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Enhancing production of quality rice in Ethiopia: Dis/incentives for rice processors

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Key messages

- Imports of rice into Ethiopia are three times higher than domestic production
- Poor quality paddy, old processing machines and limited incentives for processors to improve quality are constraining the competitiveness of domestic rice compared to imported rice.
- Addressing the challenges facing rice processors and the disincentives to producing quality rice are crucial if Ethiopia is to curb increasing rice imports and reduce the burden on its meagre foreign currency, in addition to boosting domestic production and productivity.

Introduction

Over recent years, domestic rice production in Ethiopia has increased. However, the slow rate in the growth of production, combined with increasing demand, means that domestic supply is not satisfying consumer demand. In addition, the competitiveness of domestic rice compared to imported rice is highly constrained by: (i) poor quality paddy; (ii) old processing machines; and (iii) limited incentives for processors to improve quality. As a result, Ethiopia is importing more than three times what it is producing domestically, mainly from India, Pakistan and Thailand. These imports are increasing at an alarming rate, and increasing the burden on the country's meagre foreign currency reserve.

In order to reduce the import burden and contribute towards the country's development plan through import substitution, it is critical to focus on increasing rice production and improving the quality of milled rice. Rice processors in Ethiopia play an important role in the rice sector, not only as service providers, but also as buyers and sellers of rice. In general, however, there is a general disincentive for farmers to produce good quality paddy, and for processors to produce good quality milled rice. This brief examines the main disincentives and outlines key measures that need to be put in place to address these challenges.

Rice processing in Ethiopia

Rice processing is a critical stage of the rice value chain to ensure the supply of quality domestic rice. Rice processing also plays a pivotal role in the improvement of rice quality and in creating business and job opportunities. With an increasing level of rice commercialisation, and higher numbers of smallholder farmers engaged in rice production, rice processing industries have been emerging rapidly in towns such as Wereta, Hamusit, Yifag, Reb, and Gumara in Fogera plain. The emerging rice processing industries have created dynamic rural-urban linkages as drivers for agrarian change, including changes in farming systems, land tenure, labour and other input markets, as well as changes in social relations.

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Farmers at a rice mill

Since early 1997, when there was only a single rice processor for the whole area, rice processing in the Fogera plain has developed at a remarkable pace. By 2018, there were more than 123 registered and licensed rice processors; between 1997 and 2018, the average annual growth of the number of rice processors is estimated to have been 34%. A low entry barrier for starting rice processing, combined with high profitability, has facilitated this rapid rise in small-scale rice processors. Data from APRA's rice processors' survey (APRA 2018) indicates that the rapid increase in the number of rice processors continues, particularly in newly emerging rice growing areas such as Guraferda in the Southern Nations, Nationalities and Peoples Region, Chewaka in Oromia, and Achefer in Amhara. However, in Fogera plain, growth has begun to stall due to the limited expansion of rice production, with less available land and stagnating productivity levels.

The emergence of a rice processing industry is not only a business opportunity for the processing facility owners but has also helped to incentivise: (i) the expansion of rice production and rice markets in Fogera plain; (ii) creation of job opportunities (on average a processors creates ten job opportunities, both casual and permanent); and (iii) potential investment in other business areas like hospitality and tourism, fuel stations, and other processing industries.

However, most rice processors operate on a small scale because of a lack of machines with the capacity to process large volumes, and limited working capital to purchase more paddy rice. Some large-scale processors have begun to emerge in recent years but their large-scale machines are not functional due to limited access to infrastructure, particularly access to electricity. Despite local government pledges to guarantee availability of electricity, access to reliable power for industrial purposes, including rice processing, is still a challenge in the Fogera plain and needs to be overcome before processing expansion can be realised.

As the numbers of processors continues to rise, it is likely that increasing competition will reduce processing service fees. As the scale of processing businesses also increases, with a reduced

unit cost of processing and a rise in consumer demand for quality products, rice processors should be able to afford to replace small and inefficient machines with larger and more sophisticated equipment.

Nevertheless, if current rice processors are to stay in business, it is critical that they develop efficient small to medium-scale milling systems, with an emphasis on quality improvement features such as de-stoning, dehulling, polishing, sorting, grading and packaging. These measures could enable small-scale rice processors to be competitive enough to counter the 'economy of scale' advantage that large-scale rice processors have, and with smaller machines the levels of electricity they require would also be lower than that of larger processing machines.

Rice processing machinery

In the Fogera plain, there are rice processing machines of different sizes and types (Table 1).

Table 1: Common rice processing machines in Fogera plain

Machine type	Processing capacity (t/ha)
N-90	0.8–1.3
N-70	0.9–1.5
Nx-110	1.0–1.2
Sb-30	1.0–1.5
Sb-50	1.8–2.3
Multi-level processors	2.5

Source: APRA 2018

The N and Sb types are the most common processing machine type found in Fogera plain, while the large multi-level processing machines provide grading services in addition to processing. In general, the various machine types perform differently in terms



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Sun drying husked rice

of providing quality rice, where the 'Sb' series of machines can produce better white rice than the 'N' series machines.

Most processors use old and poorly-maintained processing machines imported from China. Recently, through cost-sharing initiatives, around six processors have purchased new combined machines. However, these machines are not functional due to higher electric consumption and limited working space for drying. And although the new machines can grade processed rice according to quality, there is still no price advantage for grading (see Key disincentives). This implies that Fogera plain rice processors will continue using older processing machines with limited ownership of other required facilities for producing quality rice, including destoning machines, paddy and milled rice grading facilities, adequate storage facilities and transport facilities.

Key disincentives

Commercial behaviour of rice processors

In general, rice processors provide milling services for free, with an agreement whereby they buy the milled rice or the paddy rice and keep the by-products (husk and bran with a certain amount of broken rice). Rice processors normally negotiate a unit price for the paddy or milled rice depending on different sourcing strategies, which include: (i) direct purchase from rice producers (dominant strategy); (ii) purchase through collectors on behalf of a processor or a broker (*delala*); and (iii) purchase from 'farmer traders' who sell their own rice in addition to rice they purchase from other farmers.

Negotiating the unit price transfers the risk of paddy quality from the processor to the producer as paddy rice quality, especially in terms of seed size uniformity, is often low, which – in turn – affects the quantity and quality of milled rice. Rice breakage is caused by a combination of factors. Varietal purity, physical cleanliness, and moisture content are also important parameters for rice quality. Use of poor-quality seeds and multiple varieties produces different grain sizes, which makes milling more difficult. Identifying the correct harvesting time, and implementing good water management and proper drying practices are also important factors. In addition,

storing rice at the recommended moisture content (11–12%), use of appropriate harvesting technologies, threshing in a clean area and cleanliness of the storage area are critically important.

Another key reason for negotiating the price is to give processors the opportunity to maximise the benefits they receive from the by-products, which are further processed into rice flour and then sold by the processor. This practice results in a significant incentive for rice processors to process poorly in order to increase the volume of by-products, which are sold for livestock feed, with the price ranging from 1 Birr to 3.5 Birr (US\$0.03 to US\$0.10) per kg. Bran with the broken rice is further graded to get relatively pure broken rice, which is also sold by rice processors at an even higher price of up to 10 Birr (US\$0.30) per kg.

Consumer preferences

Broken rice is common as a result of poor processing in the Fogera plain. However, there is no price incentive to improve quality as there is currently no difference in the price between broken rice and better-milled rice. This is because the main use of milled rice is to make the local staple food, *injera* (Ethiopian flatbread), which is made by mixing milled rice with teff in the form of flour. The broken rice cannot be used as 'table rice' (boiled rice preparation), or compete with imported rice unless the factors that contribute to breakages are reduced.

Most consumers in rural communities prefer locally-produced rice for its price, taste, and compatibility for making *injera* and local beverages (*tela* and *areke*). In contrast, urban consumers prefer locally-produced rice for making *injera* but imported rice for consumption as table rice.

Mixing rice with other cereal crops (teff, maize, finger millet, sorghum) for *injera* has become common practice. In this regard, consumers only consider the colour, purity (free from adulteration), and price when purchasing rice for *injera* – not the quality with regard to the extent of breakages which, as already stated, discourages processors from producing high quality processed rice.

What needs to be done?

Addressing the challenges facing rice processors and the disincentives to producing quality rice are crucial if Ethiopia is to curb increasing rice imports and reduce the burden on its meagre foreign currency. In this regard, key measures that need to be put in place are:

1. Professionalise rice processing in Ethiopia by providing formal training for the operation and maintenance of rice processing facilities. The National Rice Research and Training Center of the Ethiopian Institute of Agricultural Research (EIAR) has a mandate for providing such training but, as yet, has been unable to implement it due to a lack of facilities and manpower. Support from development partners could help EIAR overcome these barriers. It will be important to provide a variety of different model processing machines in terms of size, functions and investment requirements to ensure prompt adoption in the processing industry. This can be facilitated by development partners from countries with advanced rice industries.
2. The government should standardise the key requirements for licensing a rice processing facility and incentivise processors (i.e. through the provision of land with a reduced lease, soft loans or tax holidays) to fulfil quality standard requirements which would require them to invest in key facilities. The public sector could also facilitate this by providing land, improving access to finance for investment, creating business-to-business linkages, and providing information about rice processing technologies. In general, to start a business in rice processing, a processor needs to obtain a license of operation and those operational processors currently do not have, for instance, sufficient space for functioning effectively, including differentiated storage space for paddy and milled rice, space for grading etc.
3. The Ministry of Agriculture needs to adapt and promote an improved paddy and milled rice marketing system, with the possibility of incorporating rice in the Ethiopian commodity exchange trading platform.

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