

NIGERIAN EXPORT PROMOTION COUNCIL (NEPC)

FINAL PROJECT PROPOSAL (4th Version)

STDF PROJECT 172

***EXPANDING NIGERIA'S EXPORTS OF SESAME SEEDS AND
SHEANUT/BUTTER THROUGH IMPROVED SPS CAPACITY
BUILDING FOR PRIVATE AND PUBLIC SECTOR***

SUBMITTED FOR THE CONSIDERATION OF

WTO/STDF

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WTO STDF SPS PROJECT IN NIGERIA (PROJECT STDF 172)

1.0 OBJECTIVES, BACKGROUND AND JUSTIFICATION

1.1 *Project Objectives*

The overall objective of the project is expanding Nigeria's Food exports of sesame seed and sheanut/butter through improved SPS capacity building for Private and Public Sector Organizations and improved quality control along the supply chain.

The focus of the project will be on developing an effective *aflatoxin* control system for sesame seeds exports and an effective FFA and impurities control system for shea butter exports. It is however, expected that the quality control system established would provide quality control for all stored cereals and pulses for local consumption and export.

The specific objectives of the project are:

1. To improve documentation for current practices of quality control for sesame seed and shea products for exports with a focus on field level production, processing, storage, transport to ports of export and to make recommendations for :
 - improvement to meet importing country standards and
 - cultivation and practices to ensure sustainable production
2. To implement:
 - (a) Implement a robust field quality control system for sesame and shea products for exports to include:
 - installation of processing equipments including driers and storage silos in strategic production areas to eliminate or reduce occurrence of *aflatoxin*
 - Establishment of a HACCP and traceability system within the Nigeria shea nut and sesame seed production and supply chain.
 - (b) Implement a Contract laboratory analyses and certification system for quality control for sesame and shea products to meet importing country standard requirements.
3. To train Producers, Traders, Exporters and Standards Enforcement Officers to adopt and implement the improved Food Quality Management System
4. To disseminate project information, studies and results to all stakeholders
5. To strengthen the public-private dialogue and partnership in the Nigeria shea nut and sesame seed sector.

1.2. *Project Background:*

SESAME AND SHEA PRODUCTION, QUALITY CONTROL AND EXPORT IN NIGERIA

1.2.1. Sesame Seed Production and Quality Control

Sesame (*Sesamum indicum* L., Pedaliaceae) is a very old cultivated crop. The Harmonized Tariff Schedule (HTS) Code for Sesame seeds, whether or not broken is HTS8 12074000.

In Africa, Nigeria ranks second to Sudan in production and export of sesame seed, earning US\$35 million¹ in the year 2005 from its exports. Average annual sesame exports for Nigeria peaked at 42,000 metric tons in 2001. Sesame is mostly exported as seed and major destinations for export include China, Japan, Turkey, Republic of Syria, and South Korea. Sesame currently ranks second to cocoa in terms of agricultural exports in Nigeria and has a potential for earning additional foreign exchange for the country if only opportunities in the European Union could be exploited.

Sesame production plays an important socio-economic role particularly in the northern states of Nigeria. Sesame seeds have a high nutritional value (rich in proteins, fats, vitamins and selenium) and apart from their commercialisation, they are also an important source of food for local families. A significant part of the local population, mostly smallholders including women directly or indirectly depend on production of sesame seed for the local or export markets, thus generating employment and income. Its promotion will therefore impact on the livelihood of smallholders, reduce poverty and improve upon their standard of living, as well as contribute to the reduction of rural migration of people into urban areas. Most sesame production takes place in seven states in the north of Nigeria, namely: Nasarawa, Jigawa, Benue, Kebbi, Taraba, Kogi, and Yobe.

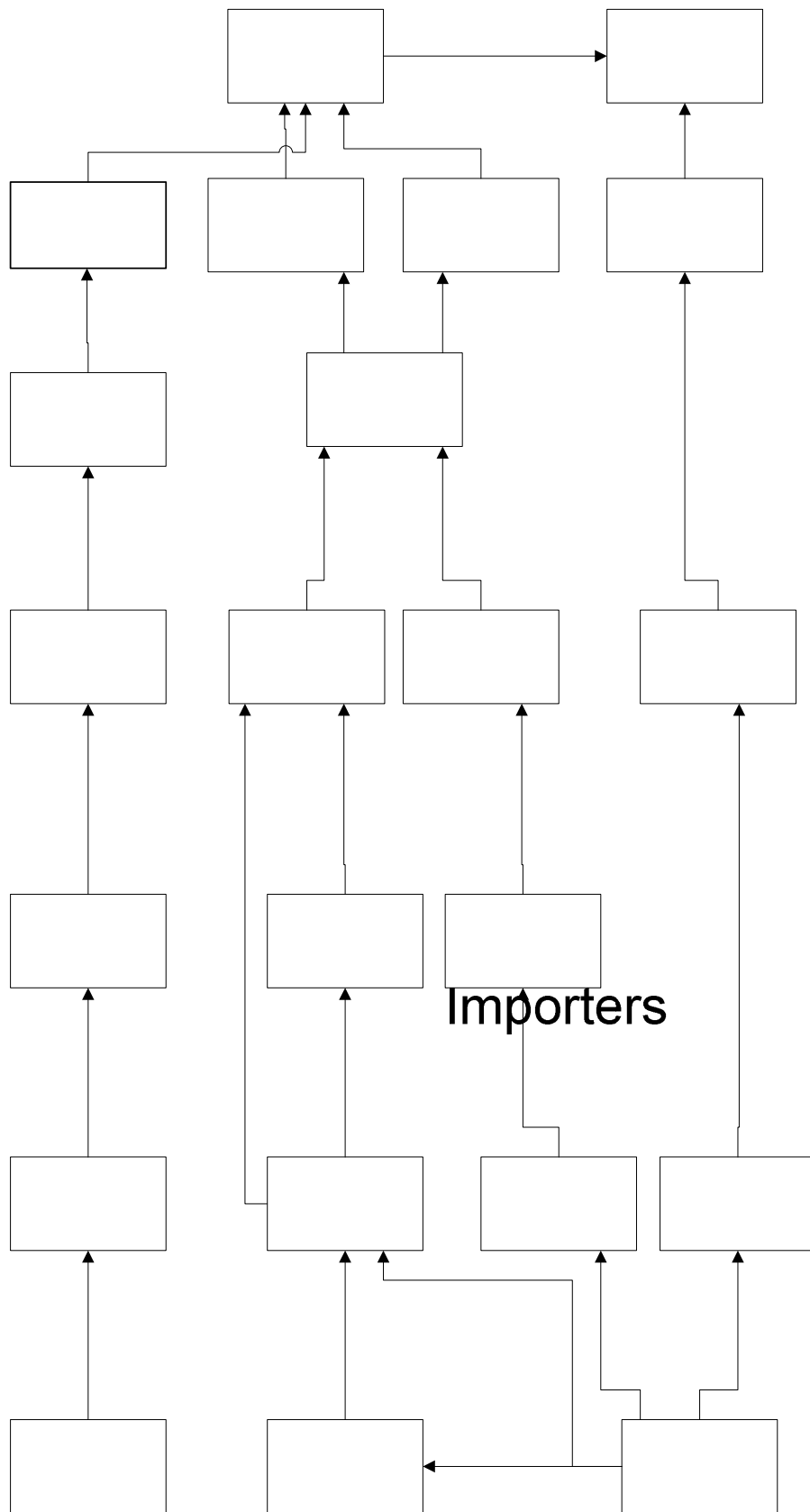
Table 1

Export Trade of sesame seed 2006 to 2008 (Partner/Export Destination: World)

<u>Year</u>	<u>Trade Quantity (Kg)</u>	<u>Trade Value</u>
2006	11, 925, 177	\$ 2, 622, 902
2007	147, 003, 904	\$ 118, 244, 150
2008	129, 615, 015	\$ 151, 299, 802

Source: UN Statistics Division. Comtrade

Supply chain Framework for Sesame Seed and Sheanut



Oversea Marine Wholesaler

Wholesale Importers

Transport

1.2.2. Food Safety Control for Sesame Seed

Sesame seed is frequently contaminated during storage by high levels of aflatoxins (B1, B2, G1, G2), which are toxic secondary metabolites produced by *Aspergillus flavus*/A. *parasiticus* when seeds and nuts are kept under conditions that favour the development of these fungi. Contamination of sesame seed along the supply chain is of major concern for public health because of the carcinogenic and genotoxic effects of aflatoxins in human beings. With plans by Nigeria to penetrate the EU market, aflatoxin control may become the largest impediment to sesame exports from Nigeria, especially to Europe where the regulation on aflatoxin levels has become very restrictive.

Presently the Rapid Alert System for Foods and Feeds (RASFF) of the EU does not provide specific data on rejects and notifications from Nigeria for sesame imports into the EU. This is partly due to the currently low imports of Nigeria sesame seed into the EU as well as the inclusion of sesame under other pulses and seeds in the RASFF without any specific mention of sesame.

In 1999, the European Commission established maximum levels of 4 µg/kg for total aflatoxins and 2 µg/kg for aflatoxin B1 in seeds and nuts and derived products for direct human consumption or as ingredient in food products and 10 µg/kg for total aflatoxins and 5 µg/kg for aflatoxin B1 in nuts subject to sorting or other physical treatment before their human consumption or use as ingredient.

Food safety and Aflatoxin control and monitoring for sesame seed supply chain in Nigeria

Presently, most exports from Nigeria are destined for the Far East countries where requirements for quality standards are not very stringent. However, Nigeria is now considering penetrating the European Union (EU) market where quality standards requirements are strict. The need for a strict quality control system for sesame is therefore a *sine qua non*.

The occurrence of fungi and aflatoxins along the supply chain, from collection of the seed to the final exported lots may not only be favoured by conditions typical of a tropical weather (high temperatures and air humidity levels, rain during the harvesting period) but also by the low technological organization of the productive chain and inappropriate product handling. Transportation distances from the north of Nigeria to the ports in the south are very long. For these reasons the period between collection and final drying for safe storage of the seed is extremely variable and can be up to several weeks. There is insufficient data on effect of transportation time on the quality of seeds from the different producing states of Nigeria.

There is need for proper drying using efficient dryers. Also the dried seeds stored in airtight containers under appropriate conditions. These will prevent moisture re-absorption that can lead to spoilage of the seeds.

Presently, no national standards for total AF and AFB1 are available except for codex standards on peanut which is high (15ug/kg). For cereals, nuts and seeds (unsorted and for direct consumption) the EU standards is used for both local consumption and export products. There is also no specific quality assurance package developed and tailored for sesame seed field production through the supply chain to export. There is little evidence of GAP formulated, documented and extended by the

Department of Agricultural Extension Services for sesame producers and neither is there evidence that a plan of Hazard Analysis and Critical Control Points (HACCP) is practiced by sesame seed processors and exporters.

The Federal Produce Inspection Service (FPIS) located at the ports assess sesame products on a standard 3% sample for quality, weight, fumigation and packaging (QWFP). Their tests have been mainly physico – visual tests such as % mouldy, % infestation, % shriveled, etc and rapid moisture content tests using Rapid Test Kits. Inspectors provide quality assurance certificate which accompanies the goods. Each export product displays the name of the exporter, the weight, the grade and country of origin. The grader number identifies the grader and the warehouse to ensure traceability. The FPIS has no laboratories of their own, but it is planned that under the present project FPIS will be able to use the laboratory facilities of NAFDAC. Exporters must be registered with the Nigerian Export Promotion Council (NEPC) in order to have the QWFP certificate. All the above are undertaken largely by sight and no proper equipment and laboratory analysis is undertaken for *aflatoxin* and other *mycotoxins* and pesticide residues.

NAFDAC has capacity to undertake laboratory analysis on sesame seeds for microbiology, *mycotoxins* as well as analysis of pesticide residues.. There are no methods to aid the implementation of Hazard Analysis and Critical Control Point (HACCP) system based on preventive and corrective measures. There is also no existing /operational platform in place to facilitate collaborative efforts of all responsible agencies required to ensure quality export production

The present proposal therefore will address the issues involved in the supply chain for sesame seed particularly for export.

1.2.3. Sheanut/Butter

Shea plant is listed in the regulation as *Butyrospermum parkii*. Other species are listed as *Vitellaria paradoxa* which grows extensively in the agro-forestry parklands of semi-arid West Africa including Nigeria. Until recently, shea was the native source of edible oil or fat traditionally used for frying, adding to sauces, as a skin pomade, for medicinal applications, to make soap, for lanterns and for cultural purposes at ceremonies, such as births, weddings and funerals. In Nigeria, the shea tree grows in the following states: Niger, Kwara, Kebbi, Kaduna and Oyo.

The fruits are gathered at the end of the rainy season and the main processing steps involve collection, selection, washing, drying and extraction of oil. The extraction process has an important socio-economic role in Nigeria since a significant part of the local population of largely women, many of whom are impoverished, directly or indirectly depend on shea nut collection and butter extraction for sale at the local or export markets which generates employment and income. Shea nut oil extraction also contributes to the socio-economic organization of large extractive areas and contributes to reducing rural-urban migration.

Over the past five years, demand for shea products has grown in the European Union (EU) and the United States (US), necessitating Nigeria and other West African countries to go into the export of shea products. Shea is now commonly used in the production of cocoa butter equivalents or

improvers (up to 5% content by weight is allowed under EU regulations) on chocolate, other confectionaries and margarine. Nigeria exports sheabutter mainly to the EU and US and this has increased in recent years as cosmetic and personal care companies have increased the use of shea butter in their products.

Table 2.

Estimated Export Volumes and Values for Sheanut and Sheabutter

Years	Sheanut		Shea Butter	
	Metric ton	Value	Metric Ton	Value
2007	1,294	\$ 516,045.60	179	\$ 277,575
2006	N/A	N/A	20	\$ 19,500.
2005	717	\$ 133,571	N/A	N/A

Source: Nigerian Export Promotion Council

SHEANUT BUTTER SUPPLY CHAIN

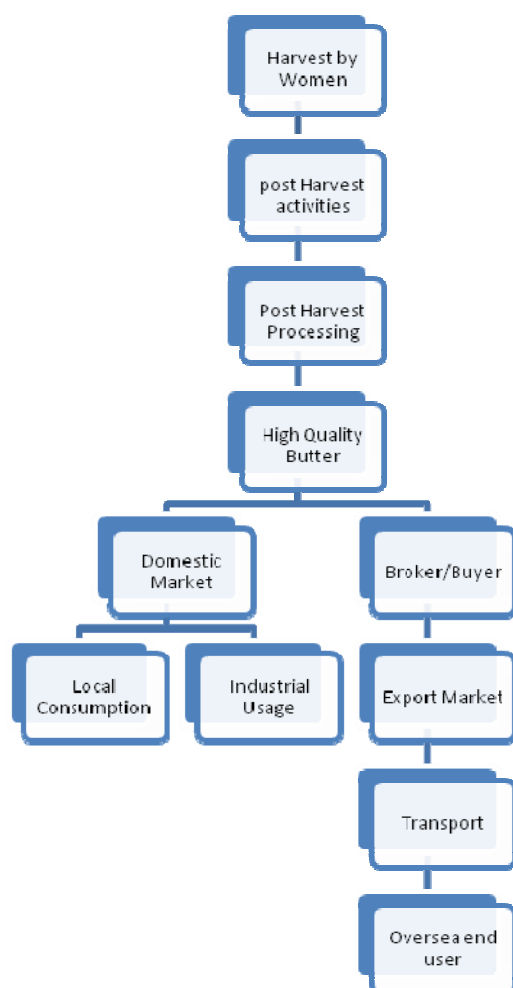


Diagram 2

Importantly, the European Union (EU) market for shea butter exceeds that of the US market, as regulatory authorities allow shea butter as an ingredient in food products, particularly in confectionary products, such as biscuits and chocolates, and also in pastries, margarine and other products usually containing vegetable fat. Chocolate producers use shea butter as a substitute for cocoa butter (up to 5%) in their products.

Being a recent export phenomenon, importing country quality requirements for shea products vary widely and need to be studied. For example, according to industry sources, the US will most likely not permit use of shea butter in chocolate manufacturing in the medium term or imports of European chocolate with any shea butter content. The US does not import shea butter as a source of vegetable oil for use in processed food products, although the Food and Drug Administration has evidently approved it for importation. Many competing types of vegetable oil (canola, peanut oil, sunflower seed oil, sesame oil, maize oil, cottonseed oil and coconut oil) already crowd the US market.

Internet research on the EU RASFF did not indicate any cases of rejections due to aflatoxin in shea. (See www.sheastandards.net/downloads/RTC_SHEA_KERNEL.doc). The opportunity to expand exports of shea butter exists², if technical, quality and shipping constraints are resolved in a cost-competitive manner. The value per MT of shea butter exceeds that for shea kernels, so that expanding shea butter exports can only contribute proportionally more to export earnings than greater levels of shea kernel exports.

The current market prefers the following kernel quality (for mechanical extraction and later refinement in EU): Free Fatty Acids (FFA) <6%, kernel fat content 45-55%, water content < 7% and impurities < 1%. The preferred demand for butter quality for the cosmetic industry, however, varies depending on end use, although discussions have revealed some preferences, like non-solvent extraction, natural source (organic certification if possible), low FFA, 'clean' white to yellow colour (not grey), filtered to remove impurities, low water content, low odour, low melting point, and high unsaponifiable fraction (the portion with therapeutic properties, 3-12% of total extract).

Certification of shea kernel and butter has become increasingly important for a number of reasons. Beginning January 1, 2005 the EU has started to demand that all agricultural products including shea nuts are traceable from source (Reg. 178, Jan 2002). Furthermore, a number of cosmetic companies are asking for organically certified shea butter for the formulation of organically labelled 'botanical' products. Demand for consistent '**Quality @ Quantity**'² is increasing the need for quality assurance. A number of buyers also hope to obtain 'fairly traded' supplies, and the Fairtrade Labelling Organisation (FLO)³ is currently developing a set of guidelines specific to shea butter.

1.2.4. Quality Control for Shea Products in Nigeria

Exporters indicated that the main problem encountered with export of shea products is its Free Fatty Acid (FFA) and *aflatoxin* content in the nut while in storage. For the butter, the main problem is both the FFA and impurities. Exports are mainly to Europe and U S A and the labeling must have

2: USAID West Africa Trade Hub 2004: "The Shea Butter Value Chain" Dr Peter Lovett, Shea Butter Consultant for WATH.

the company name and address, date of production, SON Testimonial of Quality and , NAFDAC Export Certification.

Industry associations exist for the two products and are strong. There is the National Shea butter Association of Nigeria (NASPAN) and Sesame Seed Producers Association of Nigeria. It is hoped that these Association will play a self regulatory role in quality control.

Presently, quality assurance for shea products to meet importers requirements is a very complicated and highly technical issue for which Nigeria needs to develop expertise in order to increase shea market penetration..There is a NIS on Sesame and Sheanut which is presently under revision. NAFDAC meets with NIS Standards or Standards of Importing Country.

Further investigation needs to be performed to identify and confirm the Critical Control Points (CCP) and factors all along the Nigeria shea nut production chain and to estimate the probability of contamination at the different stages of the production chain through the establishment of the critical limits and the development of predictive models for *aflatoxin* production and fungal growth; pesticide residue and other contaminants.

The definition and publication of good practices and the development of post-harvest technologies (prototypes of warehouses, washing and drying equipment) is also required.

Training courses in good practices need to be implemented in the Shea nut production and supply chain as well as in sampling methods according to the relevant European Directives for inspection and sanitary and phytosanitary certification, since these extension activities are still in their early stages and consequently they need to be reinforced. Finally, to improve the capacity of inspection staff, there is need for training courses in GAP, HACCP, sampling methods according to the European Directive 98/53/EC for *aflatoxin* inspection and sanitary certification.

The present project will address the shortcomings indicated above with the aim of reducing and controlling contamination in the supply chain to levels that meet the international sanitary and phyto-sanitary standards, in particular the stricter European regulation. This will involve the Nigerian government and its executive services, research institutes, universities, Private sector, and Non-Governmental Organizations among others in initiating a series of actions in partnership with the stakeholders in sheabutter production chain in Nigeria.

1.2.5 Past and On-going Programmes for Quality Assurance

For the present project, it will be important to find out similar past and on-going projects which are being funded for Nigeria by other donors or funding agencies. This is required to avoid duplication of efforts or to increase synergy through collaborative effort.

A search conducted revealed no specific SPS work in relation to sesame and shea. There have, however, been general studies and programmes on quality improvement for general agricultural products undertaken in the past with others on-going to develop and expand Nigeria's Food exports.

The Commonwealth Secretariat, as part of its technical assistance program to Nigeria, organised a training workshop on: “Food Safety Standards, Regulations and Export Trade” incorporating HACCP and Traceability Principles and Practice in Abuja Nigeria from 2 to 12 May 2006³. The request was made from the Federal Ministry of Commerce and Industry and the objective was to increase the ability of the country to meet the requirements of the WTO Agreement on Technical Barriers to Trade (TBT).

The study focused on reviewing the regulatory framework for food safety and quality control of key specified agricultural export products with recommendations for remedial actions to improve it. The Commonwealth Secretariat commissioned Food Surveys Ltd to carry out the study. This training workshop attracted 35 participants including policy advisors from the Federal Ministries of Commerce, Agriculture, and Health, food regulators and inspectors from SON, NAFDAC, NPQS and FPIS, farmers, exporters representing All Farmers Association of Nigeria, and commodity specific national associations for cassava, ginger, sesame and shea-butter. At this workshop, the recommendations from an earlier stakeholders’ workshop of 29 September 2005 on the formation of a National Food Safety Management Committee was revisited and a concrete six point action plan proposed and discussed with the Federal Minister of Commerce.

The FAO also organised training on Food Sanitation for grass root SMEs under the auspices of the Federal Ministry of Environment.

Various specific activities were sponsored by the EU for training in UK laboratories for technicians on sampling and analytical tests for mycotoxins for products destined for the EU market. Central Science Laboratory (CSL) United Kingdom in 2005, 2006, 2007 and 2009; International Atomic Energy Agency (IAEA) Siebersdoff Laboratory, Austria and Stellenborgh University for UNICEF Vitamins Fortification Project (2007) were some of the training Centres.

SON and IITA Nigeria also earlier submitted a project to WTO-STDF on cassava quality control in relation to *aflatoxin*. This request was turned down because there was inadequate data on the extent of *aflatoxin* contamination in cassava products.

Initiatives on shea: As a result of the potential for the shea sub-sector to provide increased benefits to the rural poor, tackle dry land environment concerns and assist with development in the region, projects and the initiatives that aim to improve this industry include: - A range of initiatives with United States Agency for International Development (USAID)⁴ funding in the shea butter production region.

ProKarité – managed by World Agroforestry Centre (ICRAF) and the Food and Agricultural Organisation (FAO), financially supported by the Common Fund for Commodities (CFC) and the Dutch government. This project aims to establish international quality standards, support a network of testing facilities and offer the methods needed to achieve qualities required for the different markets.

3 Commonwealth Secretariat 2006: Nigerian Food Safety and Quality Control Review, Final Report of a Commonwealth Secretariat Funded Study- Special Advisory Services Division Enterprise and Agriculture Section.

4 USAID-West Africa Trade Hub 2004: “The Shea Butter Value Chain – Production, Transformation, and Marketing in West Africa” Dr Peter Lovett, Shea Butter Consultant for WATH

WTO-STDF has also granted a project to the Republic of Benin for quality control for shea nuts. IITA in Nigeria is closely linked with IITA office in Benin for the preparation and implementation of this project. Knowledge gained from the Benin project could be easily made available to IITA Nigeria for the current project.

IITA was also involved in a special ⁵study on aflatoxin on maize kernels from three agro-ecological zones in Nigeria. Experience from this study can be replicated to the current study proposed for shea and sesame seed in Nigeria.

It is obvious that past efforts have not been adequate in building capacity and developing specific packages for quality control for shea butter supply chain. It is in this regard that Nigeria is seeking assistance from WTO – STDF for a grant to improve quality management system for shea products along the value and supply chain.

General Observations

From information so far available, there appears to be the following shortcomings in the field quality control for sesame seeds and shea products:

- The current process of the sheanut and sesame seed collecting, transport, processing and export is poorly defined and varies significantly between producing states.
- The crucial points of aflatoxin and other chemical contamination are not well known.
- There is currently inadequate research and fieldwork to identify at which stage in the process and in relation to variables such as moisture content, time and temperature, chemical contamination and *Aspergillus flavus*/*A. parasiticus* and aflatoxin contamination occurs. However, high moisture levels and mould activity were visually evident at all stages of the process.
- Presently, Quality Guides are in their early stages of development and lacking the required Technical background. Actions are needed to develop and disseminate guides for Good Extractive Practices (GEP), Good Manufacturing Practices(GMP) and Good Hygiene Practices (GHP)
- Quality Control centres take a sample for *aflatoxin* analysis just prior to export instead of systematic quality control checks all along the production chain.
- The sampling procedure, which is crucial for *aflatoxin* analysis due to the very heterogeneous distribution of these mycotoxins in product consignments, is inadequate. This is because it does not provide a representative and dependable result and it is not in accordance with Directive 98/53/EC.
- The control of the handling of the sample during the dispatch/transportation to the laboratory is inadequate e.g. the *aflatoxin* content may change during transport.
- There is currently no adequate traceability system in place for sheanuts and sesame seed, either during the production chain or as part of export procedures and certification.

5 International Journal of Food Microbiology 122 (2008) 74-84: *Distribution and Toxigenicity of Aspergillus species isolated from Maize Kernels from three agro-ecological zones in Nigeria*. <http://www.sciencedirect.com>

- There are established aflatoxin analytical methods used in the NAFDAC Mycotoxin Laboratories but no rapid, robust and low-cost on site methods that can be used on the field for the Nigeria sheanut and sesame seed production chain are not readily available.

1.3. Rationale/Justification

1.3.1 Current Surveillance Systems for Food Quality and Aflatoxin Control in Nigeria

Food quality and *aflatoxin* surveillance along the sesame and shea production and supply chain is not well developed to verify the effectiveness and safety management system. Rather reliance is on end-point food quality and *aflatoxin* analysis just prior to export.

Conventional analysis of *aflatoxins* is done by laboratory methods such as High Performance Liquid Chromatography (HPLC). The HPLC method EN 14123, is validated for *aflatoxin* B₁ and the sum of *aflatoxin* B₁, B₂, G₁ and G₂ to give a measure of total *aflatoxins* in sesame seed and shea nuts. This method uses immunoaffinity columns for cleanup of sample extracts and HPLC with fluorescence detection after post column derivation for *aflatoxin* identification and quantification. Whilst the method meets the legislative requirements, it is time consuming, expensive, requires very specialized equipment and uses large volumes of organic solvents. Nigeria sesame and shea nut industry faces the real dilemma of access to inexpensive and robust methods for the implementation of a HACCP type control system and to meet the legislative limits for *aflatoxins*.

Immunoassays and in particular Enzyme-Linked ImmunoSorbent Assay (ELISA), have won wide acceptance over the past 25 years in clinical and non-clinical fields. In summary, they utilise highly specific and sensitive antibodies to detect the target analyte. The presence of the analyte is then visualised using an enzyme-substrate system and read on a 96 well plate reader. Through the production of specific antibodies, R-Biopharm AG (RBAG) have developed an ELISA system for aflatoxins which overcomes many of the problems associated with HPLC but generally still needs to be carried out in a laboratory type situation. Very recently RBAG have developed a one step, on-site and robust Lateral Flow Devices (LFDs) that only take a few minutes to perform, for total aflatoxins (sensitivity down to 4ppb) which will be brought in to the project.

A competitive LFD relies upon the competition for binding sites on specific *aflatoxin* antibodies linked to gold or latex particles. This competition is between *aflatoxin* in the sample and that in the test line on a nitro-cellulose-based membrane. Next to the test line is also one that acts as a control to ensure that the test is working correctly. After the addition of a few drops of sample extracts to the well and release pad, the competition reaction is started. The ELISA systems have previously been successfully used on cereals and pulses but further basic checks will be made on this. The LFDs are at the prototype stage and will need to be linked with suitable sample extraction regimes and undergo validation before use. However it is not envisaged that this will pose any specific problems and would provide a means for inexpensive (say \$50) per test for sesame seed and shea nuts throughout the production chain.

Recently, IITA has produced antibodies for the immunoassay for quantitative determination of aflatoxins. The ELISA methodology using the in-house antibodies has been validated to quantify

aflatoxins at very low levels (1 ng/g). The benefits include ultra low cost (approximately \$1 per sample) rapid analysis turnaround time (high throughput), availability of antisera from IITA in Nigeria and the researchers are always at hand in Ibadan to complement tasks during the project and problem solving. Moreover as a follow up to the project, simultaneously-run, the available expertise at IITA may be explored for training on the rapid aflatoxin assays and transfer of technology. It was successfully done in Malawi through the assistance of International Crop Research Institute for Semi Arid Tropics (ICRISAT).

1.2.7. Choice of Sesame and Sheanut/ Butter

Sesame and shea-butter were chosen as priority agricultural export products with potential for growth, foreign exchange earnings and international market penetration. These products were chosen at a specially convened Focused Group Discussion convened by the Ministry of Commerce and Industry and Consultants of CARANA CORPORATION, USA on 8th January 2008 at Abuja Nigeria.

2.0 Detailed Work Plan

Project Components and Activities

The work plan is organised into five main component activities.

Component 1.0

This component responds directly to objective 1 of the project namely “to improve documentation for current practices of quality control for sesame seed and shea products for exports with a focus on field level production, processing, storage, transport to ports of export and to make recommendations for improvement to meet importing country standards”.

Activity 1

The following activities are planned to accomplish the above objective.

1.1 .1 Preparation of Terms of Reference and Procurement of Consultant Services

The Project Coordinator will be responsible for organising the study in the Nigerian States where shea and sesame are produced. A detailed Terms of Reference (TOR) for the study will be prepared for procurement of the services of a regional/International Consultant or any of the following bodies: IITA, FRIN, FPIS, NCRI, SON and NAFDAC (singly or in combined efforts) for the study. Data will be collected from published and unpublished internal reports, literature, and complemented by field surveys if necessary.

Two studies will be undertaken, one for shea and the other for sesame seed. The composition of each consulting team will reflect a multi-disciplinary team with relevant competences including microbiology, chemistry, post-harvest technology, agronomy, food science, quality and safety management in food production chain.

The two study teams will be deployed, one for shea and the other for sesame seed investigation. Each team will comprise a minimum of two consultants and two researchers.

The shea team will work in the following states: Niger, Kwara, Kebbi and Oyo. The sesame team will work in the following states: Benue, Taraba, Kogi and Borno.

The study will be in two phases:

1.1.2 Study of the Socio-economic characterization of shea and sesame production and supply chain in Nigeria

Terms of Reference shall include:

- identifying producing areas, volumes produced, local consumption and export
- current production and manufacturing practices, organization of production and supply chain
- Identification of critical hazard control points in the supply chain (collection points, warehouse storage, handling etc)
- Laboratory analysis of samples from various locations and stages along supply chain

1.1.3 Deliverables

Two reports will be produced, one for sesame seed and the other for shea products. The reports will document current conditions in Nigeria for sesame and shea nut production and commercialization, quality control issues and recommendations for implementing an improved quality control system for sesame seed and shea products for export.

1.1.4 Milestones and expected results

- Research methodology defined **by 2nd month.**
- Secondary and primary data collected, and an Info Gap Matrix constructed **by 4th month.**
- Data processing, analysis and synthesis completed **by 5th month.**
- Current conditions of Nigeria sesame seed and shea butter production and commercialization and opportunities described **by 6th month.**
- Organizational and incentive strategies formulated **by 6th month.**

The second part of the study involves the more Technical aspects as follows:

1.2.1 Collection of Technical Data on Sesame Seeds and Sheanuts/butter

a) Collect data on *A. flavus/A. parasiticus*, aflatoxins, water activity, moisture content, relative humidity, temperature, insect infestation. This will be done by one or all of the following bodies: NCRI, NSPRI and NAFDAC.

- Definition of sampling plans for the selected Nigeria sesame and shea nut production chains.
- Collection of Nigerian sesame seed and sheanut samples to the final site for exportation, using the European sampling procedure (Directive 98/53/EC).
- Sample screening for *A. flavus/A. parasiticus*.
- Water activity and moisture content in seed and nut samples, air relative humidity and temperature measured through the production chain from tree to final site for exportation to investigate favourable conditions for fungal growth and aflatoxin production.
- Investigate the occurrence of insects pests

1.2.2: Develop a simple predictive model for aflatoxin and fungi control in the Nigeria Sesame and Shea production chain. Tests will be performed to establish critical limits for safe storage and transport time at different moisture contents and temperatures

Since the earlier laboratory investigations would not consider the micro-conditions inside the sesame seed and shea nutshell, this part of the project will initially investigate the inside of the seed and

nutshell of fresh and unprocessed products, partially processed (semi-dried seeds and nuts) and processed seeds and nuts using sensor techniques, where applicable and available.

1.2.3: Formulate recommendations to update the existing manual of safety and quality in Nigerian Sesame and Shea:

- Identification of the Critical Control Points using the information and the model developed above.
- Draft recommendations to update the existing manual of safety and quality in Nigerian Sesame and Shea, including the development of appropriate post-harvest technologies and traceability system, and circulation to the key stakeholders for comments on feasibility of suggested changes.
- Finalise the recommendations and the manual.

1.3 Deliverables

- Published Laboratory Report on Field Data
- Published Report on Predictive Modelling
- Production of Charts for Guidelines on Critical Control Points (CCP)

1.4 Milestone and Expected Results

- Published Laboratory Report on Field Data **month 12**
- Published Report on Simulated Predictive Modelling **month 14**
- Production of Charts for Guidelines on Critical Control Points (CCP) **month 16**

Component 2.0

2.1 Introduction

This component responds directly to objective 2 (a) and (b) of the proposed project namely

(a) to implement a robust field quality control system for sesame and shea products for exports to include installations of processing and storage equipment and establishment of Critical Control Points in the *aflatoxin* reduction, HACCP and traceability systems within the Nigeria shea nut and sesame seed production and supply chain.

(b) Implement an improved contractual laboratory analysis and certification for quality control systems for sesame and shea products to meet importing country standard requirements.

2.2 Activities

2.2.1: Procurement/construction of:

For Sesame seeds:

- mobile threshers,
- construction and installation of rotary sesame seed drier and
- construction and installation of 5 ton capacity storage containers

For Shea nuts:

- Fermentation/Parboiling tank
- Parboiled Shea fruit digester
- Bed drier,
- Cracker/shell separator
- Roaster
- Milling Machine
- Oven
- Basket oil presser
- Warehouses

The Technical Group of the project will meet and decide on the final details of the design of the mobile threshers, rotary driers and 5 ton capacity storage containers. This will be in conjunction with NCRI, National Centre for Agricultural Mechanization (NCAM), identified experts and/or tropical agro - engineering companies.

2.2.2 Establishment of HACCP

(A) Establishing a monitoring system for each HACCP, establishing corrective actions, verifications, documentations and good record keeping for sesame seed

(b) Ditto for sheanuts processing

2.2.3 Establishment of Traceability system

(a) For sesame seed Collation and processing. Establishing good and traceable record keeping system and documentation

{Documentation and record keeping in the HACCP plan will be of great help.}

(b) Ditto for Sheanut butter.

2. 2. 4 Establishment of a Sampling System/Plan

(a) For Sesame Seed both for raw, processed and stored

(b) Ditto for Sheanut butter

2. 2. 5 Contractual Laboratory Testing/Quality Control.

(a) Selection of Assessment Team

(b) Pre- Qualification of Laboratory which may include, Advertisement, Verification of Tenders, Assessment visits etc

(c) Analysis by the Contractual Laboratory

2.2.6 Deliverables

- Installation of driers, 5 ton capacity storage containers and delivery of mobile threshers
- Produce a Report documenting the procurement installation and test running on-site of sustainable threshers, driers and storage silos for the reduction of aflatoxins in Nigeria sesame and Sheanut production areas **by month 10** and detailing the standard operating procedures with the training of operating personnel.
- Production of a documented two (2) HACCP plans for (i) Sesame Seed and (ii) Sheanuts
- Production of Templates for recording all monitoring activities under the HACCP Plan
- Production of documented Traceability System for (i) Sesame seed and (ii) Sheanuts
- Production of documented Sampling Plan including logistics (i) Sesame seed, (ii) Sheanut
- Laboratory Results of Testing and Certification for exports

2.2.7 Milestones and expected results

- Functional mobile threshers, driers and storage containers at the selected Nigeria Sesame and Sheanut production areas in conjunction with Specific objective 2 evaluated **by month 20**.
- The report documenting the procurement installation and test running on-site of sustainable threshers, driers and storage silos for the reduction of aflatoxins in Nigeria sesame and Sheanut production areas detailing the standard operating procedures with the training of operating personnel **by month 19**
- Two documents available on HACCP plans for (i) Sesame Seed and (ii) Sheanuts by month 19

- Template available for recording all monitoring activities under the HACCP Plan by month 19
- Available documented Traceability System for (i) Sesame seed and (ii) Sheanuts by month 19
- Available documented Sampling Plan including logistics (i) Sesame seed, (ii) Sheanut by month 19
- Result of Laboratory Testing and Certification for exports ready by month 19.

Component 3.0

Introduction 3.1

This component responds directly to objective 3 of the proposed project, namely to train staff to implement the improved Food Quality Control System. It is expected that the results of the field studies will be disseminated through training of field personnel for improved quality control.

Activities 3.2

3.2.1 Training of Trainers (Extension Workers)

Two trainings shall be conducted:

1. A one day General training delivered by the local experts from NAFDAC, SON, ADP and NSPRI. This is the first part of training which will consist of training the Federal Field Extension Workers from the producing states on the components of best practices for ensuring safe and quality sesame and Sheanut from the producing areas in Nigeria. Thereafter the Trainers will be expected to pass on training in best practices during the course of their work to the State Extension workers, farmers and collectors such as women and children.

2. Training for Producers only delivered by experts from NCRI. The project consultant may add technical inputs to the training where necessary.

3.2.2: Training of Traders, Exporters and Standards Enforcement Officers:

This training on Critical Control Points and the implementation of newly established HACCP and Traceability system within the production and supply chain is considered to be very important and it will be organized during the project progress meeting of the project partners. Also it will allow interactions amongst various organized key stake holders of the Nigeria Sesame and Sheanut productive chain. It is indeed considered important that all people involved in the Nigeria sesame and Sheanut industry should have the opportunity to be trained in the linkages between handling practices and quality/prices of their produce.

3.2. Deliverables

- Production of Report on Trained Field Workers from the Sesame and Sheanut producing states.
- Production of a Report on Trained Traders Exporters and Standards Enforcement Officers relevant in the value chain line of sesame and Sheanut export.

3.3. Milestones and expected results

Two training workshops organized by **month 20**.

Component 4

4.1 Introduction

This component responds directly to project objective 4 namely to disseminate and communicate project information, studies and results to all stakeholders.

Appropriate dissemination of knowledge delivered by the project is a major issue for its success. For this reason, a project component (Specific objective 4) is dedicated only to this activity, and the Specific objective 5 will also contribute to it through the organisation of project meetings and workshops.

The project outputs will be disseminated to

- All the participants of the project including “active” private and public co-participants,
- Different key stakeholders of the Nigerian sesame and shea nut production chain,
- Technical community including universities and research centers,
- Non-Governmental Organizations,
- Regulatory authorities,
- Official institutes as the national linking with European Union.

In order to accomplish this activity, various information systems will be used.

4.2 Activities

Activities under this component are intended to disseminate the results of the studies and control systems established to key stakeholders through implementation of information systems, training courses, website development, Technical and other publications.

4.2.1: Develop a project specific website

Open website on the Internet, brief overview of the project, partner information, contact points, links to the various partners, a calendar of forthcoming workshops, seminars and conferences and the presentation of the main results and publications. The project website will provide the study results together with explanation in order to make it understandable to visitor to the site. The website will also consist of the logos of the supporting organisations within the STDF programme and hyperlinks to their websites and other stakeholders.

4.2.2 Technical Publications and Information Brochures and Posters

A leaflet describing the project will be produced and distributed. This publication will be formulated in layman’s language and easily readable by non-specialists.

There will be two meetings and two workshops within the project. The first one will be at the start for the technical transfer of information and materials. The second will be in the second year of the project to update information from the first meeting and for the dissemination of current results. After the end of the project there will be a final dissemination workshop where all the activities and

results of the project will be reported, with the participation not only of the core group of the project and the co-participants, but also of the Federal and International community.

Dissemination of the project information and results through NEPC, in particular, through the organization of interactive TV programmes via satellite for all states of Nigeria (public questions asked by phone calls, fax or emails and answered by specialists).

Technical and technical results will be channelled through the NGO networks and newsletters that are active in Nigeria.

Every effort will be made to inform the general public, the Nigerian Sesame and Shea Associations, industry and national food agencies of the results and their implications.

Progress will be reported orally and as posters at Technical seminars, conferences and symposia and published as abstracts or proceedings.

The results will be published in prominent international Technical journals.

Each publication, leaflets, books, etc. coming out of this project will provide full reference to the support from the STDF. A copy of each of these publications will be provided to the STDF together with the relevant annual and final reports and suitable information will be included on the project web-site.

4.3 Deliverables

- project specific website published online by **month 4**
- Project specific Website reviewed and overhauled by **month 20**
- Technical and specific studies and results published by **month 22**
- Publication of Project Leaflet

4. 4. Milestones and expected results

- Project Specific Website published by month 4 and reviewed by month 20
- Publication of HACCP, traceability system, sampling and laboratory testing result on the website by month 20
- Publication of project leaflet by month 4 to create awareness and another leaflet of summary finding by month 20-22

Component 5

This component namely “To strengthen the public-private dialogue and partnership in the Nigeria shea nut and sesame seed sector” responds directly to objective 5 of the project.

It is important to find a way to develop and institutionalise a process or system of quality control in the value chain with participation of key stakeholders. It is therefore proposed that this activity or topic be treated during the mid-term meeting. Based on the feedback in the mid-term meeting, work can continue to develop a system of quality control (and identifying ways of making it self-sustaining) including traceability, as a culture of excellence in providing high value products to clients.

Activities

5.1 Project Coordination and Monitoring

This involves organisation and implementation of project meetings and workshops during the duration of the project. Four major meetings are planned as follows: start-up meeting, first workshop, mid-term progress meeting, and a final end of project evaluation workshop. These will be undertaken to co-ordinate the implementation and execution of the project activities by the different partners as well as follow-up progress of project the activities to ensure the effective execution of the work plan (review of the Technical results and possible bottlenecks to be solved),

5.1.1: Start-up meeting, and first workshop with key stakeholders

A two days kick off meeting will be organized in Abuja at the beginning of the project with the participation of key representatives of the project partners. The objective of this meeting is to plan and organize the implementation and execution of the project activities by the different partners, including administrative, financial and Technical issues.

The Kick off meeting will be preceded by a one day workshop aiming to synthesize and discuss the current context of the Nigeria Sesame and Shea nut sector, the results and conclusions of the main research work that has been carried out up to now on the topic and the research and development projects in progress. This workshop that will involve the project partners and other key stakeholders and entities of the public and private sector, will be the opportunity for the different teams to meet, get to know each other better and their respective activities.

5.1.2: Technical Publications and Information Brochures and Posters

At the mid point of the project, a two day progress meeting will be organized in Abuja with the participation of the project partners and stakeholders of the Nigeria Sesame and Shea nut production chain that have been involved in the project activities. This meeting is aimed to follow-up the progress of the activities and evaluate the effective execution of the work plan, to reinforce the knowledge of the Nigeria sesame and shea nut situation between the participants and if necessary to agree on adjustments to the direction of research. The field, laboratory and technical results will be

reviewed, analyzed and interpreted and solutions to the possible production chain bottlenecks discussed. Administrative and financial issues will also be addressed.

5.1.3: Final end of project workshop with the participation of key stakeholders

The project Coordinator with the technical assistance of the Project Consultants will be engaged to assist the project in preparing an end of project report, identifying milestone achievements including project impact on food quality, initial impacts of increased exports, lessons learned, and strategies for sustainability of project key activities in ensuring good quality of sesame and shea products in Nigeria.

A three day final workshop will be organized at the end of the project with the participation of all the project partners, and other key stakeholders of the Nigerian sesame and shea nut production chain. The objective of this workshop is aimed to disseminate and report all the results and conclusions generated by the project to Federal and international community. The participation of a European Commission expert from the local delegation in Nigeria and a representative of the STDF partner institutions is planned. Two days of demonstration sessions on the safety management tools (good practices, fungi and aflatoxin rapid drying methods for sesame seeds and sheanuts tested and validated during the project will be organized.

All the meetings and workshops will stimulate networking between the projects participants and contribute to strengthen the public-private dialogue and partnership in the Nigerian sesame and shea nut/butter sector.

5.2 Deliverables

- Start up meeting and first workshop **by 2nd month.**
- Mid-term progress meeting **by 13th month.**
- End of project evaluation workshop **by 23rd month.**

5.3 Milestones and expected results

- Start up meeting and first workshop organized **by month 2**
- Mid-term progress meeting organized **by month 13**
- Final end of project workshop organized **by month 23**

5.4 Evaluation plan

5.1 Achievement of project objectives

The delivery of original project objectives and outputs as defined in the proposal will be evaluated.

5.2 Performance summary

The performance of the project will be assessed using the following criteria:

Baseline Start Date:

Actual Start Date:

Start Variance:

Baseline Finish Date:	Actual Finish Date:	Finish Variance:
Baseline Budget:	Actual Cost:	Cost Variance:
Baseline Work Days:	Actual Work Days:	Work Variance:

Any key variances will be identified

5.3 Achievement of expected results

Results, outputs and deliverables will be examined to determine if the expected benefits have been achieved. For example has the project outputs lead to the reformulation of the Manual of Safety and Quality in Nigeria Sesame and Shea Nuts?

5.4 Project management and planning

The management of the project will be reviewed and a critical look taken at the planning process, the frequency that plans were updated and their accuracy. The effectiveness of the team and the degree of engagement with and by the other key stakeholders will also be examined.

5.6 Recommended actions

Recommendations will be proposed and will focuses on the overall success of the project to be replicated in local context in other states were sesame seed and shenuts are produced.

5.7 Future priorities

Any future priorities identified from the project will be recommended and actions to ensure project sustainability proposed.

Nigerian Sesame seeds and Shea nuts Products Export Expansion's Objective and Log Templates

Objective 1: Baseline Documentation – Improving documentation on current practices of quality control for Nigerian sesame seed and Shea products exports							
Activities	Input	Output	Output Indicator	Outcome	Outcome Indicator	Lead & support institutions	Assumptions & risks
1.Characterization of Nigerian: a. Sesame Seed b. Sheanut value Chain	a.\$10,600 b.\$10, 600	Developing Questionnaires to be used on the field Briefing of the Field Teams Laboratory tests on samples from the field	2 sets of Questionnaires 20 workers briefed Tested Field Samples	Availability of updated information and data on the Nigerian Sesame and Shea nut.	2 Documented Reports one on Sesame seeds and the second on Sheanut	NCRI, IITA NAFDAC NEPC NAFDAC	Meeting Deadlines
2.Development of a simple predictive model for aflatoxin and fungi control in Nigeria Sesame and Shea production chain based inter alia, on the review of existing data from STDF-Benin Project 67 to identify critical control point for aflatoxins contamination	\$10, 000	Predictive study on samples of sesame seeds and Sheanut to determine optimal storage and transportation conditions	Sets of check on parameters such as temperature, humidity, moisture,	Availability of practicable quality parameter checks to control growth of fungi and development of aflatoxins during processing.	1 Documented report on Predictive Control of fungi and aflatoxins	IITA	Availability of predictive test tools
3. Updating existing manuals of safety and quality on Nigerian Sesame and Shea	\$8, 000	Reviewing of existing NIS Standards on Sesame and Shea nuts. Development of Manuals and Charts	Reviewed sets of standards on Sesame and Shea nuts. By 3 rd quarter 2010 (all quality indicators that measure for	Availability of updated standards on Sesame and Sheanut. Availability of Guidance	2 Memos to DG SON requesting for review of all NIS Standards on Sesame and Shea nuts. by first quarter 2011	SON NAFDAC NCRI Trade Groups NSPRI NEPC	Meeting deadlines

		on GAP, GHP, GMP, HACCP for Sesame and Shea nuts.	standards will be reviewed Sets of Manuals on Good Practices for the Production, Processing and Transportation of Sesame and Shea nuts	documents in the production of Nigerian Sesame and Shea nuts.	2 Sets of Recommended Codes of Practice on the Nigerian Sesame Seeds and Sheanuts.	NAFDAC NCRI NSPRI Trade Group SON NEPC	
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Objective 2: Quality Control & Traceability – Implementation of robust field quality control system for Nigerian sesame and Shea products						
Activities	Input	Output	Output Indicator	Outcome	Outcome Indicator	Lead & support institutions
1.Procurement/construction Test running and Commissioning of mobile threshers and training	\$10, 000	Training of Operators and Installed Mobile Threshers	4 Operators trained	Reduction in heavy metal contents, fibres, extraneous matters etc	No of Functional Mobile threshers with Trained Operators	NCRI Supported by NSPRI NAFDAC IITA NEPC
2.Procurement/construction Test running and Commissioning of rotary sesame seed drier and training	\$8, 000	Training of Operators and Installed Rotary Driers	4 Operators trained	Reduction in the growth of fungi and aflatoxin	4 No of Functional Rotary Driers with Trained Operators	NCRI supported by NSPRI NAFDAC IITA NEPC
3.Procurement/construction Test running and Commissioning of 5 ton capacity storage containers and training	\$14, 000	Training of Operators and Installed Storage Containers	4 Operators trained	Increase in the delivery of high quality Sesame	4 No of Functional Storage Containers with Trained Operators	NSPRI NCRI NAFDAC IITA SON NEPC
4.Procurement/construction Test running and Commissioning of Fermentation/Par-boiling tank and training	\$ 5,000	Training of Operators and Installed Fermentation /Parboiling tank	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Fermentation/Par boiling tank with Trained Operators	NSPRI NCRI NAFDAC IITA NEPC
5. Procurement/construction, Test running and Commissioning of	\$12, 240	Training of Operators and Installed Parboiled	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Parboiled Shea fruit digester with Trained Operators	NSPRI NCRI NAFDAC IITA

Parboiled Shea fruit digester and training.		Shea fruit digester				NEPC
6. Procurement/ construction/Test running and Commissioning of Shea nut bed drier and training	\$12, 800	Training of Operators and Installed Shea nut bed drier	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Shea nut bed drier with Trained Operators	NSPRI NCRI NAFDAC IITA NEPC
7. Procurement /construction/Test running and Commissioning of Shea nut Cracker/shell separator and training	\$14, 400	Training of Operators and Installed Shea nut Cracker/shell separator (by third quarter 2010)	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Shea nut Cracker/shell separator with Trained Operators	NSPRI NCRI NAFDAC IITA NEPC
8.Procurement/construction/Test running and Commissioning of Shea nut roaster and training	\$5, 000	Training of Operators and Installed Shea nut roaster	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Shea nut roaster with Trained Operators	NSPRI NAFDAC IITA NCRI NEPC
9.Procurement/construction/Test running and Commissioning of Shea nut milling Machine and training	\$12, 800	Training of Operators and Installed Shea nut milling Machine	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Shea nut milling Machine with Trained Operators	NSPRI NCRI NAFDAC IITA NEPC
10.Procurement /construction/Test running and Commissioning of Oven and training,	\$16, 000	Training of Operators and Installed Oven	4Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Oven with Trained Operators	NSPRI NCRI NAFDAC IITA NEPC
11.Procurement/co nstruction/Test running and	\$9, 600	Training of Operators and Installed	4 Operators trained	Increase in the delivery of high quality Sheanut	4 No of Functional Basket oil presser with	NSPRI NCRI NAFDAC

Commissioning of Basket oil presser and training		Basket oil presser			Trained Operators	IITA NEPC
12. Establishment of HACCP Plan for shea nut and Sesame seed	\$ 6,300	Identification of hazards and establishing of CCP in processing of Sesame seed and shea nut/butter	HACCP monitoring system established	Verification, documentation and record keeping system enhanced	Production of documented HACCP for Sesame seed and Sheanut/butter	NAFDAC NSPRI IITA NCRI NEPC
13. Development of traceability system for Sesame seed and shea nut	\$6, 300	Establishing traceable record keeping system and documentation	Traceability record system established	Traceability for Sesame seed and Sheanut/ butter enhanced	Production of documented traceability for Sesame seed & Sheanut/butter	NAFDAC NSPRI IITA NCRI NEPC
14. Establishment of a sampling plan for Sesame Seed and Shea nut	\$6, 300	Sampling plan for sesame and Sheanut/ butter established	Sampling plan for Sesame and sheanut documented	Sampling for Sesame seed and Sheanut/ butter enhanced	Production of documented Sampling plan for Sesame seed & Sheanut/butter	NAFDAC NSPRI IITA NCRI NEPC
15. Contractual laboratory testing of samples and quality control	\$20, 000	Selection of assessment team & samples for testing	Selected samples tested	Samples analysed by the contractual laboratory	Laboratory results of tested samples and certification for export.	NAFDAC NSPRI IITA NCRI NEPC

Objective 3: Capacity Building – Train Producers, Traders, Exporters and Standards Enforcement Officers to adopt and implement the improved Food Quality Management System							
Activities	Input	Output	Output Indicator	Outcome	Outcome Indicator	Lead & support institutions	Assumptions & risks
1.Training of Trainers (Extension Workers)	8	Trained Extension workers ready to train others along the value chain	8 Masters Trainers	Reduction in the occurrence and levels of fungi and aflatoxins	No of Master Trainers able to train on adopting quality value system for sesame seeds and Sheanut products	IITA NSPRI FRIN NIFOR NCRI NEPC	Logistics
2.Training of Traders, Exporters and Standards Enforcement Officers:	30	Trained Traders, Exporters and Standards Enforcement Officers, ready to implement the new management system	30 Experts trained on adopted Sesame and Shea nuts quality value systems	Enhanced the capacity of the trainees on quality value system for sesame seeds and sheanuts products..	No of Traders, Exporters and Standards Enforcement Officers trained on adopted Sesame and Shea nuts quality value systems	NAFDAC SON FPIS IITA NEPC	Logistics

Objective 4: Information Sharing and Empowerment – Disseminating project information, studies and results to all Stakeholders							
Activities	Input	Output	Output Indicator	Outcome	Outcome Indicator	Lead & support institutions	Assumptions & risks
1. Website Development and maintenance	Web manager and Webmaster	Designing and Populating the Project website	A functional hosted web page	Increased awareness on the project and on the improvement in the qualities of traded Nigerian Sesame and Sheanuts	No of visitors to the website and No of enquiries from the visitors	NEPC NCRI NAFDAC SON NSPRI Trade Groups	Cost variation
2. Publications	\$10, 000	Development of Technical Reports on the project including Guidance documents and Charts both in prints and on internet	No of Publications written	Availability of well documented papers, reports, guidelines on the project wide circulation.	No of published reports, guidance documents, papers, etc on the project.	NEPC NCRI NAFDAC SON NSPRI Trade Groups	Cost variation
3.Adverts TV and radio programmes	\$16, 000	Conceptualizing catchy educative and informative adverts and jingles on billboards, local radio stations and television houses. 4 newspaper adverts, 12 radio/TV programmes published	6 Concepts popular languages in the areas of production for each commodity, presented for selection	Wider reach and subsequent acceptance of the improved value added quality system	No of adverts and TV radio programmes published	NEPC NCRI NAFDAC SON NSPRI Trade Groups	Cost variation

Objective 5: Collaboration and Sustainability– Strengthening the public-private dialogue and partnership in the Nigerian Sheanut and Sesame seed sector							
Activities	Input	Output	Output Indicator	Outcome	Outcome Indicator	Lead & support institutions	Assumptions & risks
1.Project Coordination Meetings start-up meeting	20 participants @ \$100 x 2 days	Consensus and Ownership building amongst the participating bodies in the public and private sector	20 Participants representing public and private committed to playing their roles in the project	Increased understanding collaboration and seamless operation during the project	Timely production of reports and other documents.(Weekly report after meetings and execution of projects)	NEPC FMCI SON NCRI NSPRI NAFDAC IITA NIFOR NCAM Trade Group	Logistics
2.Mid-term progress meeting	20 participants @\$100 x 2 days Return air ticket for 8 Lagos participants	Presentation of Reports by participating bodies and peer review of performance at the midterm	All participating bodies and all other stakeholders briefed on the progress of the project so far	Identification of areas of lapses and other areas demanding more attention. Projecting into the timeframe of the project and adjusting the timetable if there is a needed.	1 Documented Report on the Midterm project monitoring meeting.	NEPC FMCI NCRI NSPRI NAFDAC IITA SON Trade Group NIFOR NCAM	Logistics
3. Project Completion Evaluation meeting	20 participants @\$100 x 2 days	Meeting of participating bodies and other stakeholders to evaluate the performance of the project	All stakeholders briefed on the effect of the intervention project.	Increased patronage in the Nigerian sesame and shea nuts; and sharing and cross application of learned skills and experience to other traded	1 Meeting of the Participants	NEPC NCRI NSPRI NAFDAC IITA SON FMCI Trade Group Trainers	Logistics

				commodities.			
4.Preparation of end of project report	Technical Coordinator Consultants	All reports on field work, Production Interventions, Training, Meetings, etc	All activities Inputs and Outcome of Intervention documented	Availability of documented report on WTO –STDF SPS Project in Nigeria	1 Documented report	NEPC. With technical input from the consultant	Meeting deadlines and Cost variation

	PROPOSED WORK PLAN/TIME TABLE FOR STDF 172 PROJECT IN NIGERIA: ENHANCING THE QUALITY OF SESAME SEEDS AND SHEA NUTS FOR EXPORTS																											
	Activities↓ Months→	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Components	Component 1: Improve documentation for current quality control practices for Sesame seed and shea products for exports																											
1. 1a	Preparation of Project Document																											
B	Preparation of TOR and Procurement of Services of Project Consultant																											
c.	Preparation of Contract Agreement for timely release of funds for the project between the Project Coordinator and Project Consultant.																											
1.2 (a)	Study to characterize Sesame Seed and Sheanut value chain by selected Consultant/Body																											
	Preparation of questionnaire and other research instruments																											
	Workshop to brief field team																											
	Field work																											
	Physical characterization of the Nigerian Sesame Seed and Formulation of Strategy along the value chain to the port of exit																											
1.2b	Laboratory test by NAFDAC to characterize the Nigerian Sesame Seed and Sheanut along the value chain before the intervention of STDF																											
1.3	Development of a simple predictive model for aflatoxin and fungi control in Nigeria Sesame and Shea production chain based inter alia, on the review of existing data from STDF-Benin Project 67 to identify critical control point for aflatoxins contamination																											
1.4a	Formulation of recommendation to Update existing manuals of safety and quality on Nigerian Sesame and Shea																											

[illegible]

Detailed Budget and Proposed Uses of WTO-STDF Grant Funds

The total cost of the proposed project amounts to US\$520,040.00 out of which Grant funds requested from **WTO-STDF amounts to US\$339,240.00 representing 70% of total cost**. The Federal Government of Nigeria (FGN) will be responsible for a total cost of US\$180,800.00 representing 30 % of total cost mainly in the form of remuneration to full time and part time officers involved in the implementation of the project.

Detailed cost tables are shown in table 3 below:

Table 3

EXPANDING NIGERIA'S EXPORTS OF SESAME SEEDS AND SHEANUT/BUTTER THROUGH IMPROVED SPS CAPACITY BUILDING							
	COMPONENT 1	UNIT	UNIT COST	QTY	TOTAL	WTO-STDF	FGN
1.1	Preparation of TOR & Procurement of Consultant Services						
	Return Air Ticket NEPC rep from Lagos to Abuja	Person	250	1	250	250	-
	Return Air Ticket NAFDAC Rep to Abuja	Person	250	1	250	250	-
	Per diem \$150 per officer x 2 days + Ground Transport for 2 officers	Day	300	2	600	600	-
	Hire of Meeting Room, snacks etc	Day	200	1	200	200	-
	sub-total				1,300	1,300	-
1.2 (a)	Study to characterise Shea value Chain						
	Questionnaire preparation & field study instruments	State	100	4	400	400	-
	Workshop to brief field team	Day	200	1	200	200	-
	Field Work: Per diem @ \$200 per team x 5 days per state x 4 states	State	1000	4	4,000	4,000	-
	Transport for field team @\$100/day x 20 days	Day	200	20	4,000	4,000	-
	Workshop to discuss results of field work	Day	2000	1	2,000	2,000	-
	sub-total				10,600	10, 600	-
1.2 (b)	Study to characterise Sesame value Chain						
	Questionnaire preparation & field study instruments	State	100	4	400	400	-
	Meeting to brief 4 member field team	Day	200	1	200	200	-
	Field Work: Per diem @ \$200 per team x 5 days per state x 4 states	State	1000	4	4,000	4,000	-
	Transport for field team @\$100/day x 20 days	Day	200	20	4,000	4,000	-
	Workshop to review results of field study		2000	1	2,000	2,000	-
	sub-total				10,600	10, 600	-
1.2	Development of a simple predictive model for aflatoxin and fungi	Lump sum	5, 000	5	25, 000	10, 000	15, 000

(c)	control in Nigeria Sesame and Shea production chain based inter alia, on the review of existing data from STDF-Benin Project 67 to identify critical control point for aflatoxins contamination						
1.3	<u>Data Entry and Analysis & Summary Report SHEA & SESAME</u>						
	4 man team of data analysts @\$400 per team x 10 days SHEA team	Team	400	10	4,000	4,000	-
	4 man team of data analysts @\$400 per team x 12 days SESAME	Team	400	12	4,800	4,800	-
	sub-total				8,800	8,800	-
	Updating existing manuals of safety and quality on Nigerian Sesame and Shea	Day	2,000	4	8,000	8,000	
	TOTAL FOR COMPONENT 1				64,300	49,300	15,000
	COMPONENT 2						
2.1	Construction of motorized mobile thresher and training for 4 major sesame producing states	Set	2500	4	10,000	10,000	-
2.2	Construction and installation of 500 Kg capacity rotatory sesame seed drier and training in 4 major sesame producing states	Full compliment	2000	4	8,000	8,000	-
2.3	Construction and installation of 60 unit 5 ton capacity storage containers and training in 4 major sesame producing states.	Set	3500	4	14,000	14,000	-
2.4	Construction and installation of 250kg/batch Fermentation / Parboiling tank with drainage system and training in 4 major shea nuts producing states.	Set	1250	4	5000	5000	-
2.5	Construction and installation of 500kg/hr Parboiled Shea fruit digester coupled with 6hp diesel engine and training in 4 major sheanut producing States.	Set	3060	4	12240	12240	-
2.6	Construction and installation of 500kg/batch Shea nut bed drier capacity and training in 4 major shea nuts producing states	Set	3200	4	12800	12800	-
2.7	Construction and installation of Shea nut cracker/shell separator coupled with 7hp diesel engine 500kg/hr capacity and training in 4 major shea nuts producing states	Set	3600	4	14400	14400	-
2.8	Construction and installation of Shea nut roaster 100kg/batch and training in 4 major shea nuts producing states	Set	1250	4	5000	5000	-
2.9	Construction and installation of sheanut milling machine and training.	Set	3200	4	12,800	12,800	-
2.10	Procurement/construction Test running and Commissioning of pre-heating shea paste (kerosene/charcoal) Oven and training,	Set	4000	4	16,000	16,000	
2.11	Construction and installation of Basket oil presser with 30 tons Hydraulic jack 100kg/batch capacity and training in 4 major shea nuts producing states	Set	2400	4	9600	9600	-
2.12	Establishment of HACCP Plan for shea nut and Sesame seed	Set	6300	1	6300	6300	
2.13	Development of traceability system for Sesame seed and shea nut	Set	6300	1	6300	6300	

2.14	Establishment of a sampling plan for Sesame Seed and Shea nut	Set	6300	1	6300	6300	
2.15	Contractual laboratory testing of samples and quality control	Lump sum	20, 000	1	20, 000	20, 000	
2.16	Contingency	Dollars	10, 000	1	10, 000	10, 000	-
	TOTAL FOR COMPONENT 2				168, 740	168, 740	-
	COMPONENT 3						
3.1	Training in Good Agricultural Practises and HACCP in Sesame seed and Sheanut Production and Supply.						
3.1	Training of operators and extension workers in operations of the threshers driers and storage silos for 15 days	Dollar	5000	8	20,000	20,000	-
3.2	Production of Manuals, Charts , training materials and training for 30 producers etc in HACCP, GMP and GAP 5 days, including air ticket, ground transport, per diem, hotel for expert/resources person etc		500	30	15,000	15,000	-
3.3	Contingencies	Dollar	1000	1	1,000	1,000	-
	TOTAL FOR COMPONENT 3				36,000	36,000	-
	COMPONENT 4						
4.1	Website Development	Lump sum	5000	1	5,000	5,000	-
4.2	Website maintenance and ISP fees	Month	300	24	7,200	7,200	-
4.3	Publications	Lump sum	10000	1	10,000	10,000	-
4.4	Adverts	Lump sum	6000	1	6,000	6,000	-
4.5	TV and radio programmes	Lump sum	10000	1	10,000	10,000	-
	TOTAL FOR COMPONENT 4				38,200	38,200	-
	COMPONENT 5						
	<u>Project Coordination Meetings</u>						
5.1	Start-up meeting for 20 participants @ \$100 x 2 days	Number	200	20	4, 000	4, 000	-
5.2	Return air ticket for 8 Lagos participants	Number	250	8	2,000	2,000	-
5.3	Mid-term progress meeting x 20 participants @\$100 x 2 days	Number	200	20	4,000	4,000	-
5.4	Return air ticket for 8 Lagos participants	Number	250	8	2,000	2,000	-
5.5	Project Completion Evaluation meeting x 20 participants @\$100 x 2 days	Number	200	20	4,000	4,000	-
5.6	Preparation of end of project report	Lump sum	2000	1	2,000	2,000	-
5.7	Hire of conference room and misc coordination expenses	Lump sum	14, 600	1	14, 600		14, 600
5.8	Remuneration of Project Consultant@ \$450 x20day \$2,500x2 visits per year	Lump sum	14, 000	1	14, 000	14, 000	
5.9	Remuneration of Project Coordinator @\$1,500/Month	Month	1500	24	36,000		36,000

						-	
5.10	Remuneration of Technical Coordinator @\$1,500/Month	Month	1500	24	36,000	-	36,000
5.11	Remuneration of Project Accountant @\$300/month	Month	300	24	7,200	-	7,200
5.12	Remuneration of 10 institutional part time staff @\$300/month	Month	300	24	72,000	-	72,000
5.13	Ex-post project evaluation	Lump sum			15,000	15,000	
	TOTAL FOR COMPONENT 5				212,800	47,000	165,800
	TOTAL PROJECT COST				520,040	339,240	180,800
	PERCENT SHARE					0.7	0.3

APPENDIX 1

Description of Team Members, Role of Project Partners and Letters of Support from Local and International Collaborating Organizations:

Introduction

This request for WTO-STDF grant assistance is being made to expand Nigeria's agricultural exports through capacity building for private and public sector organisations responsible for production, processing and exports of cereals and pulses particularly sesame seed and sheanut/butter.

PROJECT IMPLEMENTATION/MANAGEMENT STRUCTURE

1. Implementing Agency

The implementing agency shall be the Nigeria Export Promotion Council NEPC with leadership support from the Federal Ministry of Commerce and Industry.

The expected roles of the NEPC as the Lead Agency with the ownership and responsibility to drive the process of the project implementation shall be as stated in the MOU

2. Supervising Agency (ITC)

The supervisory role of the project shall be an International Agency appointed on a contractual agreement by the WTO. Such agency should have the required expertise and experience of supervising similar project in the past.

3. Project Coordinator

There shall be one project coordinator who should be fully in charge of the coordination of the project activities. The project coordinator would be supported by an International Consultant to deliver the technical inputs and a team of local experts drawn from the Core Group and the Collaborating Agencies. The role of the project coordinator shall be as stated in the contract agreement

4. Project Steering Group

The Project Steering Group will serve as the decision making organ in the implementation of the project. The members of the group are :

- Nigerian Export Promotion Council NEPC (Chair)
- Representative, Federal Ministry of Commerce & Industry
- Representative of Agricultural Development Project (ADP)
- Representative of National Sesame Seed Association of Nigeria
- Representative of National Shea products Association of Nigeria

5. Role of International/Regional Consultant

- **To provide technical inputs to the local technical experts in the development of the approach to follow**
- **To review project outputs and suggest changes**
- **Participate and advice in the Core Working Group meeting once every year.**
- **To suggest changes if required of the value chain of both Sesame Seeds and Sheanut/butter.**

6. Core Working Group

These are Agencies/Organizations who will partner with the NEPC in the project implementation.

The grant request will benefit directly these organisations through budgetary provisions made from the grant over a period of two years. They include:

- I. National Cereals Research Institute. NCRI
- II. Nigerian Stored Produced Research Institute. NSPRI
- III. Forestry Research Institute of Nigeria. FRIN
- IV. Standards Organisations of Nigeria. SON
- V. Nigerian Agricultural Extension Research and Liaison Services NAERLS

Collaborating Institutions:

These organisations will not receive direct funding from the WTO-STDF grant funds but will participate in contract services, capacity building and training programmes as well as collaborate with the core partner group in implementing key activities of the project.

Collaborating institutions include:

1. National Agency for Food and Drugs Administration and Control NAFDAC
2. National Association of Sesame Seed Producers of Nigeria
3. Association, of Sheanut Producers of Nigeria.
4. Nigeria Agriculture Quarantaine Service NAQS
5. International Institute of Tropical Agriculture IITA
6. All Farmers Association of Nigeria.
7. Agricultural Development Projects. ADP
8. Nigerian Institute for Oil Palm Research (NIFOR)
9. Federal Produce Inspection Services.
10. Federal Ministry of Commerce and Industry.
11. National Centre for Agricultural Mechanisation (NCAM)

The Federal Ministry of Commerce and Industry as the supervising ministry of the NEPC will provide leadership and policy oversight to support the NEPC in the overall implementation of the project.

The Federal Ministry of Agriculture is fully represented by its Agencies in the Core Working Group and Steering Group and collaboration Agencies

The two categories of partner organisations will offer strong and complementary set of expertise, experience and research on the subject matter as well as human and material resources needed for the implementation and sustainability of the project

Table I

PROJECT MANAGEMENT CHART

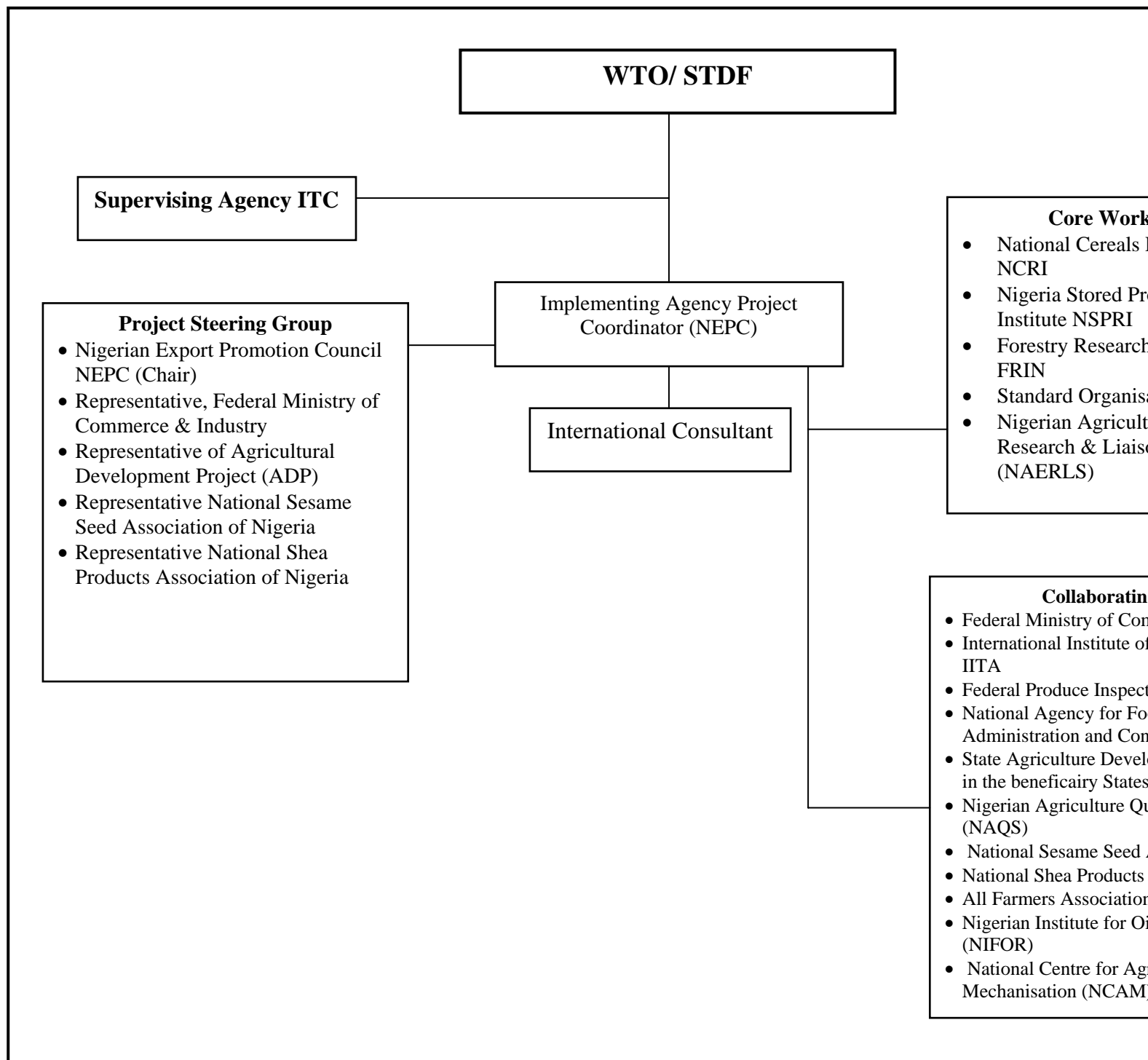


Table II

Resume of Key Staff of NEPC Involved in project

Name	Educational Level/Function	Field of Expertise Related to the project	Project responsibility
Osibo Omowunmi Mrs	B. Pharm. (Hons), Diploma in Management, Certificate in Pharm. Tech, Drug Quality Control and Information. Director	Planning, Management, Quality Control and Information	Project Coordinator
William A. Ezeagu	Diploma (Packaging), B.Sc (Economics, Geography), PGD (Management), MBA (Marketing) Deputy Director	Storage, Packaging, Quality Assurance, Certification	Socio-economic survey of products, Lead Researcher
Lawal Shehu Dalhat	B. Sc. International Studies, M. Sc International Relations. Alumni World Bank Institute Washington DC (Trade Finance in the Context of the Global Financial Crisis), Certificate in Project Cycle Management (ITC) Chief Trade Promotion Officer	Coordination of the overall administrative aspect of the project. And liaison with ITC and WTO/STDF	STDF 172 Lead Project Officer
Benny Anani	B.Sc. Industrial Chemistry)), PGD (Business Management),. MBA Assistance Chief Trade Promotion Officer	Chemist	STDF172 project Assistant Officer
Evelyn I. Obidike	HND (Marketing), M.Sc. (International Marketing), MBA (Marketing), Alumni World Bank Institute Washington DC (Export Dev & Diversification), UNIDO Cert on Export Consortium Assistant Director	Liaison with Exporters at Ports of shipment on SPS issues	Researcher
Ndamini Baba	HND Statistics Chief Trade Promotion Officer	Import-Export Statistics	Researcher on socio-economic survey of the two products
Afolabi Bello	B. Sc. (Biochemistry) Certified International Transport & Logistics Specialist (CITLS) Certified International Freight Forwarder (CIFF) Principal Trade Promotion Officer	Trade Logistics and Quality Assurance	Supply Chain Logistics

Table III

Resume of Key Federal Ministry of Commerce and Industry Staff Involved in the project

Name	Educational Level/Function	Field of Expertise Related to the project	Project responsibility
Abdulsalam Usman	B.Sc. (Bus. Admin), PGD (Journalism), PGD (Trade Policy)	Trade Facilitation	Instructor
M.A. Abdulhamid	B.SC Pol. Sc, PGD Trade Policy, M.SC Econ. Analysis & Int. Dev.	WTO Agriculture, SPS and other WTO Issues	Coordinator 1
Kalu E.E.	B.Sc. (Bus. Admin), MBA	Chief Trade Officer	Coordinator 2
Onyerikwu Simeon .A.	Dip. (Pub. Admin), HND (Bus. Admin) Dip. (Trade Policy)	TRIPS, TBT, Dispute Settlement.	Facilitator
J.O. Apanisile	B.Sc. Agric. (Agronomy) MBA	Assistant Director	Produce Inspector

Standards Organisation of Nigeria (SON)

In Nigeria, the fulcrum of Standardisation and Regulation of quality for all products is vested in the Standards Organisation of Nigeria (SON). Established by Act No. 56 of 1971 and with three amendments in 1976, 1984 and 1990, the body corporate, has the sole responsibility for National Policy on Standards, Standards Specification, Quality Control and Metrology.

The Standards Organisation of Nigeria is an active member of the African Regional Organisation for Standardisation (ARSO), Codex Alimentarius Commission, which is the Food Standardisation Organ of the United Nations Food and Agriculture Organisation (FAO) and is also a member of the International Organisation for Standardisation (ISO).

The Standards Organisation of Nigeria is also an intending member of the World Standards Services Network (WSSN), International Electro-technical Commission (IEC) and International Telecommunications Union (ITU).

SON participates fully in the programmes and activities of international bodies and appropriate UN agencies, in particular, UNIDO and UNICEF, in the interest of Nigeria.

Table IV
Resume of Key Standards Organisation of Nigeria Staff involved in the project

Name	Educational Level/Function	Field of Expertise Related to the project	Project responsibility
Mr. Abiola Komolafe	B.Sc. Biochemistry M.Sc Food Technology Deputy Director Codex Contact Point	Codex and Quality Assurance	Quality Assurance
Mrs. Toyin S. Idowu	HND Textile PGD in colour Chemistry Chief STDS Officer	WTO/TBT enquiry point	Standards Technical, Regulation and Conformity Assessment procedures development and inspection of quality management system
Mrs. Omolara Okunlola	B.Sc. Food Science and Technology M.Sc. Microbiology Chief Standards Officer (Food/Codex)	SPS Desk, Food safety, ISO 22000, Quality Assurance Process	Development of National Standards in food related products, inspection of quality control process in food and related products
Mr. Charles Nwagbara	B. Sc. Biochemistry Chief Standards Officer (Food/Codex)	SPS Desk, Food safety, ISO 22000, Quality Assurance Process Codex Contact Point	inspection of quality control process in food and related products
Mr. Ojo I. Akogun	B.Sc. Microbiology Standards Officer	Mycotoxin Analysis	Laboratory Analysis

National Cereals Research Institute (NCRI)

The Institute has the national mandate of research into the genetic improvement of sesame (beniseed) as well as that of soybean, castor, rice, Acha and sugarcane. The institute also has the mandate of the overall farming systems resource management, research and extension in the central zone of Nigeria comprising of eight (8) States namely Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, Taraba States and the Federal Capital Territory, Abuja.

The NCRI, through its Oilseeds Division, had carried out Baseline Surveys on sesame seed production, processing and utilization in Nassarawa, Kebbi and Yobe states.

Among the strategies and specific objectives of the Oilseeds Division are:

- To evaluate pest and disease, monitoring and control methods in the production of sesame seed.
- To evaluate agronomic traits and conduct investigations into the input requirements of acceptable and promising varieties of sesame
- To develop processing, utilization and storage technologies (adding value) for these oilseeds

Table V

Resume of Key NCRI Staff Involved in the Project

S/N	Name	Educational Level/Functions	Field Expertise related to Project	Project Responsibilities
1	Dr. M. A. Adagba	Phd. (Agronomy)	Head, Sesame Research Programme	Coordinator
2	Dr. M. M. Ishari	Phd. Breeder	Breeder	Processing and storage studies. Development of predictive protocols etc.
3	P. I Audu	Agronomist	Disease and Pest Monitoring	Field Evaluation

NSPRI

The Nigerian Stored Products Research Institute carries out research into bulk storage problems of export commodities and local food crops and in particular it conducts research into special problem areas such as stored product pests, pesticide formulations, residue and mycotoxin surveys, development of storage techniques and specifications for top quality sheanuts and sesame seeds, cleaning and sorting procedures, etc.

Table VI

• **Resume of Key NSPRI Staff Involved in Project**

Name	Educational Level/Function	Field of Expertise related to the project	Project Responsibilities
Pessu P.O	PhD.	Entomologist	Coordinator

Afolabi J.F	M.Sc	Microbiologist (Head Sesame and Sheanut Programme	Processing and Storage, Quality Standards.
Arowora K.A	PhD	Chemist	Laboratory Standards
Aina J.F	M.Sc.	Chemist	Laboratory Standards
Olorunfemi M.F	M.Sc	Microbiologist	Laboratory Standards
Omolaro M.A	B.Sc	Storage Engineer	Development of Dryer and packaging structures
Ogunjinrin O.C	HND	Technologist	Laboratory Analysis

National Agency for Food and Drug Administration and Control (NAFDAC)

Is mandated to regulate and control the manufacture, importation, exportation, distribution, advertisement, sale and use of foods and chemicals/ drugs. It is also empowered, as the national regulatory authority to register food and drugs and certify packaged, processed or semi processed food commodities for export. NAFDAC activities include establishment inspection, sampling and laboratory analysis. The Agency also conducts import inspection of regulated products and ensures Good Manufacturing Practices (GMP) as well as Hazard Analysis and Critical Control Points (HACCP) Concept on the basis of Codex and ISO standards. The Agency also monitors and controls the advertisement of regulated products. Its laboratory for Food Quality and Safety Analysis is the main laboratory that trains and performs aflatoxin analysis of products destined for export. This laboratory will provide a methodological support for Nigeria sesame seed and sheanut/butter sampling and aflatoxin analysis.

Table VII

Resumé of Key NAFDAC Staff Involved in the Project

Name	Educational Level/Function	Field of Expertise related to the project	Project Responsibilities
Stella Denloye	B. Sc. Biochemistry, M.Sc. Analytical Chemistry. Deputy Director / Head of Laboratory	Laboratory Analysis	Laboratory Component
Mrs. H. J. Keri	B. Pharm Director/Head of Establishment Inspection	Field Sampling and Establishment Inspection	Sampling of Products
Mr. M. S. Momodu	B.Sc Director/ Head of Ports Inspection	Ports Inspection and Certification of Products	Exports Certification and Sampling .
Jane Omojokun	B.Sc (Micro), M.Sc (Ind. Micro). Deputy Director (Regulatory Affairs)	Trained Food Scientist GMP/HACCP Facilitator	Trainer on SPS
Ogochukwu Mainasara	BSc. Micro; MBA Deputy Director(Food Registration)	Food Scientist	Registration of Food Products
Mr. A. O. Adegboye	B. Sc (Food Tech) MSc. (Env. Resources Mgt) /	Food Safety, Enquiries on SPS matters, Risk	SPS Trainer

	Chief Regulatory Officer (Codex)	Assessment	
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Federal Produce Inspection Service (FPIS)

Is the organisation that certifies products on a standard 3% sample for quality, weight, fumigation and packaging (QWFP). The FPIS is located at the key ports of exit in Nigeria. Through its certification system it provides some element of traceability of produce to warehouses of storage and source of production. It also assigns country of origin certification and links exporters to the Nigerian Export Promotion Council through the QWFP certification system. The FPIS will collaborate with NAFDAC in implementing the early warning system at field level required to control aflatoxin, pests and other contaminants in sesame seed and sheanut / butter production.

IITA

International Institute for Tropical Agriculture (IITA) conducts research, training and germplasm development and information exchange activities in partnership with regional and national programs in many parts of sub Saharan Africa. The research agenda addresses crop improvement, plant health and crop management and resources. IITA has worked over the past fifteen years on toxigenic fungi and resultant mycotoxin contamination in staple food and export crops in Africa. Research has focused on the impact of aflatoxin on child health and related socio-economic factors, the development and deployment of management practices for the control of aflatoxin, ecological factors that influence *A. flavus* infection, the control of *A. flavus* in the field with atoxigenic *A. flavus* – strains and related economic studies looking at cost/benefit of aflatoxin reducing technologies, awareness campaigns, information exchange through conferences and workshops and adoption, impact and uptake.

IITA has recently succeeded in the development of antibodies for the immunoassay of semi quantitative determination of Aflatoxin. The methodology has been validated to screen for Aflatoxins at very low levels (4ug/Kg). The benefits include reducing the cost of screening for AFs to \$1. IITA's contribution to the project will be in the form of training in ELISA and some research activities particularly on *Aspergillus* identification as well as assisting NAFDAC in the procurement of materials and supplies for ELISA technique.

IITA also is presently linked with its office in Benin that is involved in the STDF Grant Project on Shea nuts.

Table VIII

Resume of Key Staff of IITA Involved in project

Name	Educational Level/Function	Field of Expertise related to the project	Project Responsibilities
Dr Ranajit Bandyopadhyay	PhD. Plant Pathologist and Mycotoxin Specialist	Management of Aflatoxin and Toxigenic Fungi	Training on aflatoxin analysis by ELISA identification of <i>Aspergillus</i> species
P. Lava Kumar	PhD. Virologist	Diagnostics and development of immunoassays	Training on aflatoxin analysis by ELISA

APPENDIX II

Sustainability of the project.

The Nigerian Government is committed in its effort to bring about a tremendous growth in the non-oil export. Institutional frameworks under the strict leadership of the NEPC with support and policy oversight of the Federal Ministry of Commerce and Industry and the other core working group will be in place to ensure efficiency, transparency and accountability in the administration of the project grants.

Frameworks for Sustainability

After the initial 24 months duration, the following options are proposed to the Project Steering Group for consideration and advice as the best possible way of managing the project to ensure that the activities of the project are sustained even after the initial 24 months pilot period.

1.1 **Commercialization** of the project to be operated and managed as a commercial entity with a Public Private Partnership (PPP) arrangement where farmers, exporters and other users will be expected to pay a predetermine service charge to use the project equipment, (driers, storage facilities). The proceeds will be used in the maintenance of the project facilities including the website. The Aba Common Facility Center in Aba, Abia state of Nigeria is managed in similar pattern. It is a project funded by the **UNIDO** and NEPC to enhance the quality of leather and leather products for exports from Nigeria. The management structure will involve representatives from the NEPC, State Ministry of Agriculture in states where the project is being implemented, State Agriculture Development Projects (ADP), and Industry Associations of Sesame seed and Sheanut butter.

1.2 **Outsource** the sustainability aspect of the project to a private Enterprise.

1.3 **Auction** the project equipments and facilities to a group e.g. the Associations. The proceeds will go to a pool account which will be used to sustain the project and possibly continue in other producing areas. It should be noted that the project is a pilot project starting with 4 states out of a total of 12 states where Sesame seed and Sheanut butter are produced

Clause:

A clause will be included in the sustainability framework where performance indicators will be attached to any of the options taken above. The Commercialisation, Outsource or Auction frameworks will come with an agreement and licence to be issued in order to ensure sustainability of the project. Failure to comply will lead to the revocation and withdrawal of licence.

2. **Updating of the Website regularly**

3. **Training and re-training** of Trainers, Standard Enforcement Agents Vis-a-vis new research findings

4. **A bi-annual Forum** for all Stakeholders on updates in the Sector.