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Insight

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CDC leads:

Julia Tobias and Martina Castro

jtobias@cdcgroupp.com

mcastro@cdcgroupp.com



What's the impact of modern rice farming in Nigeria?

Practical thinking on investing for development

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Overview

Coscharis Farms Limited (Coscharis Farms), a subsidiary of Coscharis Group, is an integrated rice processor in Nigeria. Strategically located in Anaku, in Anambra State, Coscharis Farms began its farm development activities in mid-2015. Coscharis Farms currently has nearly 2,500 hectares of land for rice cultivation in Anambra, along with an irrigation system enabling multi-cycle rice cultivation. The investment is managed by Sahel Capital's Fund for Agricultural Finance in Nigeria (FAFIN), which focuses on increasing the potential of the sector.

This study explores the impact of the Coscharis Farms model, drawing on interviews with its employees and contractors in Anambra, combined with other data sources. Our aim was to understand how Coscharis Farms contributes to food security and employment generation in Nigeria. The research was conducted by 60 Decibels and CDC, in partnership with FAFIN and Coscharis Farms.

Main findings include:

- **Coscharis Farms is helping to reduce Nigeria's dependency on rice imports and improve food security.** During the last few decades, rice production in Nigeria has emerged as an important food security issue, with rice demand growing faster than domestic supply. The modern farming model adopted by Coscharis Farms helps to address this supply shortfall.
- **The Coscharis Farms model is improving agricultural productivity through introducing modern farming methods.** It currently achieves 1.3–1.7 times higher rice yields than the regional average. This is an important achievement in the Nigerian context – where low rice yields have been a persistent challenge, making it difficult for local rice farmers to compete with cheap imported rice.
- **Coscharis Farms creates job opportunities, with many of its workers previously unemployed, and contributes significantly to workers' family incomes.** Before working for Coscharis Farms, 32 per cent of the staff were not employed and 8 per cent worked only sporadically. About half of the workers surveyed reported that their salary from Coscharis Farms was their family's only source of income.
- **Coscharis Farms workers report their quality of life has improved.** 62 per cent of current employees report that their quality of life has improved since joining Coscharis Farms. Workers value the timely payment of salaries, professional development opportunities and benefits packages provided by Coscharis Farms.

The study also presented Coscharis Farms with a range of feedback from workers, and the company has recently introduced efforts to address some of these issues, including assessing the training needs and other needs of its staff.

Models like Coscharis Farms – with its largescale rice growing and processing – can create economic opportunities across the agricultural value chain. Our research supports the notion that modern large-scale farming focusing on staple crops is a viable solution to improve crop productivity and to help address food insecurity. We identify some potential opportunities to build impact further based on the study findings, by enhancing training opportunities, improving community relations, and enhancing communication across the organisation.

We hope this research provides actionable insights, both for Coscharis Farms and a wider audience of companies and investors interested in understanding how to support long-term, positive impact in this space.

Contents

Overview	2
01. Context	3
02. Methodology	4
03. Can Coscharis Farms, and similar models, help reduce Nigeria's dependency on rice imports?	5
3.1 In Anambra, the rice sector is not meeting its economic potential	5
3.2 Anambra rice production experiences a yield gap	6
3.3 Improving rice yields means addressing some key productivity bottlenecks	6
3.4 Coscharis Farms' large-scale modern farming addresses key cultivation bottlenecks and contributes to fixing the Nigerian rice supply shortfall	7
04. Does Coscharis Farms create new and better employment opportunities?	8
4.1 Coscharis Farms creates jobs, provides training and contributes significantly to workers' family incomes	8
4.2 The workers at Coscharis Farms value on-time payment and career growth opportunities	9
4.3 Evidence that Coscharis Farms provides higher salaries is mixed	10
05. Looking forward	11
References	12

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For questions please contact jtobias@cdcgroup.com



01

Context

As a subsidiary of Coscharis Group, Coscharis Farms manages a comprehensive rice value chain in Nigeria, encompassing rice cultivation, milling, storage and marketing. The farm is currently growing on 1,300 hectares of land¹ with its in-grower model, and is in the early stages of developing an outgrower scheme expected to reach 4,500 farmers in the first phase of project implementation. In 2019, Coscharis Farms built and commissioned a rice mill with a milling capacity of 40,000 metric tons per annum, and signed a concession agreement to manage a 25,000 metric ton silo complex located adjacent to the mill for storage.

Coscharis Farms is an investment managed by Sahel Capital's Fund for Agricultural Finance in Nigeria (FAFIN). CDC committed \$15 million into FAFIN in 2017.

The impact thesis for investing in Coscharis Farms rested upon two main expected impact areas:

– Reducing Nigeria's reliance on rice imports

Nigerians are estimated to consume more than five million metric tons of rice each year, with a significant portion coming from imports. Rice demand is growing faster than supply, driven by factors including population growth and urbanisation. Although several strategies have been put in place to increase rice production and promote national self-sufficiency in rice, local farmers have often struggled to produce rice efficiently enough to compete with imported rice prices. Key among these efforts is an attempt to stimulate domestic rice production through the dissemination and adoption of modern technologies, such as seeds and fertiliser (Liverpool-Tasie, 2015).

The Coscharis Farms model can help address the Nigerian demand-supply gap. Its modernised approach to large-scale farming has the potential to improve rice yields and introduce innovations and efficiencies into the value chain.

5m

Nigerians are estimated to consume more than five million metric tons of rice each year.

¹ 1,300 hectares are currently active with a total 2,500 hectares of land under ownership; some land is being used for other purposes including biodiversity conservation.

– **Increasing employment opportunities**

Coscharis Farms provides jobs and vocational training opportunities through its farm, which is located in a state with a high percentage of arable land where agriculture is a driver of job creation. Coscharis Farms currently employs 292 full-time equivalent workers who are mostly farmers, and has the potential to create new employment opportunities as it expands its operations.

This Insight report summarises the evidence and data available to assess whether the impact case for Coscharis Farms is playing out. We focus on two key questions:

- **Can Coscharis Farms, and similar models, help reduce Nigeria's dependency on rice imports?**
- **Does Coscharis Farms create new and better employment opportunities?**

292

Coscharis Farms currently employs 292 full-time equivalent workers who are mostly farmers.

02

Methodology

To assess the contribution of Coscharis Farms to *addressing Nigeria's rice productivity challenges*, desktop research was carried out using a combination of data sources: station data to estimate yield gaps from the Yield Gap platform, IFPRI rice production analysis based on LSMS-ISA World Bank/NBS surveys, 2005 satellite/GIS data from Harvest choice, and discussions with Coscharis Farms.

To assess improvements in *employment opportunities and working conditions*, CDC contracted 60 Decibels (previously Acumen Lean Data) to conduct phone surveys with a sample of 63 employees and contractors (50 men and 13 women) over a seven-day period in December 2018. The survey questions aimed to understand worker profiles, employment journeys, satisfaction with the workplace, and challenges faced by workers.



03

Can Coscharis Farms, and similar models, help reduce Nigeria’s dependency on rice imports?

The study provides strong evidence that Coscharis Farms can contribute to reduced dependency on rice imports and improved food security, for several reasons outlined below.

3.1 In Anambra, the rice sector is not meeting its economic potential

Agriculture represents about 20 per cent of the state GDP, which is about half the average share for Nigeria (NBS, 2017). According to 2010-2012 World Bank data, rice production from the Anambra region accounts for only 15 per cent of Nigeria’s total rice production (Takeshima & Bakare, 2016).

In Anambra, historically, rice has represented 5 per cent of land cultivated but only 1.6 per cent of the total value of agricultural production. By comparison, in Nigeria, rice has been cultivated on 6 per cent of the land but represented 3 per cent of the total value of agricultural production (IFPRI, 2005).

15%

Rice production from the Anambra region accounts for only 15 per cent of Nigeria’s total rice production.

	Anambra	Nigeria
Agriculture sector, % of GDP	19.6%	43.7%
Crop mix, % cultivated land	- 26% cassava - 17% yams - 14% oil crops - 5% rice	- 16% sorghum - 11% millet - 8% maize/cassava - 6% rice
Rice, % value of total agricultural production	1.6%	3%

Table 1: Anambra agriculture compared to national averages

(Source: Agriculture sector, percentage of GDP is from NBS 2017. Crop mix and rice production values are from IFPRI 2005.)

3.2 Anambra rice production experiences a yield gap

Anambra rice yields are low at 2.1 tonnes per hectare (t/ha). This is 27 per cent lower than the West Africa average. Anambra's yield gap – the difference between yield potential and actual yield – is 14 per cent higher than the West Africa average. This represents a 186 per cent shortfall of what is technically feasible (World Bank, 2014).

27%

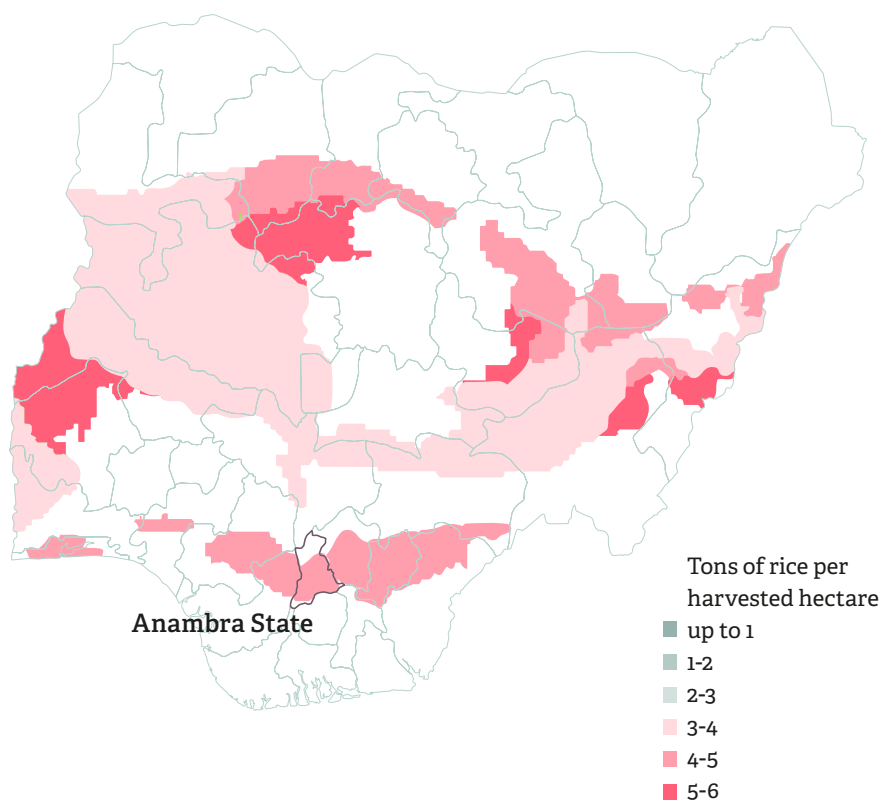
Anambra rice yields are 27 per cent lower than the West Africa average.

	Anambra	Nigeria	West Africa
Rice yield, t/ha	2.1	2.2	2.9
Yield gap rice, t/ha	4.8	4.0	4.2

Note: figures are calculated for rainfed rice; irrigated rice average share of national area is 4 per cent (Takeshima & Bakare, 2016).

Table 2: Rice yields compared

(Source: YieldGap, 2019. Anambra indicator uses closest available data - Enugu station data (YieldGap, 2019) and Nigeria Southeast regional average (Takeshima & Bakare, 2016). Nigeria and West Africa data uses available station data (YieldGap, 2019) and a five-year average for the 2006-2011 time range (Takeshima & Bakare, 2016).)



Map 1: Rice yield gaps compared

3.3 Improving rice yields means addressing some key productivity bottlenecks

Several key drivers affect Nigerian rice yields: climate (sunlight, favourable temperatures), water access, soils, pests and diseases (including iron toxicity), weeds, floods, socioeconomic factors (seeds, fertiliser, irrigation, mechanisation and extension), along with credit and market access (Takeshima & Bakare, 2016).

3.4 Coscharis Farms' large-scale modern farming addresses key cultivation bottlenecks and contributes to fixing the Nigerian rice supply shortfall

Rice production in Nigeria is mainly driven by small-holder farmers, who experience barriers in increasing productivity as they still rely on traditional practices. Large, commercial and asset-rich rice farms, such as Coscharis Farms, are rare (Takeshima & Bakare, 2016).

Small-holder farmers tend to be low-income, asset-poor, and resource-constrained (Takeshima & Bakare, 2016). As a result, they often lack the economic incentives to address the root causes of low productivity, for example by adopting new seed varieties or increasing fertiliser use (Takeshima & Bakare, 2016). Bridging the rice yield gap in Anambra means either focusing on large-scale agriculture – in line with the Coscharis Farms approach – or supporting small-scale farming by creating outgrower schemes.

The Coscharis Farms model represents a positive step towards improving rice productivity. As shown in Table 3, while only 38 per cent of typical farmers in Anambra use purchased seeds and 47 per cent use fertiliser, these rates are twice as high for Coscharis farmers. Modern farming methods, such as irrigation and mechanisation, are also much more widely applied at Coscharis Farms compared to other local farms. Through its direct production programme, Coscharis Farms is estimated to achieve 1.3-1.7x yields and improves rice yield gaps by 29-58 per cent compared to the Anambra average, and there is potential to expand these benefits further through outgrower schemes. Coscharis Farms is exploring the profitability of different service delivery models for potential outgrower and ingrower schemes to guide these decisions.

29-58%

Coscharis Farms improves rice yield gaps by 29-58 per cent compared to the Anambra average.

% of farmers	Anambra*	Coscharis Farms
Purchasing seeds	38%	80%
Using fertiliser	47%	90%
Irrigating crops	4%	40%
Using mechanisation	1%	90%
Rice yields		
Potential rice yield per season (t/ha)	4.5	4.5
Rice yield (t/ha)	2.1	2.7-3.5
Yield gap (t/ha)	2.4	1-1.8
Relative yield gap (%)	53%	22-40%

Table 3: Coscharis Farms outcomes compared to Anambra

Source: Data on seeds, fertiliser, irrigation, mechanisation and extension services is from LSMS-ISA 2015/16 (NBS, 2016/2017); Anambra values are estimated using South East regional averages for all crops. Potential rice yields reported here were estimated by Coscharis Farms based on local conditions. This compares to potential rice yields for Anambra of 6.9 t/ha and a yield gap of 4.8 t/ha based on assumptions about optimal conditions and use of seeds, fertiliser, water, etc. based on yieldgap.org and Takeshima & Bakare (2016). Coscharis Farms rice yields were reported by the company and vary across different varieties of rice, but most fall within the range indicated. Rice yield data for Anambra is from YieldGap, 2019. Yield gap is the potential yield minus the actual rice yield. Relative yield gap is calculated as the yield gap divided by the potential rice yield.



04

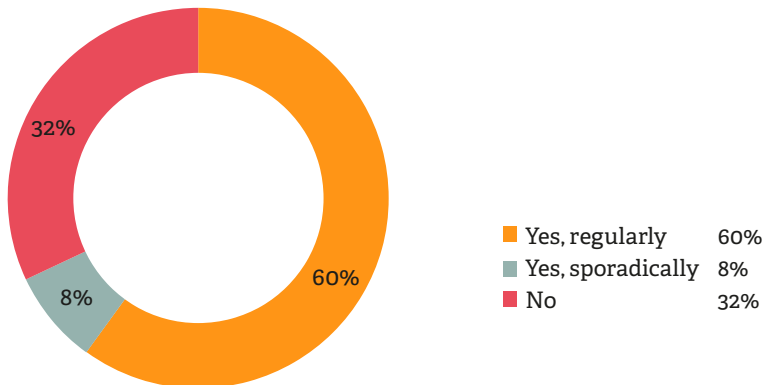
Does Coscharis Farms create new and better employment opportunities?

The survey of Coscharis Farms employees and contractors conducted by 60 Decibels provides supportive evidence that Coscharis Farms is helping to create jobs with decent working conditions, while self-reported evidence on whether the business is helping to improve worker incomes is somewhat mixed. Across the 63 workers interviewed, on average, respondents had been working for Coscharis Farms for two years and reported working full-time hours each week.

4.1 Coscharis Farms creates jobs, provides training and contributes significantly to workers' family incomes

Coscharis Farms currently has 292 employees (full-time equivalent) and provides a number of training opportunities for staff. Roughly 40 per cent of current employees were in precarious employment positions before getting a job at Coscharis Farms, of which 32 per cent were not employed and 8 per cent worked only sporadically. The remaining 60 per cent of current Coscharis Farms staff were previously employed. The biggest factors in their decision to work for Coscharis Farms were the attractiveness of a regular job and its status as a large, reputable company.

Were you working before you started working at Coscharis? (n=63)



Working at Coscharis has improved my knowledge of farm work.

Coscharis Farm employee



Coscharis is better than other employers because salaries are paid in a timely matter.

Coscharis Farm employee

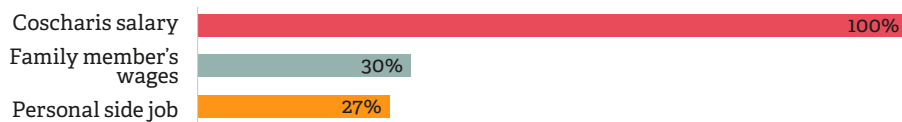
Key characteristics of previous job (n=43)



Coscharis Farms accounted for 81 per cent of workers' family incomes in the past year on average, with just over half of the workers reporting that their salary from the company was their family's only source of income.

Coscharis workers are given several trainings, including Good Agricultural Practices (GAP) training in rice agronomy developed by the UN Food and Agriculture Organization (FAO). This covers a range of topics to improve agronomic practices for rice cultivation, including how to apply fertilisers and other chemicals, how to identify pests and diseases, and environmental risk, adaptation and mitigation measures. Farm machinery operators receive training on procedures, potential hazards or accidents, and recommended safe job procedures during operations. Farmers will also be trained on basic bookkeeping and business concepts.

What are the top three sources of income for your family? (n=63)



How much of your family's total income in the last 12 months came from Coscharis? (n=62)



4.2 The workers at Coscharis Farms value on-time payment and career growth opportunities

According to the study results, 90 per cent of staff report being paid on time and 62 per cent feel their quality of life has improved. Of these, all have been working at the farm for three years or longer, suggesting that changes in quality of life may take time to be perceived.

Out of the number of employees and contractors who had worked elsewhere previously, 70 per cent say their job at Coscharis Farms is better than their former one, for the main reasons of professional development opportunities, and better salary and benefits packages. Of those surveyed, 71 per cent expect to continue working at Coscharis Farms in the next two years, and more than half plan to stay for the next five years.

Is your current position better, worse or same as your previous jobs? (n=43)



My life has improved because I can now pay my bills and I am independent now.

Coscharis Farm employee

52%

reported Coscharis salary as their family's only source of income.

81%

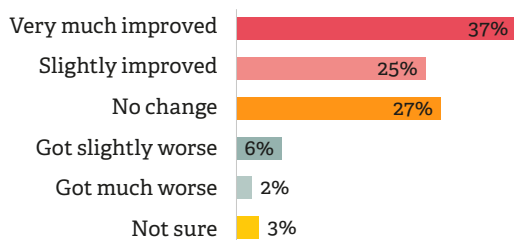
of workers' family incomes on average came from Coscharis in the last 12 months.



The consistency in payment of salary has greatly helped me in paying my bills.

Coscharis Farm employee

How has your quality of life changed since working on Coscharis Farms? (n=63)



The company's Net Promoter Score (NPS) is fair, with employees reporting that they value the good working environment and opportunities for learning. However, 44 per cent of workers reported facing some type of challenge in their daily jobs, suggesting there is scope for the company to continue improving job quality and worker satisfaction. Some of the suggestions provided including improving training offerings, implementing a shorter work week, and offering overtime pay options. Coscharis Farms has also faced some challenges in maintaining harmonious relations with the surrounding community, with some tensions raised related to land and pollution issues, for instance.

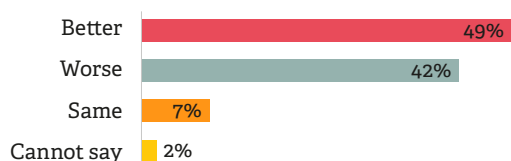
CDC and FAFIN worked with Coscharis Farms to employ an Environmental, Social and Governance (ESG) manager trained to help address some of these issues. As a result, some new policies have been developed to improve worker wellbeing and safety. Coscharis Farms has been making efforts to improve farm security and train staff on sensitive behavioural and cultural issues to maintain respectful relationships with its host communities, and holding stakeholder engagement meetings has reportedly helped to improve these relations.

Coscharis Farms has recently implemented a performance appraisal process that includes an assessment of training needs and a focus on career development. Some steps have also been taken to improve communication between management and staff, including establishing regular 'town hall' meetings and departmental meetings, and introducing a suggestion box.

4.3 Evidence that Coscharis Farms provides higher salaries is mixed

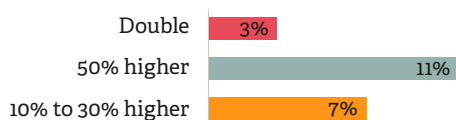
Of current employees who were previously employed, 49 per cent mentioned that their salary and benefits at Coscharis Farms are better than their previous job, 7 per cent reported them as the same, and 43 per cent reported earning less – a potentially concerning number. However, other factors may have affected these responses, such as severe flooding experienced across a number of Nigerian states, including Anambra, before the survey period.

Are your current salary and benefits better, worse or same as your previous jobs? (n=43)



For two-thirds of those who report better salary packages, the difference is quite substantial at 50-100 per cent higher than their previous jobs. Further, 50 per cent of the people earning less still report that Coscharis Farms is a better place to work than their previous job. The key reasons listed here include salaries being paid on time and learning and growth opportunities.

How much higher is current income compared to previous job? (n=21)



I am able to plan my spending in a proper manner because of the timely manner in which salaries are paid and the consistency in payment.

Coscharis Farm employee



The salary is higher than my previous job so my standard of living has gone up.

Coscharis Farm employee



I am earning more at Coscharis so I can afford my basic needs.

Coscharis Farm employee

Looking forward

Based on worker feedback, our study recommends several actions for Coscharis Farms to increase worker satisfaction, productivity, and overall working conditions. As noted earlier, Coscharis Farms is already taking steps to address some of these issues, and further progress will be monitored over time:

- **Offer more training opportunities and resources for staff to improve skills and productivity.** It has developed a training program that will be in place this year to help achieve these goals. In the future, there is room to develop outgrower programmes to benefit nearby farmers.
- **Improve community relationships and workers' sense of safety.** Some actions have been taken to better integrate the company in the host community. For example, setting up a committee and engaging an ESG manager and community liaison officer to help manage grievances in the community.
- **Open dialogue between management and staff.** It has instituted a regular town hall meeting as an opportunity for staff to share their views.

Alongside this progress, it is worth noting that Coscharis Farms has faced some challenges in securing sufficient rice supply to process and operate the factory optimally. With recent increased stress on the food supply, due to factors including COVID-19 and rice import restrictions, there has been a significant increase in the demand for rice. Increased competition among rice companies is making it important to build loyalty among farmers to assure a more steady supply of rice inputs.

Moving forward, Coscharis Farms is exploring models to partner with outgrower farmers around the host community to offtake their harvest so that they do not experience wastage and get good value for their harvest. Coscharis Farms is also working on ingrower models that will ensure farmers receive support, training and access to irrigation infrastructure to enable them to increase crop yields and farm two cycles each year. We hope these initiatives will prove to be successful in deepening the company's impacts on farmers and the local economy.

References

- 'Agribusiness Indicators: Nigeria', World Bank Group 2014.
- Chandler, L., 2017. 'FAFIN Fund Baseline Report'. *UK Aid, The Impact Program*.
- '[Coscharis Farms](#)'.
- '[Data Africa – Anambra – Crops by harvested area](#)', International Food Policy Research Institute (IFPRI) and Datawheel 2017.
- '[Data Africa – Anambra – Crops by production value](#)', International Food Policy Research Institute (IFPRI) and Datawheel 2017.
- '[Global MPI Country Briefing 2018: Nigeria \(Sub-Saharan Africa\)](#)', Oxford Poverty and Human Development Initiative (OPHI), Oxford Department of International Development, Queen Elizabeth House, University of Oxford.
- '[Gross Domestic Product – Q4 2017](#)', OpenData for The National Bureau of Statistics - Nigeria.
- 'Lean Data Coscharis Farms - Coscharis Group', *60 Decibels 2019*, Worker Survey.
- "Is fertilizer use really suboptimal in sub-Saharan Africa? The case of rice in Nigeria", Lenis Sewada Liverpool-Tasie, Michigan State University, 2015.
- '[LSMS-Integrated Surveys on Agriculture General Household Survey Panel](#)', National Bureau of Statistics 2015/2016 (NBS).
- 'Nigeria Population by Age and Sex - 2012', NBS, from [Nigeria Data Portal](#).
- 'States Nominal Gross Domestic Product (2013 - 2017) - PHASE II', from [Nigerian National Bureau of Statistics](#).
- 'The Nigerian rice economy: Policy options for transforming production, marketing, and trade'. Hiroyuki Takeshima and Oladele Samuel Bakare, International Food Policy Research Institute (IFPRI), Chapter 6.
- 'Yield, Yield Gaps – Nigeria, West Africa', YieldGap 2019, [Global Yield Gap Access](#).

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▶ **CDC Group:**

Julia Tobias

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