



Oladele Oladipo

Boosting rice production through mechanisation



Taiwo Oyaniran

We estimate that increasing the mechanisation rate in Nigeria from 0.3hp/ha to 0.8hp/ha in the next 5 years, can double rice production to 7.2 million tonnes.

Rice - the most consumed staple

Rice is a common food staple consumed by over 50% of the world's population. It provides 19% of global human per capita energy and 13% of per capita protein. Hence, rice production is critical to global food security. It is grown on more than 144 million rice farms, mostly smaller than 1 hectare. This makes rice an important source of employment and income, particularly for the rural people.

Global rice production has grown at an annual average of 1.0% over the past decade, reaching 486.7 million tonnes in 2017. Most of this growth has come from Asia, accounting for 89% of global output. China and India are the largest producers, each with a share of 29.6% and 22.6% of global production respectively.

Global rice consumption remains strong, driven by both population and economic growth in Asia and Africa. Over the past two decades, rice demand increased at an annual average of 1.2% to reach 481.6 million tonnes in 2017.

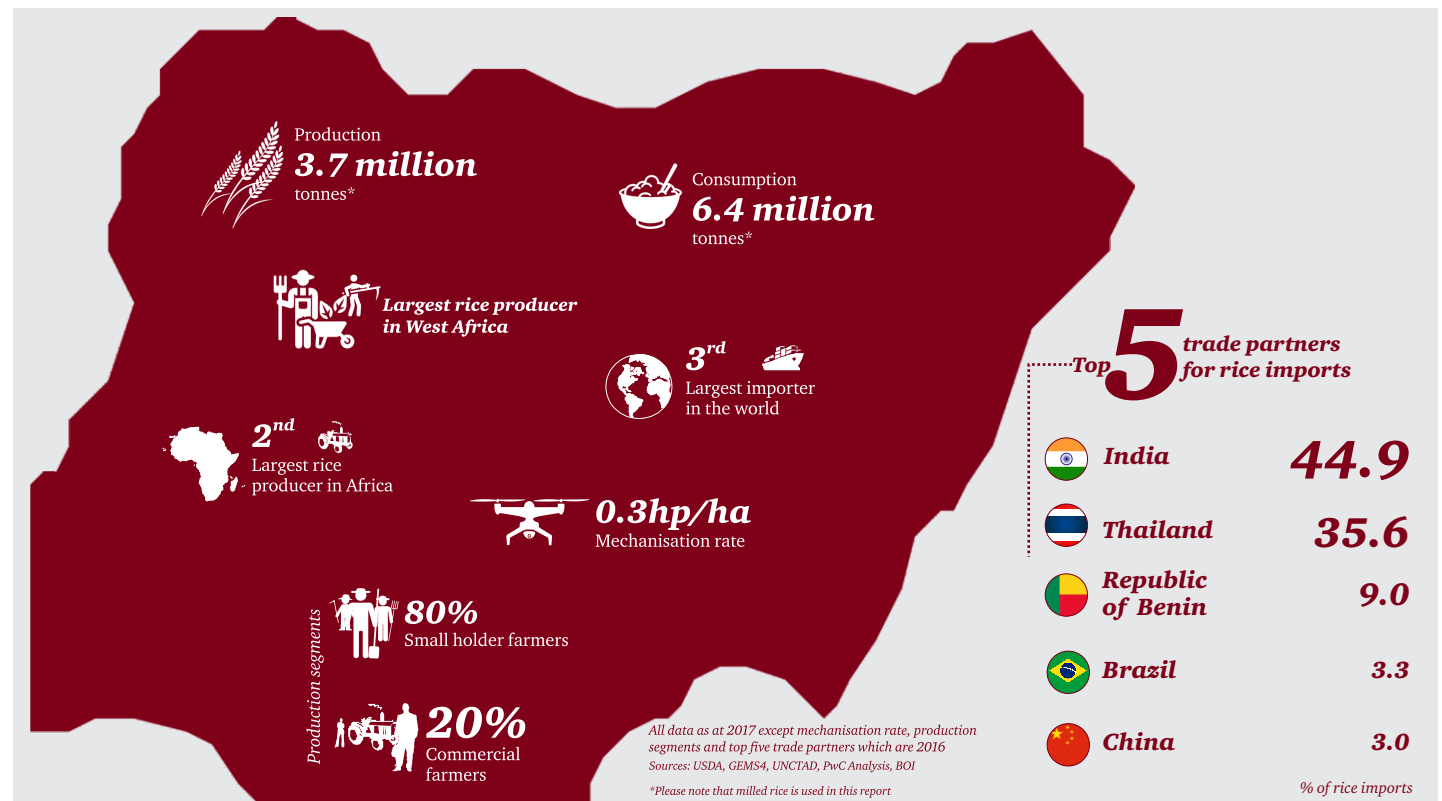
Nigeria's Rice Industry

Rice is a predominant staple crop in Nigeria, produced in over 18 states of 36 states. Production has increased at an annual average of 3.7% over the past decade, reaching 3.7 million tonnes in 2017. Growth has been facilitated by an increase in area under cultivation for rice. The area under rice cultivation expanded from about 2.4 million harvested hectares in 2010 to 3.2 million harvested hectares in 2017 – the highest in the last 5 years.

Rice mechanisation is however low, negatively impacting rice yields and production. Nigeria's rice yield is one of the lowest globally at 2 tonne per hectare, relative to 4 – 7 tonne per hectare in Asia.

More than 80% of Nigeria's rice is produced by small scale farmers, while the remaining 20% is produced by commercial farmers. In addition, most of the processors are small scale with low capacity (less than 300kg/hr) and obsolete mills. Production constraints within the rice value chain include low mechanisation, limited supply of agrochemicals and fertilisers, low adoption of modern varieties and inadequate extension services.

Nigeria continues to rely on rice importation to meet growing rice demand. Moreover, urban consumers generally have preference for imported rice as a result of the perceived higher quality. In the past 5 years however, rice imports have declined 33.3% reaching 2.7 million tonnes in 2017. This decline has been attributed to reduced demand as a result of Government's policies on import substitution – import tariffs and inclusion of rice in the list of 41 items ineligible for forex in the official market. Despite these, Nigeria remains the single largest rice importer in Africa and the world's third largest, with Thailand and India as its largest import sources.



Government policies to boost production

Government intervention in rice production has leaned towards providing inputs such as improved seedlings and fertilizer to small holder farmers. Also, some state governments have granted land concessions as an investment incentive to large commercial farmers. Towards improving irrigation, government is investing in various irrigation projects. The Zauro irrigation project for instance is targeted at developing water reservoir for the production of 42,000 tonnes of rice.

In addition, through the Central Bank of Nigeria, funding has been made available to rice farmers at affordable rates through the Anchor Borrower's Programme. Also, favourable trade policies by the government – zero tariffs on machinery and equipment, quotas and licenses - have positively impacted domestic rice production.

The mechanisation gap

Nigeria's mechanisation has remained low at 0.3 hp/hectare, relative to 2.6hp/hectare in India, 2.2hp/hectare in Vietnam and 8 hp/ha in China. The number of agricultural tractors is estimated around 22,000, relative to 1 million and 2.5 million in China and India respectively. Low income, limited access to affordable financing and the lack of technical skills have limited the adoption of mechanisation across the rice value chain.

The FAO identified mechanisation as a key input for developing the agriculture sector in SubSaharan Africa, recommending a minimum of 1.5 hp/hectare.

We estimate that increasing the mechanisation rate in Nigeria from 0.3hp/ha to 0.8hp/ha in the next 5 years, can double rice production to 7.2 million tonnes. To achieve this, we estimate that Nigeria will need to at least triple its current stock of machinery over the same period. In addition to raising production, adequately increasing mechanisation has the capacity to raise yields, increase labour productivity, reduce post-harvest losses, increase income generated by farmers and deepen import substitution.

The impact of mechanisation include:

- Increased yields
- Higher labour productivity
- Reduction of post harvest loses
- Increased value added to farm output
- Income generation
- Import substitution
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An opportunity

Nigeria's mechanisation gap provides numerous opportunities for investment across the agricultural value chain. To attract the required investment, the government needs to create an enabling environment that ensures mechanisation is profitable. In terms of priorities, the government should concentrate on addressing challenges around land tenure and ownership, providing rural infrastructure and extension services, and ensuring incentives are transparent and accessible to all investors.

We recently published a report on the potential impact mechanisation will have in boosting Nigeria's rice production. The report is available here <https://www.pwc.com/ng/en/publications/boosting-rice-production-through-increased-mechanisation.html>

About the authors

Oladele is a Partner with PwC Nigeria's Consumer & Industrial Products & Services Industry practice. oladele.n.oladipo@pwc.com

Taiwo is a Senior Manager and Agric Sector business development lead at PwC Nigeria. taiwo.oyaniran@pwc.com

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