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Can technology help dried fish nourish the Nigerian economy?

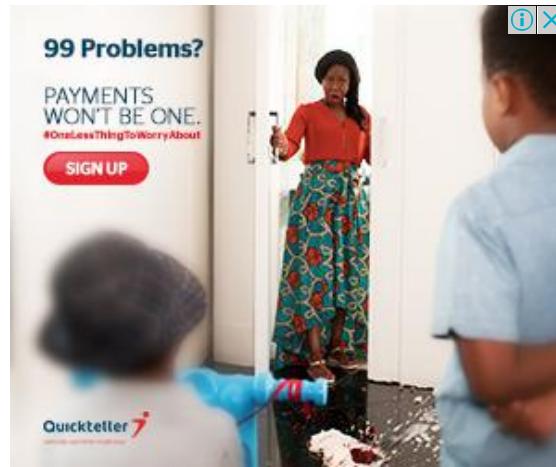
AUGUST 16, 2017 BY VICTOR EKWEALOR — 0 COMMENTS

On one hot sunny afternoon, I visited the Asegere Fish Market in the Makoko Area of Lagos State. There, different shapes, sizes and variants of the proteinous aquatic delicacies summoned my alter ego; a gluttonous chef. Asides the prospect of a delicious seafood [Edikaikong](#) soup, one unsavoury scene caught and held my attention.



In a corner of the market, 30-year old Asake* is trying to regulate the fire under her fish laden kiln by taking out excess pieces of wood and the stove is belching out clouds of smoke in defiance to this action.





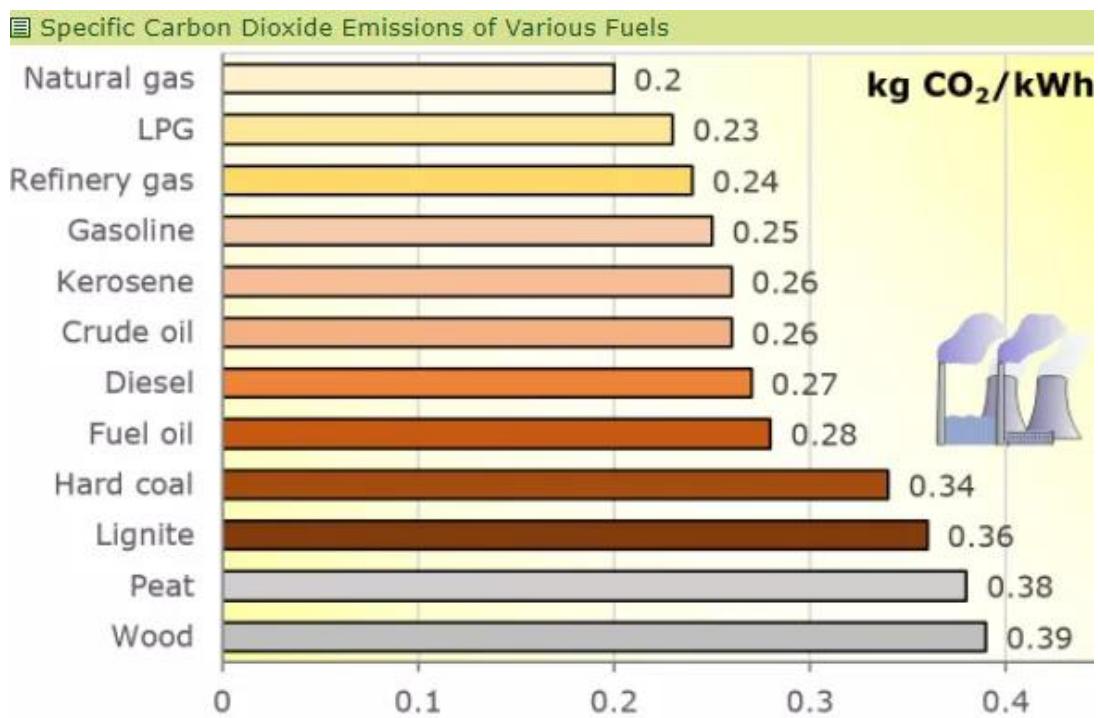
The task has left her teary-eyed and wheezing badly but she is hiding it very well. As I cough and rub my stinging eyes, she laughs and adds that the smoke does not bother anybody that works kilns as they have already become accustomed to it.



The Asegere Fish market opens by 5 AM and closes by 7PM daily, that is 14 hours on an average for Asake under these smoke clouds.



Wood has a higher carbon dioxide emission rate than other fuels. Considering the hazardous effects of direct exposure to carbon dioxide(CO₂), I am worried about the long-term effect of this smoke on Asake and people around her.



Source: Volker Quaschning

Even though a [report](#) by the International Energy Agency(IEA) places Nigeria lowest on a CO₂ emission list by country, the overall effects of these emissions are not lost on the atmosphere. And the people in direct contact with them.



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Asake's is one of 3 operational kilns in the market and there is usually a queue; a very long one. Chinyere* is Asake's first customer of the day and at 12:00 AM, she is still waiting to collect her fish.



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“I bought #30,000 worth of fish and after paying for processing and smoking, I was asked to leave it overnight and come back tomorrow”, Chinyere laments. “This fish has been in the oven for 5 hours and is still not halfway done; we started since 7 AM. I should have gone, I actually regret waiting.”

Asake confirms that sometimes it can take 18 to 24 hours to dry a load of fish, depending on the quantity.



Considering the high inefficiency, health and environmental hazards, I ask Asake why she and other 'fish smokers' still use the wooden kilns. Her first reason is that the fish will taste bland without the smoky flavour from the firewood.

“ Since I was born in 1987, this is the business my parents and grandparents have been into and this is the method they have used to smoke fish. It has worked for them.

Asake has never tried any other method so there is no way she can know what works or doesn't; she is only stating what she had been told. Even before Asake's grandparents, hieroglyphics show ancient Egyptians smoking fish on wooden kilns over 5,000 years ago.

Fish processing as an industry is full of opportunities. With all the technological advancements, why are the likes of Asake scattered all over Nigeria still stuck on this archaic and tedious process?

Opportunity wasting?

Director General of the National Biotechnology Development Agency (NABDA) says annual demand for fish in Nigeria is 3.2 million Metric Tonnes but the country produces only 1.1 million MT, 2 million MT less than demand. Until the production gap is bridged, an efficient preservation method is the only way to prevent wastage and make sure there is enough to feed the fish-eating part of a 186 million population.

Away from the home turf, processed fish is a good source of export revenue for Nigeria. In the USA, a Bioterrorism Act of 2002 stipulates that the US Food and Drug Administration examines all processed seafood exported to the United States of America.

And the same applies to the European Union, but Nigeria is on the list of [approved countries](#) in the EU. Smoked fish costs anywhere from **\$20 – \$40/kg** in the US market and **£15 – £30/kg** in Europe depending on the retailer or store.



Fish is an integral part of most African dishes and the dried variants have a distinct flavour that enhances food. There is no exact head count on the number of Africans living abroad, but they are unarguably a fish buying multitude.

According to the Senior Special Assistant to the President on Foreign Affairs and The Diaspora, Mrs Abike Dabiri-Erewa, there are about 15 million Nigerians living in the diaspora and they have **plenty money**. Yet it is clear that even if this demand is met, Nigeria does not have a share in this potentially huge market.



A **study** in the year 2000 showed West African countries (Ghana, Ivory Coast, Nigeria and Cameroon) imported 500 tonnes of smoked fish per annum into the United Kingdom with a retail value of **£5.8 to £9.35 million** that's an average of **£7.57 million**. Of this quantity, Nigeria exported about 60 tonnes per annum via airfreight A quarter of the air freighted smoked fish is detained at entry point and 70% of these seized goods are eventually destroyed by customs for poor processing standards.

Even though this study is nearly two decades old, Mr. Chukwudi* an Anambra based businessman who exports dried fish tells me that things have not changed very much since then.

“ Exporting dried fish is a big gamble because there is no way to know if they are going to allow it go through [the ports] or not. There are some things in the fish that enters from fire when it's being dried that makes them seize these goods.

Further investigation reveals that ‘the things’ in the fish Mr. Chukwudi refers to are **Polycyclic Aromatic Hydrocarbons(PAHs)** ; carcinogens banned in America and the EU.

Smoke from wood and charcoal fuel are the largest sources of PAHs and as the major method of processing fish in Nigeria, it is nearly impossible not to get some into the fish.

Considering the study, assuming demand and production are constant, Nigeria has lost approximately **£15.4 million** over a 17-year period and this is only in the United Kingdom.

These wastage can be traced to inefficient smoking techniques and this is a problem technology can solve.

Cost as a hindrance to efficiency

Mr. Oladipo Olatunbosun of Omotenigbola Farms in the Ikotun area of Lagos dismisses Asake’s theory on the relationship between smoke and well-flavoured fish.

“ Most people season fish before drying them. But even in the absence of any form of seasoning, smoke sometimes does more harm than good to the fish.

According to him, most people know about efficient techniques and methods, but price is a major deterrent as building and maintaining efficient fish processing machines is expensive as opposed to setting up Asake’s firewood powered brick kiln.

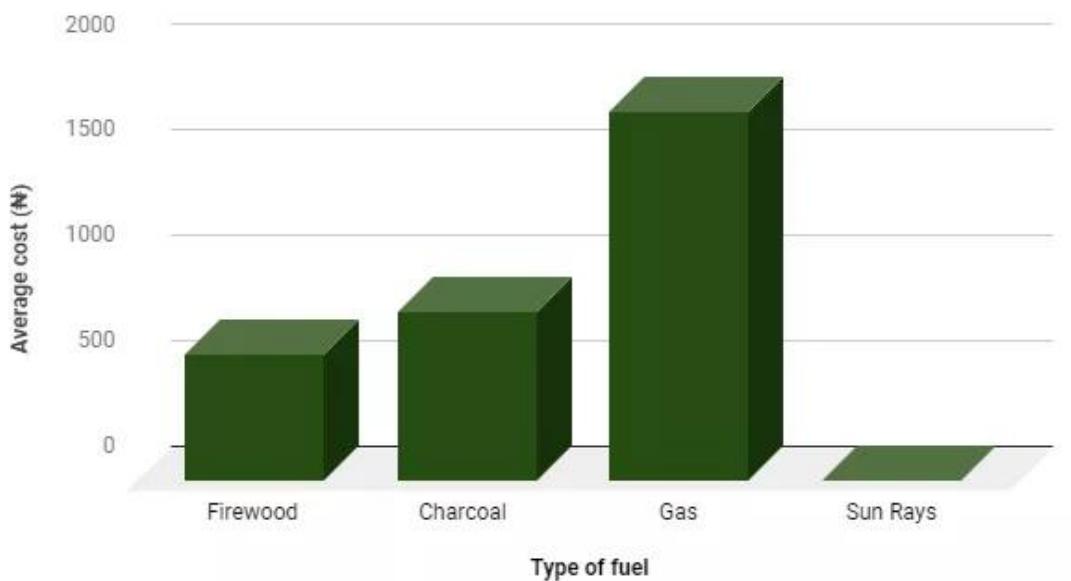
According to **Lannap Newman Selbol**, an expert on solar equipment and renewable energy, a 300kg solar dryer will cost around **₦1.5 million**.

With over a decade experience in the fish farming and processing industry, Mr. Oladipo highlights the price problem with a focus on fuel.

“ Using firewood to dry fish is the cheapest as a **₦600** bundle can fully cover a 70kg load of fish with few sticks left. The same size will consume

charcoal worth **#800** and gas of about **#1,500 – #2,000**. Solar on the other hand is the most efficient but expensive. Considering the inclement weather nowadays, it may be a problem. Of course, there is sun drying which is not considered fit enough for consumption talk more of commercial purposes.

AVERAGE COST OF FUEL FOR FISH DRYING MACHINES



At the Federal Institute of Industrial Research Oshodi(FIIRO), Stephen* an engineer on site showed me super efficient charcoal powered brick and aluminium kilns. Although he refused to allow me take pictures of the kilns, as it was against house rules, I managed to get one online. These kilns dry heavy loads of fish in 8 hours max and their design does not let smoke get anywhere near the fish.



FIIRO Smoking Kiln, Image: Agriculture Nigeria

Built with fin-like ribs that channel smoke from charcoal away from the fish upwards to a chimney, these machines produce a near 98% smoke-free experience. Compared to the nearly 24-hour period of Asake's firewood kiln and 12 hours on Mr. Oladipo's charcoal kiln, this is super efficient and energy-saving.

Stephen quoted the prices and confirmed Mr. Oladipo's earlier statement on the price problem; a 300kg capacity kiln costs **#800,000**, 150 kg is quoted at **#480,000**. These prices are for the double door brick kilns that require physical onsite installation.

The mobile aluminium variants on the other hand do not have any fixed price, estimates have to be made before cost is determined. I asked Stephen if there is any facility for small-scale enterprises that can't afford these charges, he replied in the negative. *"If you do not have plenty money, we can help you reduce the number of trays on the aluminium variant and build something that fits your pocket,"* he added.

Is there a solution to this problem?

Stakeholders I spoke to were optimistic, but few stressed the Nigerian factor and how government can be a hindrance to proactive steps. But I wonder, do we have to drag the government into this? Maybe.

Why is the government not seizing this great opportunity? They are, but not to an appreciable extent.

In the early 2000s when smoking fish in steel drums with wire mesh and sawdust as fuel was the norm, Oluremi Tinubu wife of then governor of Lagos State Bola Tinubu organized a skills acquisition workshop. Asake and other women at the fish market attended.

“ I cannot remember the year exactly, but they taught us how to use other methods of fish drying especially the solar method.

“That Mama did not go” Asake continues pointing at an older woman skewering filleted fish. Apparently, 'Mama' believed the workshop would not add any value, Asake agrees to a certain extent.

“ After teaching us how to use solar dryers, they gave us certificates and **₦50,000** to get machinery. Even then when things were cheaper, we had to form groups of 4 people to be able to afford a firewood kiln.

This is not a trend unique to Lagos State, investigations show that most empowerment training schemes in some states of the federation have provisions for efficient fish processing. At the end of these empowerment workshops, no financial arrangements are made to equip trainees.

“Why train to use solar dryers and not give us the machines or means to get them?” Asake asked the question on my mind at that time.

To be fair, the government owns the kilns currently in use at the Asegere Fish market and they charge a small rental on them. Asake could not say how much she pays as the cost is probably muddled up with other charges.

On the other hand, solar technology was inexpensive howbeit unpopular in the early 2000s. Lannap Selbol estimates that a 70kg solar dryer would cost **₦350,000** at the time as against the present cost of **₦500,000**. That is a 43% increase. Going by this estimate, financial viability at the time was not an excuse.

The Bank Of Industry (BOI) has a [Cottage Agro Processing Fund](#) that supports agricultural production. The CAP Fund, as it is popularly called, was created to tackle wastage of food products and raw materials in Nigeria by supporting establishment of cottage agro processing plants. But the interest rates and terms for accessing the CAP Fund are unfavourable to a small-scale manufacturer and there lies the problem.

Mr. Chukwudi suggests a plausible remedial action.

“ It is not too late to salvage fish processing practice for export and local consumption in Nigeria. The technology is there it is just not very affordable, especially for the small-scale business person. The government can set aside a huge chunk from the CAP Fund with lower interest rate and most importantly, easily accessibility for fish processing.

I completely agree.

As I leave Asegere with itchy eyes, runny nose and reeking of *eau de poisson*, I cannot help but ponder at this ignored avenue for further diversification of the Nigerian economy.

*names have been changed at personal request of people interviewed.



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