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Nigeria, decay and waste

Nigeria: End Hunger and Poverty

Introduction

My name is Fleur Krufft and in front of you is my global challenge essay on food waste. Every year, 40% of all the food produced in Nigeria goes to waste (World Bank Publications, 2019). I find it incredible that so much food is thrown away in Nigeria while people are dying of hunger in the same country. Food wastage has a huge impact on human beings now and in the future. It is therefore very important for food security that we tackle this problem. I participate in Wageningen Youth Institute (March 2022) and Alabama Youth Institute because I believe that we, as relative prosperous, rich people, have a responsibility for people who are less fortunate than ourselves. I would like to do my bit to solve this world problem.

Step one: choose a country

Country: Nigeria.

Population, rural and urban: 213 million people, 51.96% is urban (Statista, 2022). 48.04 % is rural (TRADING ECONOMICS, 2020).

Government and leadership: Nigeria is a federal republic with 36 states. The President is the head of state, the head of government and the head of a multi-party system (Ade Ajayi, 2020).

Cultivated land, major crops and exports: About 30.7 million hectares (76 million acres), or 33% of Nigeria's land area, is under cultivation (Agriculture - Nigeria, 2007). Nigeria's major agricultural imports include wheat, sugar, fish and milk, while its major agricultural exports are sesame seeds, cashew nuts, cocoa beans, ginger, frozen shrimp and cotton. Sesame, cashew nuts and cocoa account for more than half of agricultural exports. (Oyaniran, 2020)

Average farm size: Smallholder family farms in Nigeria own an average of 0.5 hectares of land. This is as big as a football field (measuring 100m by 50m). The average farm size in Europe is 13.8 hectares (FAO, 2018).

Climate and geography: Nigeria is located on the west coast of Africa in the inner corner of the Gulf of Guinea. Nigeria has three distinct climate zones, a tropical monsoon climate in the south, a tropical savannah climate for most regions in the centre of the country and a semi-arid climate in the north. The amount of precipitation decreases from south to north (World Bank, 2020).

Step two: research a typical family

Family size and dwelling: The average household size in Nigeria is 5.0 persons (Statista, 2022b). Overcrowding in urban dwellings is a major problem. Living conditions are poor. Traditional Nigerian houses are mostly found in rural areas. Wood, straw, bricks and mud are mainly used in the construction of these houses (Real Estate, 2020).

Diet: Nigerians usually eat two large meals during the day and, depending on the family, may also eat a light breakfast. Rice, maize, yam (an edible root), beans, noodles, pasta, and cassava. The various foods available depend on the region and the season. Tropical fruits are eaten all year round (Food by country, 2001).

Cooking: Most Nigerian meals are cooked outdoors over an open fire as other fuels are often too expensive.

People who live in the cities buy their food from "chop bars" (bars that sell food), street vendors, hawkers (vendors who shout what they are selling) or from restaurants (Food by country, 2001).

Jobs and wages: The living wage of an individual in Nigeria is 42500 NGN/month on average, which is equivalent to 89.95 Euros (TRADING ECONOMICS, 2021). The working population of Nigeria is 49 million. Of this, 5.8 per cent is unemployed. 70 per cent work in agriculture, 10 per cent in industry and 20 per cent in services and/or flight (Agriculture - Nigeria, 2007).

In Nigeria, about 30 per cent of women were housewives in 2020. Other common occupations of Nigerian women were trader, hawker, salesperson, farmer, craftswoman, or skilled manual labourer (Statista, 2022c).

Education and health care: Although primary education is officially free and compulsory, about 10.5 million of the country's children aged 5-14 do not attend school. Only 61 per cent of 6–11-year-olds attend primary school regularly and only 35.6 per cent of children aged 3-5 years receive pre-school education (UNICEF, 2017).

Of Nigeria's health expenditure, 77 per cent is paid for by the citizenry, according to the latest 2017 World Health Organisation (WHO) data. This means that most Nigerians have no health insurance whatsoever and the poorest Nigerians have extremely limited access to quality health care. The current ratio of nurses, midwives and doctors to patients is 1.95 to 1,000 (Agbonile, 2020).

Access to clean water, toilets, electricity, telephones, roads and local markets:

48 per cent of the population has access to drinking water sources and 33 per cent has access to sanitation (USAID, 2020).

In Nigeria, access to electricity in 2015 was close to 60 per cent (according to the World Bank), with 86 per cent of urban areas and 41 per cent of rural areas having access (The World Bank, 2022). However, this electricity supply is unreliable and often falls off.

In May 2021, the Nigerian Communications Commission reported that Nigeria had over 160 million active GSM mobile telecom subscribers (International Trade Administration, 2021). Compared to countries with lower gross national income (GNI) per capita, such as Ghana and India, road density in Nigeria is low. As a result, about 75 per cent of Nigeria's rural population has no access to a road network. According to the Government Infrastructure Concession Regulatory Commission, Nigeria has about 195,000 km of road network, of which about 60,000 km is paved (2019). Much of the road network is in disrepair and barely usable. There are many traffic jams in the major cities. There are also long delays in freight traffic. Railways are Nigeria's second mode of transport. The rail system consists of a route of 3,500 kilometres of 1,067 metres (Nations Encyclopedia, 2011).

Currently, local food production in the Lagos area meets only 10 per cent of local demand, while the rest of the demand comes from both domestic and foreign sources. Over 90 per cent of domestic staple foods and over 90 per cent of imported foods are sold in traditional markets (World Bank Publications, 2019).

Barriers earning a living and access to nutritious food: High food prices make obtaining food difficult. Poor people in developing countries spend between 50-80 per cent of their income on food that consumers need. Any increase in food prices will reduce food consumption and increase hunger (Eme, 2014). In addition, degradation of soil fertility, poor credit, fragmented and decreasing size of farmlands, poor grain storage facilities and conflicts, have worsened food security in Nigeria. These cases make it very difficult to make money in the agricultural sector (World Bank Publications, 2019).

Step three: choose a topic

My topic is: spoilage and waste

Step four: analyse the impact

Present status and severity: In Nigeria, 40 per cent of total food production is lost every year, which is equivalent to 31 per cent of total land use and causes 5 per cent of the country's greenhouse gas emissions (World Bank Publications, 2019).

(World Bank Publications, 2019). The food currently lost in Africa could feed 300 million people.

(FAO, 2013) Food loss and waste also constitute a major waste of resources, including water, land, energy, labour and capital, and they produce unnecessary greenhouse gas emissions, contributing to global warming and climate change (UN, 2013).

Improving, worsening or staying the same: In Nigeria, there is no increase or decrease in the amount of food waste.

Contribution to the trend:

- Limited access to pesticides
- Early or delayed harvesting due to climate
- Poor harvesting or processing techniques
- Poor access to the local market and infrastructure
- Stringent quality conditions
- Damage (due to decay)
- Overplanting
- Product changes

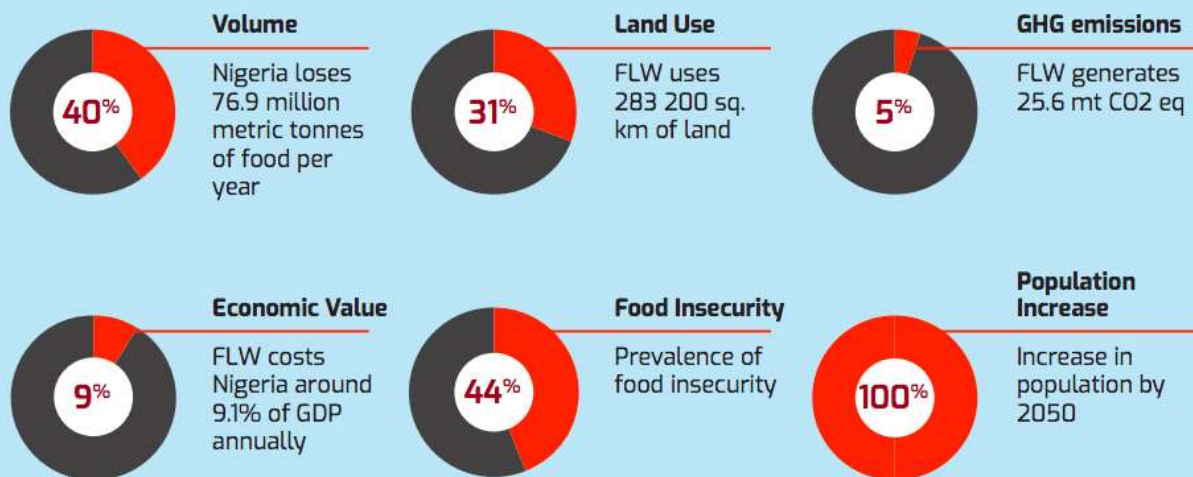
(Too Good To Go, s.d.)

Affect rural and urban populations: Rapid urbanisation is creating a large urban population. This in turn will lead to increased affluence and demand for perishable goods and proteins. This will further increase food safety concerns (World Bank Publications, 2019). The growing population will increase food insecurity in both urban and rural areas. Food security is higher in urban areas because this is where the imported goods are often consumed, this is because the infrastructure is better here.

Affect minorities: Rising food prices due to increasing demand will particularly affect the poorest of the poor (NPO, 2021). Reducing losses and wastage increases the availability of food in regions where it is grown and can provide an opportunity to make diets more nutritious. Nigeria would greatly increase "productivity" and would not have to rely on imports or development aid. Reducing food waste in production would also provide a buffer against the effects of climate change.

Affect environment: Food waste accounts for 8 per cent of total global greenhouse gas emissions; this is equivalent to 3.3 gigatons of CO₂ (FAO, 2013) making food waste the third largest emitter in the world, if it were a country (FAO, 2015). Climate change is leading to an increase in average temperature in Nigeria, as well as greater variability of rainfall, rise in sea level and increase in extreme weather events.

(World Bank Publications, 2019)



(World Bank Publications, 2019)

Step five: solutions & recommendations

Solution 1: MARKET AND CLIMATE INFORMATION: DATA AND EARLY WARNING SYSTEMS

Advantage: Access to technology can play an important role in reducing losses due to the lack of climate and market information. Apps or websites can provide climate data that can help farmers make better decisions about sowing, harvesting or investments. To protect themselves against pests and the irregular climate, farmers often plant more than necessary. Market conditions can lead farmers to discard crops. When the price of products on the market is lower than the cost of transport and labour, farmers sometimes leave their crops on the land. This is called dumping and occurs when farmers produce more than people are willing to buy, or when the demand for a product suddenly drops. With the help of telephone technology, farmers can access the latest market and price data. This technology can also help farmers adapt better to the changing climate. Better access to data from early warning systems and better market information allows for more informed technical and business decisions, which can help reduce food losses. Without this knowledge, it is difficult to make the right choices that make production more efficient and reduce food losses. This solution will mainly be of interest to farmers.

Disadvantage: This information may not lead to better informed technical and business decisions. Also, it involves modern techniques, which entail large investments.

Solution 2: IMPROVED STORAGE AND TREATMENT TECHNIQUES

Advantage: Nigerian farmers face the problem of poor storage facilities that affect the quality and safety of the crops. This leads to increased food losses. In large urban areas, modern silos and warehouses are used for storage, but most rural farmers often only have access to traditional methods of storage, such as baskets, bags, and sheds. These traditional storage methods are vulnerable to moisture ingress, rust, mould, pests, roof leaks and theft. Replacing these traditional storage methods with modern storage methods can drastically reduce food waste. This solution will increase the food security of the whole country and will therefore be of interest to many people, but especially the farmers will benefit from it.

Disadvantage: Modern storage methods, however, involve costs.

There is also a lack of farmer cooperatives, which makes access to improved storage and handling techniques difficult.

Solution 3: BETTER CONNECTIVITY: TRANSPORTATION AND ROADS.

Advantage: Major inefficiencies such as poor infrastructure, traffic accidents, flooding, dilapidated roads and blocked roads cause crops and products to remain in the transport phase much longer than ideal, leading to greater losses. For example, a journey from Jibiya to Laos can take up to 19.5 days and be relatively costly. By improving the infrastructure, food losses can be reduced, and farmers will dare to invest in better means of transport, for example. This solution will increase the mobility of the entire country and will therefore be of interest to many people.

Disadvantage: This solution is complex and requires large investments.

My solution: BETTER STORAGE BY MEANS OF PLASTIC BINS

Meet all the needs: Farmers will benefit. But also, the minorities, the people who suffer from food insecurity.

Solution: A large proportion of farmers in rural areas only have access to traditional and improvised storage structures such as baskets, sacks and sheds. However, these storage methods are highly susceptible to water, rust, pests, spoilage, etc. By providing all farmers in Nigeria with something as simple as reusable plastic bins, much of the food can be protected from these hazards. This is a simple solution but has great potential. Previous research has shown that using plastic crates instead of bags reduced losses from about 41 per cent to just 5 per cent (World Bank Publications, 2019). Using plastic bins will protect the food on top from water, chemicals and pests. The construction of expensive silos will then be of less importance. It will also protect the food crops better during the transport phase. This solution is easy to arrange and will be relatively cheap. The plastic bins can be made of recycled plastic bottles.

Management and leadership: This plan can be realised by the United Nations or by non-profits. If we ensure that farmers grow crops more efficiently by throwing away less, they will no longer be dependent on emergency aid and/or imports. These organisations can give information to the farmers and help them use the bins properly. They can do this by organizing events and creating a website.

Funding: A lot of money is often raised for emergency aid, but with the right marketing, Europe can be galvanised into action to support poor farmers financially by donating money. The money raised is used to fund plastic bins. 'A coin in your pocket will buy a plastic container in Africa'.

Organisations: The Nigerian government can also play a role in this, especially in providing information to farmers.

Policies: Ensure that the bins reach the farmers. Not only to the more prosperous farmers, but especially to impoverished farmers.

Cultural norms or behaviours: That these bins are not sold on to other farmers but are used to store food.

Sustainability: The use of recycled plastic will increase the sustainability of this solution, but at the same time it will involve a greater investment.

Difficulties government: Due to the high level of corruption in the Nigerian government, the money set aside for plastic bins may not actually be used for that purpose. That is why it is smart to hire someone from outside to control the flow of money towards the provision of bins.

Another difficulty is the distribution of the bins and communication to the farmers. Due to the large informal sector, not all farmers are registered with the government. That is why it is smart to disseminate information and bins where farmers get together and sell their crops. For example, at the marketplace. Dissemination of information about the bins is also possible via cell phones and media. The fair distribution of the bins can be difficult. But by keeping good records, like photos, names and addresses, it will be possible to identify which farmers have received bins and which have not yet. By giving the bins a unique code, they cannot be resold.

Role citizens: Citizen participation gives every individual an opportunity to influence and change political, social, economic and public decisions and allows people to be an important part of the democratic decision-making in Nigeria.

(Jeremiah, 2019) They can speak up and gather to protest. They should give the government reasons why they gain from the investment as well.

Dutch citizens: This immense world food problem needs more attention from the (social) media. Dutch people can do their part just like the Nigerians by standing up and protesting the great inequality and food waste.

Arguments: Still 736 million people live in extreme poverty. They have less than €1.90 a day to live on. In addition, areas around the world are becoming less livable due to climate change. (Ministry of Foreign Affairs, 2022) An immense problem mainly caused by developed countries, such as the Netherlands. We have a duty, a responsibility, to countries that are less wealthy than we are. Development aid also has positive effects on the Dutch economy. A study (IOB 2014) that examined the effects of Dutch policy found that for every euro invested in development cooperation, half a euro is generated in additional exports. According to CBS (2015, source), aid and trade relationships have nearly tripled trade with developing countries in the past decade, and the volume of trade with these countries is increasing much faster than trade relationships with other countries. (Central Bureau of Statistics, 2015)

In addition, a comprehensive opinion survey by Kaleidos Research (2016) found that 62% of the Dutch felt it was important to help people in poorer countries. (Carabain, 2016) When we invest in emerging countries now, we will benefit later.

The budget for development cooperation represents less than 2 per cent of the total expenditures of the central government in 2015 for public health, education, health care, social security, work and income, etc. So, 98 per cent, almost all of what our government can spend, is spent on our direct wealth. (Oxfam, s.d.) In addition, money would be better invested in long-term solutions, such as reducing food waste, instead of emergency aid during famine, this way the origin of the problems is solved. When investing in plastic bins, the developing country in question will become less dependent on emergency aid.

BETTER PROCESSING THROUGH A HOTLINE

Meet all the needs: This solution can be used throughout the food chain.

Solution: In addition to using plastic bins, it is important to have a reporting point (an app or a telephone number) where Nigerian farmers can report when they cannot dispose of their food crops because of low market prices, surpluses or cosmetic imperfections. In this way, the farmer does not have to take the waste to a central location (which often does not happen because of the many costs and less benefits) but the organisation can come and collect it and give the farmer a small price for it. This is a good deal for both the farmer and the organisation, and the organisation can process the food and/or give it away to food insecure groups. This processing can be different: soups, sauces, purees, smoothies, broths, juices, 'super meal', cattle feed, chips, dehydrated fruit, spices or chutney. Insects can also be grown on the food, which are then used as chicken feed (Ministry of Agriculture, Nature and Food Quality, 2021). In cities, organic food waste can be handed in at collection points for bonus points. The machine will separate different kinds of food and will detect for mold.

Management and leadership: The organisation in question can be either a commercial organisation or a non-governmental organisation. Think for example of the food bank in the Netherlands or *Leger des heils*. These organisations can give information to the citizens/farmers and help them to get to know the reporting/collecting points. They can attract attention through social media or farmers events. They should first focus on one city plus countryside and later they can expand.

Funding: The collection points can be funded by the government or by the organisation concerned. The rest of the costs are for the organisation. However, there may be a subsidy from the government.

Organisations: The Nigerian government can also play a role in informing its farmers and residents.

Policies: There must be permission to build collection points and processing kitchens. Food safety rules in Nigeria are less strict than in Europe. For example, growing insects on waste for animal feed is not prohibited there.

Cultural norms or behaviours: Farmers and residents must be willing to take their waste away or report it to the collection point. No non-food items should be handed in at the collection points and a report should only be made if there is real food waste.

Sustainability: The production of methane emissions from food waste is a major threat to Nigeria, when this food waste is collected, it will reduce methane emissions and thus counteract the enhanced greenhouse effect. The use of sustainable means of transport in the collection of the food waste can also contribute to this.

Conclusion:

In short, in Nigeria, a lot of food waste occurs mainly at the beginning of the food chain. There are various reasons for this, including poor storage methods. To reduce food waste in Nigeria, the best actions to take are as follows:

1. Provide farmers with plastic bins.
2. Create a national hotline for rural food waste and create urban collection points for organic, food waste. So that the wasted food can be processed.

Unfortunately, governments and organizations are sometimes limited in their resources and time. That's why I would start with the providing of plastic bins, because this solution will be easy to implement and is least dependent on the government. In addition, the 'ladder of Moerman' tells us that it is better to first avoid food waste and only then recycle it. The first solution will therefore have the most impact!

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