmers and other value chain stakeholders through various institutional arrangements.

(a) A farmer using SRI technology



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(b) Yield effects on rice commercialisation

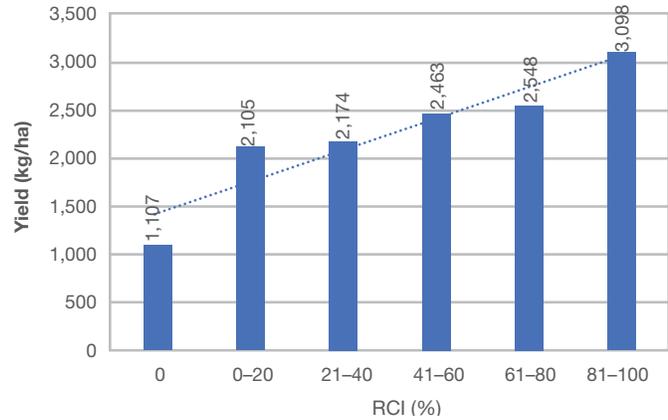


Figure 2 Commercialisation by intensification

lower prices due to added transport costs. During 2017, farmers in villages not connected to electricity sold rice at TSh 647/kg (US\$0.28) on average; almost 10% lower than TSh 718/kg (US\$0.31) for farmers in connected villages.

### Intensification

Commercialisation via intensification is happening but at a very slow rate. The positive effect of intensification on rice commercialisation increases as farmers adopt three or more SRI technologies. For this study, SRI farmers attained the highest mean yield (2.8t/ha) compared to SSFs (2.5t/ha) and MSFs (2.1t/ha).

Farmers who own less than 2ha, and female-headed households, attained lower yields and significantly lower commercialisation levels. However, the potential to increase productivity is much higher since the maximum yield (12.4t/ha) was achieved by an SRI farmer within the farm size category 2.1–5ha. This implies intensive production technologies (such as improved seed, organic fertiliser and pesticides) are best applied on small plots, not exceeding 5 ha.

### Poverty reduction

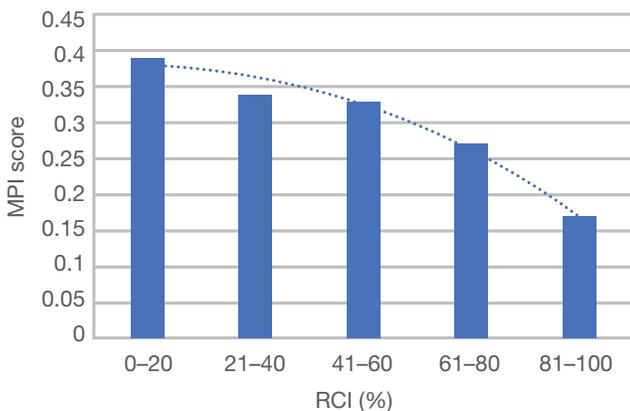
In the study area, rice commercialisation is positively correlated with poverty reduction (Figure 3a), which was measured using the Multidimensional Poverty Index (MPI). The MPI is a product of the incidence of poverty (percent of poor households) and the intensity of poverty (level of deprivation). But, for most farmers, poverty remains prevalent, especially among MSFs (MPI = 0.39) and female-headed households (MPI = 0.29) compared to SRI farmers (MPI = 0.24). Significant reduction in MPI is only noticeable at an RCI greater

than 60% (Figure 3b). High poverty levels have been attributed to various factors including poor feeder roads, which limit access to education and health services. Cultural norms and awareness about education and hygiene also increase the level of deprivation. Poor access to clean drinking water and cultural norms that limit the empowerment of women and undermine children’s right to education, as well as poor enforcement of hygiene by-laws are prevalent in remote villages. These challenges reduce the potential of any commercialisation achievement, since higher incomes do not always improve the welfare of all household members, especially women and children.

### Conclusion

Rice commercialisation in the study area, largely driven by area expansion, will continue as long as there is enough land to expand into. In most villages, area expansion can benefit MSFs who are mostly located in remote villages where land for farm expansion is available – they constitute only about 10% of the sample. However, area expansion results in negative environmental implications for downstream water users within Kilombero valley, hence it is not a long-term sustainable option. Meanwhile, the study findings demonstrate that commercialisation by intensification can be achieved by all farmers if they are trained to adopt productivity improving technologies, hence benefiting SSFs as well, who constitute the majority of farmers in the area. However, the pace of rice intensification is slow because of low levels of using improved seed, and artificial and organic fertiliser.

(a) Poverty declines as RCI increases



(b) Percent of MPI poor households declines with higher RCI

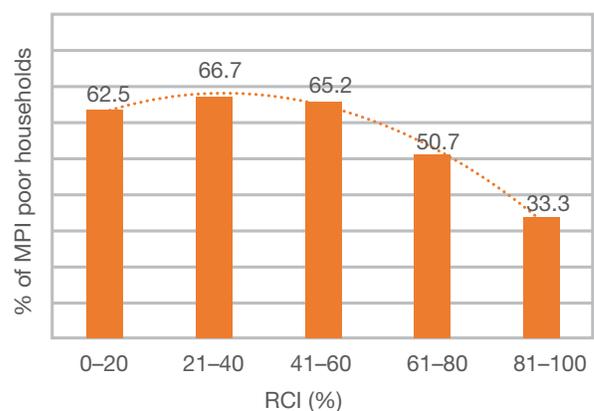


Figure 3 Poverty reducing effect of rice commercialisation

## Recommendations

- Local government authorities (LGAs) should continue working with various donors and development agencies to support rice intensification technologies such as SRI, through training, follow up and credit facilitation to improve adoption rates and productivity so that more farmers benefit, especially owners of very small farms, including female-headed households.
- To address the limitation of area expansion for increasing rice production, there is a need to increase rice intensification among MSFs.
- The central government and LGAs should improve infrastructure, especially feeder roads and electricity so that farmers in remote villages can fetch higher prices for their produce.

- LGAs working with village governments and local communities should direct efforts towards improving access to water, health and education services, the lack of which undermine gains from commercialisation, thereby impeding efforts to improve livelihoods.
- LGAs, village governments and non-governmental organisations working with informal community leaders should improve awareness of and enforce existing by-laws to improve hygiene and health requirements at household level and school attendance for children, especially among agro-pastoral and pastoral communities. Cultural norms that undermine the empowerment of women and which limit the benefits resulting from commercialisation processes should also be addressed through increased awareness of these critical issues.

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