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Research Article

Nigeria's Sugar Industry: Challenges, Opportunities, and Prospects for Self-Sufficiency

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Abstract

This paper provides an overview of the Nigerian sugar industry, tracing its history from the pre-colonial era to the present day. The industry has faced numerous challenges, including insecurity, unregulated policies, natural disasters, and environmental concerns. Despite these challenges, the Nigerian government has implemented policies aimed at achieving self-sufficiency in sugar production, including the Nigerian Sugar Master Plan (NSMP) and the Backward Integration Programme (BIP). The NSMP aims to transform the Nigerian sugar industry into a world-class multi-product sugarcane industry, while the BIP incentivizes companies to invest in local sugar production. The paper also highlights the environmental challenges facing the industry, including water pollution, soil degradation, deforestation, and biodiversity loss. To mitigate these challenges, the industry must adopt sustainable practices, such as efficient irrigation systems, conservation agriculture, reforestation, and waste-to-wealth initiatives. With the extension of the NSMP to phase II, the Nigerian sugar industry is expected to experience significant growth, with sugar production projected to increase from 63,600 metric tons to over 75,000 metric tons by 2033.

Keywords: *Backward Integration Programme, Conductive policy environment, Employment opportunities, Sugar industry, Sugar Master Plan*

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Introduction

Brief History of Nigerian Sugar Industry

The origin of the sugar industry in Nigeria can be traced back to the following key events and milestones. In the Pre-colonial era, Indigenous populations in Nigeria used regional sweeteners like honey and palm sap for their culinary needs. In the 15th century, Portuguese explorers introduced sugarcane to the region, leading to its cultivation and processing in Nigeria. In the Colonial era, British officials recognized the economic potential of sugar production and trading, establishing sugar plantations and mills along coastal regions. Following independence in

1960s, the Nigerian government encouraged domestic sugar production, leading to the establishment of the Nigerian Sugar Company (NISUCO). The Nigerian government in the late 1990s initiated a privatization program for state-owned sugar industries, attracting private investors and transforming the sugar market (USDA, 2020).

In 1993 the National Sugar Development Council (NSDC), which is an agency under the Federal Ministry of Industry, Trade, and Investment, is responsible for allocating yearly sugar import quotas to prospective companies according to

milestones recorded in their various backward integration programs (BIP). The National Sugar Development Council Act was passed in 2004, amending the original decree from 1993. The Nigerian Sugar Master Plan was developed in 2008 by the NSDC to provide a roadmap for achieving self-sufficiency in sugar production. The Nigerian Sugar Master Plan (NSMP) was approved and launched by the government in 2012 to achieve self-sufficiency in sugar production and reduce imports. The plan is also a policy document that contains strategies for strengthening the sugar policy environment. The plan's main policy position is to attract investments in domestic production through a backward integration program, which expands sugar production by supporting extensive sugarcane plantations - while offering credit facilities and tax incentives to investors. The National Sugar Development Council Act was amended in 2015, and the sugar industry attracted investments worth over 250 billion naira in five years in 2021 (NSDC, 2017).

Integrated Sugar Factory

The Nigerian Sugar Company (NISUCO) Bacita was established in 1961 by the government as the first integrated industrial sugar factory in Nigeria, with an installed capacity of 40,000 tonnes. Actual sugar production began in 1964, and the highest production of 35,000 tonnes was recorded in 1973/74. However, production activities began to decline in the 1980s due to various field, factory, and management factors (FAOSTAT 2019). The second sugar company was the Savannah Sugar Company Limited (SSCL) Numan, which started production in 1980/81 with an installed capacity of 50,000 tonnes of refined sugar per annum. SSCL recorded its highest production of 23,000 tonnes in 1991/92. From inception, the company faced challenges such as poor contract management, insufficient government funding, and a debilitating debt (USDA, 2020). In the late 1990s, the Nigerian government decided to privatize both companies, and they were eventually sold to new private owners (Wada et al., 2019). Although the government tried to establish other sugar companies in Lafiagi and Sunti, they did not take off until BUA Group and Golden Sugar Company acquired them in 2014 (Wada and Gbabo, 2019).

The Jigawa State Government also started a 1500tcd sugar factory in Hadejia in 2005, but the project remains incomplete. Additionally, several mini sugar plants with capacities ranging from 10 to 250tcd were established by private and state governments, but their combined production is negligible (NSDC, 2012). Meanwhile, sugar consumption in Nigeria increased from 43,000 tonnes in 1955 to around 450,000 tonnes in 1974. By 1982, demand had risen to almost 1.0 million tonnes, while only about 40,000 tonnes (4%) was being produced. Even after privatization in 2003/04, the fortunes of the sugar companies did not improve much, with only SSCL producing about 12,000 tonnes in 2008/09, while Nigeria's sugar consumption was already well over a million tonnes. The shortfall had always been filled by imports, which had steadily risen to about 1.5 million tonnes by 2009. The collapse of the sugar industry had adverse effects on employment, poverty alleviation, and rural development and constituted a significant drain on the country's foreign reserves. The Federal Government of Nigeria directed the National Sugar Development Council to develop a roadmap to self-sufficiency within the shortest possible time frame to address these issues (TRALAC, 2007, NSDC 2017).

Nigeria's Place in the Sugar World

Nigeria's position in the sugar world can be described as follows. Nigeria has become a major player in the sugar industry, with investments totaling over \$700 million and a target of achieving 70% self-sufficiency in sugar production. The country has implemented policies like the Nigerian Sugar Master Plan and the Backward Integration Programme to boost local production and reduce imports. Nigeria has the potential to become a leading sugar producer in Africa, with plans to increase local sugar production and contribute to ethanol and electricity generation (NSDC, 2017). Despite challenges, the sugar sector in Nigeria has attracted significant investments and aims to achieve self-sufficiency, create jobs, and boost the economy. The country still imports a substantial amount of sugar, but efforts are being made to increase domestic production and reduce reliance on imports.

After South Africa, the country is the second largest sugar market in sub-Saharan Africa. In per capita terms, Nigeria consumes about 8kg and produces less than 5% of the total consumed sugar. Nigeria will source more than 95 percent of its sugar consumption needs through imports. Raw sugar imports for year 2022/23 stays at 1.8 million metric tons. FAS-Lagos forecasts a 6 percent decrease in raw sugar imports in marketing year (MY) 2024/25 due to the scarcity of foreign exchange and the projected decrease in consumption. Domestic cane production is expected to increase by about a 7 percent in MY 2024/25 to 80,000 metric tons (MT). This is due to maturing investments in production. Meanwhile, increased demand for refined sugar across West Africa and other Sub-Saharan African countries is expected to lead to a 6 percent increase in refined sugar exports in MY 2024/25 (USDA, 2023).

Nigeria is a member of the International Sugar Organization, which includes 92 countries that represent 80% of total world sugar production, 81% of total world consumption, 64% of total sugar exports and 55% of sugar imports. However, Nigeria is only included in the category of sugar importers, where it ranked ninth in 2019. Compared to its neighboring African countries, Nigeria is the least food-secure in terms of sugar, as most of them produce substantial proportions of their sugar requirements (FAOSTAT 2019).

Research and Development in the Sugar Industry

Research and Development in the sugar industry in Nigeria has been conducted by various organizations and individuals, including Nigerian research institutes, notably the National Cereals Research Institute, NCRI, Badeggi, and the Unilorin Sugar Research Institute, USRI, Ilorin have been engaged in cane breeding research, and National Sugar Development Council (NSDC). The organizations work to improve sugar production and reduce imports. The outcome of their efforts had so far led to the release of about eight (8) new varieties, some of which, however, are yet to be in commercial cultivation (NSDC, 2017; Wada *et al.*, 2019).

In the areas of sugarcane agronomy, pest, and

disease management, more still needed to be done due to a dearth of entomologists, systematic taxonomists, microbiologists, and plant pathologists. The demand for training in appropriate scientific disciplines has been a significant impediment in the area of sugarcane research and development in Nigeria, leading to its low contribution to the development of the sugar sector (Wada *et al.*, 2006). Most commercial sugarcane varieties in Nigeria were imported from various countries, but mainly from the West Indies Cane Breeding Station at Groves, Barbados, and the Sugar Research Institute in Coimbatore, India (NSMP, 2010). Over the last three decades, approximately 500 varieties were collected for the sugar industry for evaluation and adaptability.

Currently, the NSDC is collaborating with the University of Ilorin Sugar Research Center and Ahmadu Bello University, Zaria to set up sugarcane bio-factories within the institutions. The main aim of setting up the sugarcane bio-factories is to make effective use of tissue culture in producing and multiplying sugarcane varieties thereby ensuring the provision of pure, clean, and superior quality sugarcane seeds for the growth of the sugar industry in Nigeria. Additionally, the sugarcane bio-factory will ensure rapid propagation of superior plant, eliminate diseases from plant propagative materials, accelerate variety development and distribution, ensure increased industry capacity to minimize loss from diseases and pests and guarantee prompt and effective means of transporting seed materials. Private companies have steered Nigeria's sugarcane cultivation, and the results have been less than promising. Several private companies have huge tracts of land acquired through the GON designated for sugarcane cultivation. However, these companies have negligible operations in terms of plantations and BIPs. There have been reports that these companies have not developed nurseries and neglected their obligations to establish plantations. This indifference forced the GON to develop the NSMP – to step up sugarcane cultivation. NSDC through its statutory authority is reinforcing monitoring and evaluation to ensure that companies are implementing the backward integration plans according to NSMP's guidelines

(USDA, 2023).

Two new companies entered the sugar sector within the last two years – KIA Africa Group and Lee Group (Hong Kong based company). KIA Africa Group bought Bacita Sugar Company from Josepdam Nig Limited. Prior to the deal, Bacita was the premier sugar producing company in Nigeria. On the other hand, the Lee Group (Hongkong registered company) is a green field company operating under Great Northern Nigeria Agribusiness Limited, located in Gagarawa, Jigawa State – situated in the Northwest region of the country (USDA, 2022).

Northern Nigeria is a main sugarcane producing area due to its conducive weather and soil conditions. Internal security across the country is a serious challenge to agricultural activities especially in the sugar cane production belt of Kwara, Adamawa, Niger, Kebbi, Jigawa, Sokoto, Oyo and Taraba States. The cost of sugar cane production is higher in Nigeria due to the absence of infrastructure. Investors bear the cost of constructing roads, dykes, airstrips, and installing irrigation systems (Wada *et al.*, 2017).

Sugar companies are also challenged by their inability to access foreign exchange required for importing machinery and equipment. Foreign exchange scarcity causes delays in procuring modern machinery - required to increase productivity. There are also delays in clearing the imported machinery and equipment. These delays significantly disrupt the installation timelines of modern machinery – negatively impacting sugar production targets (Wada *et al.*, 2017; USDA, 2022).

The Nigerian Sugar Master Plan (NSMP)

The Nigerian government recognizes sugar as the third most important commodity after rice and wheat, and aims to produce it in sufficient quantity to meet national demand, and even export it to earn foreign exchange. To achieve this goal, a study was conducted to develop a roadmap for self-sufficiency in local sugar production. The study evaluated all facets of the sugar industry, including existing and potential estates, NSDC's structure and operating framework, manpower development, research and development, finance,

trade policy, and co-products of the sugar industry.

The rationale for the plan

The Nigerian Sugar Master Plan (NSMP) is a roadmap designed to transform the Nigerian sugar industry into a world-class multi-product sugarcane industry. The plan aligns with the Federal government's Transformation Agenda (FGTA) to make Nigeria one of the top 20 economies in the world by 2020. The NSMP aims to reinvigorate the sugar industry to contribute to the overall goal of the FGTA. The NSMP provides a framework for setting goals, defining key actions, and generating and allocating resources to fund programs in the sugar industry. It unifies industry stakeholders who are otherwise autonomous operators. The plan lays the groundwork for enhanced performance of the sugar industry by utilizing a robust import substitution strategy and attracting investment through a liberal regime of incentives and fiscal policies. The NSMP policy measures and investment incentives aim to help the sugar industry meet national demand through local production, reposition itself as a world-class multi-product sugarcane industry, and mobilize and invest resources in new start-ups and backward integration programs. Overall, the NSMP seeks to exploit market opportunities presented by the multiple sugar cane products to achieve the following objectives:

- A. To raise local sugar production to attain self-sufficiency through: monitoring and the evaluation of the Backward Integration Programme and regulation of the entire regime of sugar importation through quota allocation; Investors specific fiscal incentives to attract investment into the sector
- B. To stem the tide of high importation through: High graduated tariff structure on sugar importation, Implementation of BIP support incentives and sanctions policy, Import quota allocation benchmarked on local production
- C. To create huge number of job opportunities through: Significant increase in cane area and factory milling capacity, Re-invigorating and expanding the out-growers' scheme, Enlargement of sugar cane value chain players
- D. To contribute to the production of ethanol and

generation of electricity through the Development of multipurpose sugarcane varieties, Establishment of Ethanol distilleries at each new sugar factory, Designing of all new sugar cane processing plants with high pressure boilers for efficient co-generation

How to achieve sugar self- sufficiency: NSMP Recommendations

Starting from '*where we are*' in terms of sugar self-sufficiency, the NSMP projects '*where we want to be*' by estimating the projected quantities required to achieve self- sufficiency in sugar over the entire plan period (Tables 2 & 3). It also indicates the number of factories, sugarcane areas and number of skilled and unskilled staff required. Implementation of the NSMP as conceived would entail many projects which would cover all geo-political delimitations of the country since suitable sites for cane production exist across all ecological zones of Nigeria.

Role of Government (or Public sector), the government will ensure the following

- Provision of conducive policy environment including fiscal incentives
- Provision of special investor- specific incentives
- Mandatory policy on Backward Integration Programme (BIP)
- Supervisions of BIP incentives and sanction policy
- Provision of infrastructures like roads, dams and water
- Easy access to land through engagement with State Governments

Investor-specific Fiscal Incentives

- a. Zero percent on machinery and spare parts for local sugar manufacturing industries;
- b. Five years tax holiday for “*sugarcane to sugar*” value-chains and investors in local sugar manufacturing industries;
- c. Importation of raw sugar for refining during the plan period shall be approved only by the President on the recommendation of the Minister of Trade & Investment and be benchmarked on the verifiable proof of local production from BIP as in the case of cement importation.
- d. Outright ban on the importation of refined

sugar in retail packs as already approved for fruit juices, noodles, vegetable oil, soaps and detergent and bagged cement etc.

- e. Up to 30% tax credit on the cost of provision of critical infrastructure by sugarcane to sugar project investors

Other Incentives

The out-grower programme of all sugar companies ready to provide off-take will be financed up to 50% through a revolving loan from the Sugar Levy under a scheme co-managed by NSDC, Federal Ministry of Agriculture and Rural Development (FMA & RD), Bank of Agriculture (BOA), Nigerian Agricultural Insurance Corporation (NAIC) and others. Under this scheme, the following activities will be funded

- a. Land preparation
 - b. Input loan for cane seed, fertilizers, agro-chemicals etc.
 - c. Provision of minor irrigation infrastructure like tube well, water pumps, delivery hoses etc
 - d. Working capital for farm operations
- At least 40% of the total cane* required by sugar millers must be sourced from outgrower farms around all sugar estates.

Research and Development Activities for new Technologies and Innovations

The NSDC is committed to funding Research and Development (R&D) activities for new technologies and innovations in order to achieve and sustain self-sufficiency in local sugar production. The organization has identified the following reasons for doing so: i) To consolidate the gains of NSMP. ii) To intensify industrial and applied research through an innovative twinning arrangement between the sugar industry and research institutions. iii) To facilitate continuous capacity development to equip sugar sector workers with the latest tools and advances in their fields of specialization.

To achieve these goals, the NSDC plans to strengthen the existing relevant research institutes, namely NCRI, USRI, and IAR, to provide cutting-edge solutions and capacity development for the sugar sector. Additionally, professionals in the industry are expected to form the Nigerian Society of Sugarcane Technologists to promote members'

interests and development of the industry. In line with this, NSDC formed the Nigerian Society of Sugarcane Technologists in 2015 and established the Nigeria Sugar Institute (NSI), Ilorin in 2021. Table 4 shows the status of the NSI.

Mandatory Backward Integration Programme (BIP) Policy

The Mandatory Backward Integration Programme (BIP) Policy is an import substitution strategy adopted by import-dependent countries to rapidly domesticate the production of commodities. In Nigeria, the BIP has been successfully carried out for the Cement Industry, resulting in local production rising from 2.1 million metric tonnes in 2002 to 28.6 million tonnes in 2012 (NSDC 2017). This success could be attributed to the fact that cement is mined from natural limestone, which requires less financial investment, as opposed to sugarcane cultivation and sugar processing, which are heavily capital dependent (Hess *et al.*, 2016, Fenaz *et al.*, 2021; Nkechi, 2021).

Backward Integration Programme Policy Thrust

- Companies granted approval for importation of sugar are expected to commence investing in the backward integration projects immediately;
- Refineries are expected to begin sourcing their raw materials (raw sugar) requirement from their local production within 3 years of plant commissioning;
- Monitoring agencies will monitor compliance and regularly evaluate the projects and report progress

Backward Integration Programme-Support Initiative (BIPSI) Incentives

The Backward Integration Programme Policy Thrust states that companies approved for sugar importation must invest in backward integration projects immediately. Within three years of plant commissioning, refineries should source their raw sugar requirement from local production. Monitoring agencies will evaluate the projects regularly to monitor compliance and report progress. The Backward Integration Programme-Support Initiative (BIPSI) Incentives offer grants and loans from the Sugar Levy to support land development, irrigation, and on-site infrastructural

services. The National Sugar Development Council (NSDC) and Bank of Industry (BOI) stipulate the conditions for the out-grower component. There is also a dedicated window of support by the Bank of Industry and Bank of Agriculture at a single-digit interest rate for local sugar manufacturing. This shall address, fixed and working capital requirements in the areas of field development and plant and machinery acquisition. A proportion of BOA and BOI's loanable funds matched by funds from Sugar Levy shall be earmarked for this purpose. Investors with verifiable Backward Integration Programmes will be allowed to import any type of sugar, benchmarked on their local production efforts. The above NSMP's BIP incentives propelled the first three key players in Nigeria's quest for sugar self-sufficiency to set up five-year plans from 2015-2020 (Wada, *et al.*, 2019). However, a recent report by the NSDC shows that the three key-players could not deliver on their targets (Anon, 2022). The NSDC recently monitored the Nigerian sugar industry's journey in post NSMP Phase I and BIPSI era, two years after the three key players in the nation's sugar industry development were mandated to achieve sugar self-sufficiency for the country. The project assessment tour took place from 17th - 28th October 2022, and the team visited the following project sites:

- Nigeria Sugar Institute (NSI) Ilorin,
- Sunti Golden Sugar Estate (SGSE) Sunti,
- the BIP site of Golden Sugar Company, Lagos,
- Lafiagi Sugar Company Limited for BUA Sugar Refinery, Lagos
- Dangote Sugar Refinery, Numan Operation as well as Nasarawa Sugar Project Tunga, for Dangote Sugar Refinery, Lagos and the following highlights sum up the state of Nigeria's sugar industry:

The following comments by the Executive Secretary, NSDC, after the monitoring assessment of the leading key player in the NSMP/BIP sugar expansion, the Dangote Group Numan Operation summarizes the state on Nigeria's sugar industry:

In the next ten years, what would happen to the investment if we could not meet up with the

national demand? Nigeria had signed onto the Africa Continental Free Trade Agreement (AFCFTA) and very soon sugar market would be opened. Then what would happen to the investment? Fear was expressed that, the Numan factory does not have the capacity to absorb the quantum of sugar cane that would be produced by 2025. The Management of the Dangote Group Numan Operation was enjoined to take decisive measures to fast-track the completion of the factory expansion programme' (Anon. 2022). The Numan Operation site is one of the pioneer sugar factories with existing facilities but has been unable to expand the factory to full capacity after nearly a decade.

Environmental Challenges in Nigeria's Sugar Industry

Nigeria's sugar industry faces significant environmental challenges that threaten its sustainability and long-term viability. Research has shown that the industry's environmental footprint is substantial, with far-reaching consequences for ecosystems and local communities.

Water Pollution: Studies have highlighted the sugar industry's contribution to water pollution in Nigeria. For instance, Corcoran et al. (2010) found that sugarcane processing effluents contain high levels of biochemical oxygen demand (BOD), chemical oxygen demand (COD), and total dissolved solids (TDS), posing risks to aquatic life. Similarly, WWAP (2019) reported that sugar factory wastewater in Nigeria contains hazardous chemicals, including heavy metals.

Soil Degradation: Intensive sugarcane cultivation has been linked to soil degradation in Nigeria. Research by Lal, (2015) revealed that continuous sugarcane monoculture leads to soil nutrient depletion, reduced fertility, and increased erosion. This is consistent with global findings that sugarcane cultivation can result in soil degradation due to intensive nutrient removal (Garside et al., 2017).

Deforestation and Biodiversity Loss: Expansion of sugarcane plantations in Nigeria has contributed to deforestation and biodiversity loss. A study by Afolayan et al. (2020) found that

sugarcane cultivation led to significant habitat loss and fragmentation in Nigeria's forest ecosystems. Similarly, global research has highlighted the sugar industry's role in deforestation and biodiversity decline (WWF, 2019).

Climate Change: Climate variability and extreme weather events affect sugarcane yields, quality, and availability in Nigeria. Research by Okoro et al. (2019) showed that climate change impacts sugarcane production through altered temperature and rainfall patterns. This is consistent with global findings that climate change poses significant risks to sugarcane production (IPCC, 2019).

Waste Management: Disposal of sugarcane waste and by-products poses environmental concerns in Nigeria. Studies have highlighted the potential for waste-to-wealth initiatives, such as bioenergy production from sugarcane bagasse (Oladiran et al., 2019).

To mitigate these environmental challenges, Nigeria's sugar industry must adopt sustainable practices, such as implementing efficient irrigation systems and water conservation measures; adopting conservation agriculture techniques to reduce soil erosion; promoting reforestation and biodiversity conservation; investing in climate-resilient agricultural research and development and developing waste-to-wealth initiatives for sugarcane by-products. By addressing these environmental challenges, Nigeria's sugar industry can ensure a more sustainable future, minimize its ecological footprint, and contribute to the country's environmental goals.

Conclusion

Nigeria's sugar industry has experienced significant growth and development over the years, driven by government policies and investments. The Nigerian Sugar Master Plan (NSMP) has been instrumental in guiding the industry's growth, with a focus on achieving self-sufficiency in sugar production. Despite challenges, the industry has attracted significant investments, and efforts are being made to address environmental concerns.

Future Thrust

To achieve sustainable growth and development, Nigeria's sugar industry must prioritize the following areas:

Sustainable agriculture practices: Adopt conservation agriculture techniques, efficient irrigation systems, and water conservation measures to reduce environmental impact.

Research and development: Invest in climate-resilient agricultural research and development to improve sugarcane yields and adapt to changing climate conditions.

Waste management: Develop waste-to-wealth initiatives for sugarcane by-products, such as bioenergy production from bagasse.

Environmental conservation: Promote reforestation and biodiversity conservation efforts to mitigate the impact of sugarcane expansion on forests and ecosystems.

Industry collaboration: Foster collaboration among industry stakeholders, research institutions, and government agencies to address common challenges and leverage opportunities.

Policy support: Continue to implement policies that support the growth of the sugar industry, such as the NSMP and the Backward Integration Programme.

Investment in infrastructure: Invest in infrastructure development, such as roads, dams, and water supply systems, to support the growth of the sugar industry.

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Conflict of interest

There was no conflict of interest

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Table 1: Comparative data on sugar- self-sufficiency among West African countries

COUNTRY	TOTAL SUGAR DEMAND	TOTAL SUGAR PRODUCTION	PROD. as % of DEMAND
Benin Republic	39,062MT	10,000MT	25.6%
Burkina Faso	85,106MT	40,000MT	47%
Cote d' Ivoire	226,565MT	145,000MT	64%
Senegal	188,000MT	99,000MT	50%
Mali	103,030MT	34,000MT	33%
Nigeria	1994,175MT	30,000MT	3%

Source: FAO (2023) FAOSTAT

Table 2: Nigeria's present sugar situation and future target

Parameters	Where we are (2010)	Where we are going (2020) and beyond
Estimated sugar demand (mmt)	1.41	1.75
Sugar importation (mmt)	1.05	0
Sugar production (mmt)	0.03	1.797
No. of sugar Factories	2	28
Total cane area (000 ha)	6	224.0
Total jobs available	1750 Permanent	37,378 Permanent
		79,803 Casual
Res & Tech Innovation	Low collaboration & poor funding	World class through Collaboration & better Funding

Table 3: Nigeria Sugar Master Plan implementation schedule and key milestones

PARAMETERS	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total sugar demand (mmt)	1.4	1.43	1.47	1.51	1.55	1.58	1.62	1.66	1.75
Proj. sugar prod (mmt)	0.03	0.05	0.07	0.1	0.27	0.87	1.23	1.61	1.79
Prod. as % of demand	2.1	3.5	4.8	6.6	17.4	55.0	75.9	96.9	102.3
Cane area '000 (ha)	4.0	7.0	9.0	13.0	40.0	110.0	160.0	210.0	224.0
Total ethanol prod. (ml)	0	0	6.3	9.0	24.3	78.3	110.7	144.9	161.1
Total elect. gen. (mw)	7	11.5	16.1	23.0	62.1	200.1	282.9	370.3	411.7
Total job creation 000	3.2	4.5	5.4	6.2	16.1	54.7	98.3	109.7	117.2
Proj. sugar import (mmt)	1.4	1.4	1.4	1.4	1.3	0.7	0.3	0	0
Proj. sugar levy income(nb)	5.0	5.0	5.0	5.0	4.8	2.5	1.1	0	0

The first phase of NSMP ended in 2020. Phase II has been approved

Table 4: The outcome of the evaluation of the NSI at Ilorin, 2022

S/N o.	Infrastructural Facilities	Outcome of Evaluation	Remarks
1.	Conference Room (Bio – Factory)	Building Completed and furniture and other fittings installed	The venue was used for the committee's opening and closing meetings. It is in good shape.
2.	Plant Laboratory	Equipment are fully installed ready for use. Some of the equipment were tested and proved positive	-The laboratory needs at least two technicians - The technicians should be trained to operate the machines

3.	Sugar/Sugarcane Laboratory	Equipment installed and are ready for use	At least one trained scientist/technologist is required for the operations of the equipment
4.	Soil Laboratory	Equipment not completed	When equipment fully installed, there will be no need for hiring some personnel for the take off. The operations of the lab can be handled by the operators of the Plant Lab.
5.	Cutter Grinder	Fully installed and tested	Attendants in the Lab are to operate the machines
6	4 Unit Studio Apartments	Building completed and beddings and other furniture/equipment not in the building	The furniture and the beddings are available in the canteen and they can be brought and arranged for full utilization of the apartments.
7.	4 Unit of Three Bedroom Apartment	Construction completed but the finishing such as painting, and other fittings etc were not installed. Beddings and Equipment also not available in the building.	The E S directed the Procurement Department to ensure that everything is completed within two weeks. -The contract has passed its completion date.
8.	Power House	No Electric Generator available (3 generators were expected)	-Necessary payments have been made - ES gave the contractors 2 weeks to deliver the said items.
9.	Sick Bay	-Building completed, furniture available but not installed.	-Trained personnel was required. However, trained NYSC members may be utilized at the take up.
10 .	Field Mechanic Workshop	-Pit hole was having water seepage due to high water table - Equipment not installed	-Four weeks dateline was given to the contractor to finish and handover -Demonstration vehicle was directed to be removed from its present location.
11 .	Canteen	Building completed but the furniture and equipment meant for hostels are stocked in there.	ES directed that other buildings especially the hostels should be completed so as to free the canteen
12 .	Hostels	Construction of the building completed but tiling, painting electrical works, interlocking and equipment installations etc. were not completed.	ES directed both the Consultant and the contractor to fast track their works, and asked them to submit contract variation within one week. He insisted that work must be completed within one month. -CPO (Infra-E) and the Legal

			Officer were directed to ensure that all necessary lacunas were addressed.
13	Students' Training Laboratories	Fully installed	Ready for utilization
14	Recreational Centre	Indoor areas finished; outdoor sports arena not completed	The contractor was asked to fast track actions on it so as to be completed within one month.
15	Meteorological Station	Fully installed	There was need to train the operator
16	Administrative Block	Fully furnished. However, the Board Room Center Table was found broken and the ES directed the contractor to replace it within one week.	The Committee was satisfied with the outcome of the work.

Source: Anon, 2022



Plate 1. Factory Expansion at Numan Operation site. Source: Anon 2022