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SUSTAIN

NIGERIA

OCTOBER 17 - 24, 1991

ASSESSMENT MISSION

S haring
U nited
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T echnology to
A id in the
I mprovement of
N utrition

A U.S. Private Food Industry initiative
in collaboration with the U.S. Agency for International Development
through a Cooperative Agreement with the National Cooperative Business Association

Upgrading the Food Processing Industries in Developing Countries.

Why SUSTAIN?

SUSTAIN represents a successful collaborative effort between the U.S. food industry and the Agency for International Development (A.I.D.) to upgrade food processing in developing countries. It provides an excellent model for similar private-public sector joint ventures in health, agriculture and other areas of concern to developing countries.

Food processing is a major contributor to development. It serves multiple roles. Food processing can increase the available food supply by extending the life of perishable food products. It can improve the nutritional quality of the diet by making nutritious foods available the year round. It can lead to the growth of related enterprises in transportation, storage, distribution and marketing. And, it can produce much needed foreign exchange by creating value added products both for export and for internal substitution of imported processed foods.

The U.S. food industry has embraced the concept that freely sharing its expertise and knowledge is of mutual benefit to recipient and donor - to the recipient by improving current operations - to the donor by contributing to a healthier global future.

How SUSTAIN Works

A.I.D. missions and trade associations in developing countries publicize SUSTAIN's goals and activities. Executives of U.S. food companies with technical expertise and overall knowledge of the food industry serve as the SUSTAIN Steering Committee, providing guidance and overseeing activities.

Food related companies in developing countries submit their requests to SUSTAIN through the A.I.D. mission or a designated organization in their country. SUSTAIN screens all incoming requests and if necessary asks for additional information. Appropriate U.S. companies are then invited to respond.

Some problems can be readily resolved by providing information. Others require that consultants be sent. When a consultant is sent, the usual assignment is for one to three weeks. Upon completion of the assignment, the consultant prepares a report describing findings and making recommendations. Depending on need, some consultants may return for follow-up visits to ensure that recommendations have been appropriately implemented.

SUSTAIN Helps

Requests are diverse. Help may be needed to solve processing problems, to identify equipment needs and sources of new and used equipment, to train personnel in the use of new equipment and new technologies, to find new uses for indigenous commodities, to establish or improve quality assurance procedures, to control insects and rodents in food processing plants and to improve plant layouts and materials handling.

In the past, U.S. food companies, large and small, have provided technical assistance in the form of information, consultants and training to food processors in Africa, Asia, Latin American and the Caribbean.

SUSTAIN PROGRAM

ASSESSMENT MISSION TO NIGERIA

OCTOBER 17 - 24, 1991

MISSION TEAM:

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NCBA/SUSTAIN Project 111.001

NIGERIA REPORT

SUSTAIN

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SUSTAIN TEAM REPORT

LOW-COST WEANING FOODS IN NIGERIA

Executive Summary

SUSTAIN team members visited Nigeria between October 17-24, 1991 along with two team members from the Women & Infant Nutrition Support (WINS) project of the U.S. Agency for International Development (USAID) Office of Nutrition.

According to WINS team members, over-reliance on the popular low cost unfortified cassava, maize, or sorghum gruels (sometimes known as "ogi", "akamu", or "koko") is implicated in malnutrition at the weaning age. These are fermented foods made at home by vendors using their own individual recipes; they tend to be "gut fillers" of low overall nutrient content, further diluted for use. High quality weaning foods are on the market and are purchased by the poor but are unaffordable in the quantities needed to prevent malnutrition. Inflation and other economic disruptions attendant on Nigeria's adoption of the Structural Adjustment Program are also reported to be contributing to the prevalence of malnutrition at weaning.

The two-member SUSTAIN team, accompanied by the WINS team and several members of Nigerian government and university organizations, visited several private sector firms which expressed interest in a possible low-cost weaning food and which are currently providing food products to mass markets in Nigeria

Several manufacturers would have the manufacturing and marketing capabilities to produce and market a nutritious low cost weaning food. However, there are major barriers to market entry for such a product, and the existence of a strong seller's market in Nigeria makes the prospect difficult. However, SUSTAIN could help address those barriers. Specific actions by SUSTAIN are recommended. These include the solicitation of weaning food venture proposals from Nigerian private sector firms and the provision of short-term one-on-one assistance from the U.S. private sector directly to selected firms to assist the formulation and implementation of those ventures.

I. INTRODUCTION

A. Purpose of the Assessment Mission

SUSTAIN team members were requested to participate in an assessment of the potential for manufacturing and marketing of a low cost weaning food in Nigeria. The background for the assessment is set out in detail in the Scope of Work which is included in part as Appendix A of this report. Quoting from that Scope of Work, "...such an assessment would facilitate private sector involvement in optimal infant and young child feeding through the production of a low cost weaning food... ". The assessment mission was a joint effort between SUSTAIN and the Women and Infant Nutrition Field Support (WINS) project of USAID. SUSTAIN team members focused their efforts on assessment of selected manufacturers as potential candidates for assistance; assessment of Nigerian government organizations as partners in providing such assistance; and on discovery of mechanisms for channeling the type of help SUSTAIN could provide.

B. SUSTAIN Program Description (See Appendix B:)

II. ASSESSMENT OF NEEDS

The joint team members met with representatives of the Nigerian National Council on Food and Nutrition (NCFN) and visited the Federal Institute of Industrial Research Oshodi (FIIRO). The Chairman of NCFN, Dr. Ogunye, is a senior official in the Ministry of Science and Technology, and other members represent FIIRO, University of Lagos, and other agencies on NCFN. NCFN is primarily a coordinating body, with little staff. The Coordinator of NCFN, Prof. Tola Atinmo, accompanied the team on its visits to manufacturers.

The team members, accompanied by their NCFN and FIIRO counterparts, visited and assessed the following four manufacturers who had been identified in a preliminary assessment as potential producers of low cost weaning foods: JHY Foods, Temitope Bakery and Catering Services, Lisabi Mills, and Domino Stores. A planned trip to manufacturers in Kano was not made due to lack of time. The SUSTAIN team members wish to recognize the good preparation carried out for these firm visits by the local consultants, Dr. Olatunji and Mrs. Kupoluyi.

Detailed data from these assessments are included in Appendix B attached.

The SUSTAIN team members approached each firm visited with the following questions in mind: "Could this firm handle a weaning food project in the near term?" "What types of assistance would be needed to enhance the firm's chances for successfully carrying out a weaning food project?"

The SUSTAIN team members found varying degrees of capability within the firms visited. One of the firms would be technically capable of handling a weaning food project with relatively modest technical and managerial assistance, but currently has a business focus in a different market area. Other firms visited would need greater inputs of assistance to handle a weaning food project. The assistance needed would include project design and technoeconomic analysis, product and process development, marketing planning, plant implementation, and startup. One firm indicated need for sourcing used process equipment. The team feels that all the firms contacted harbor a notion that some type of physical assistance beyond technical and managerial expertise is implicit in the attention from USAID.

None of the firms visited have any experience in weaning foods or in the formulation or manufacture of nutritionally enriched food products. All of the firms visited expressed an interest in receiving SUSTAIN assistance. All of the firms also indicated an interest in principle in packing a nutritious weaning food. This response is not unexpected since the firms at this point were not obliged to make any business or financial commitments.

Team members also visited FIIRO and observed the pilot plant set up to make "Soyogi", a soy

based weaning food under development at FIIRO for about 15 years. The process involves the preparation of a soy milk which is concentrated, combined with cassava, and subjected to flash drying in a specially-designed drying unit. FIIRO holds process patents and a trademark. This process and the "Soyogi" trademark are being licensed on a non-exclusive basis to a private firm, Domino Stores, which was one of the firms visited by the team during this mission.

Domino Stores made a very effective presentation of their product positioning strategy and marketing plans for Soyogi. Domino is a significant player in the retail market with several stores around the country. However, they have no manufacturing facilities; a new plant being built now to produce Soyogi will be their first venture in food processing. It also became clear that Domino's positioning will place their product at a price point just below the major multinational brands and therefore again out of reach of most Nigerian consumers. Furthermore, in adjusting the product to improve palatability, sugar content was increased, which had the effect of lowering the product's fat content below optimum for weaning food.

FIIRO staff members informed the SUSTAIN team that they are also licensing another private firm to produce Soyogi. This firm would apparently be owned in part by the FIIRO staff members. How the relationship with FIIRO would be handled and how conflicts of interest would be resolved was not mentioned. FIIRO staff members indicated interest in receiving SUSTAIN assistance on this project.

Barriers to Market Entry

Nigeria's rapidly growing population provides a very large potential market for low cost weaning foods. One official estimated there are a million babies a year in that market. However, there are major barriers to entry into the market. The barriers include the technical issues of product formulation, nutritive content, raw materials supplies, manufacturing system upgrading, quality control, and packaging, and also very importantly the design and execution of a marketing strategy and program.

In discussions with public- and private-sector officials, the team was informed that high-quality weaning foods meeting international standards for nutrition and possessing suitable flavor and texture are marketed in Nigeria by several major multinational firms. However, these products are in a price range that is beyond the reach of most Nigerians. So far, the present upscale weaning food marketers have maintained a market positioning and strategy that precludes them from entering the low-cost market segment.

The very strong value image of the upscale products constitutes a market entry barrier for low cost weaning foods. This can be attributed to the success of the marketing efforts on behalf of the upscale weaning foods, so that they are imbued with almost magical properties; low-income

mothers buy such products but cannot afford to feed them in quantities sufficient to properly nourish the child, that is, the mothers excessively dilute the product.

Packaging constitutes another barrier to entry for a low-cost weaning food. At lower price points, packaging material can become a major cost item. The upscale products are very well protected and attractively presented in lithographed tin cans. A low price product cannot support the cost of this type of packaging, so a compromise package must be found that provides reasonable product protection and reasonable presentation.

It was felt by the SUSTAIN team that consumers need to have some identifier that they could rely on to assure quality and value in a weaning food. At present the tradenames and packaging of the upscale products are the only such criteria available.

III. POSSIBLE AREAS OF ASSISTANCE

All firms interviewed stated they would welcome SUSTAIN assistance, and FIIRO personnel indicated interest in SUSTAIN assistance to the Soyogi commercialization effort. The team assumes that other firms not interviewed would also be interested. It is the opinion of the SUSTAIN team that the firms interviewed would in fact benefit from such assistance.

SUSTAIN could provide short-term one-on-one assistance from the U.S. private sector directly to local private sector firms. Technical assistance from Project SUSTAIN could potentially hasten the completion of one or more product/marketing efforts by candidate companies. However, the structuring of such assistance requires careful consideration: (1) services of SUSTAIN consultants should be sought by the private sector firms involved; (2) there must be a mechanism for assuring that the product/marketing effort meets the criteria of low-cost and nutritional adequacy; (3) consulting assistance available through Project SUSTAIN should not harm indigenous efforts to provide such services in either the private or the public sector.

The team believes that some assistance in overcoming a major market entry barrier will be an essential element in a program aimed at encouraging low-cost weaning foods businesses in Nigeria. The team suggested that the establishment of a readily recognizable symbol of nutritional quality for such foods is an essential. The cost of a marketing campaign to achieve that recognition is beyond the experience and financial capability of any one of the firms interviewed, and therefore constitutes a major barrier to market entry. It would be useful for an appropriate Nigerian government body to undertake that campaign, and the team provided this suggestion to members of the National Council on Food and Nutrition. SUSTAIN could provide private sector advertising/promotion expertise to this quality recognition effort.

USAID could play a useful role in providing improved child nutrition in Nigeria by following a vigorous two-pronged approach in encouraging the development of a competitive market in low-cost weaning foods. One element is assistance and encouragement to the National Council on Food and Nutrition to carry out the recognition campaign described above. The other element is technical, marketing, and managerial assistance through SUSTAIN to appropriate private sector firms attempting to enter that market.

Handling assistance of the type provided by SUSTAIN to the private sector is not a familiar activity for local USAID missions, in Nigeria and elsewhere. Mechanisms for handling that assistance need to be worked out to assure USAID staff time is used productively, to minimize abuse of the assistance provided, and to maximize the effect of the assistance on the nutrition of children.

Criteria for the qualification of a firm and project for assistance are needed. The following product criteria are proposed for discussion, that is, the candidate firm must have a proposed venture to produce a product that has:

- (1) nutritional content meeting internationally recognized standards for weaning food
- (2) nutrient density as consumed greater than 50 kcal/100 ml.
- (2) retail market price less than half of the market price of current upscale weaning foods

Barriers to Effective SUSTAIN Assistance

Several factors need to be recognized as real or potential barriers to the effective transfer of SUSTAIN assistance to businesses. Most important would be the role of government agencies involved in the weaning food movement. The assistance, or at least the cooperation, of agencies such as NCFN and FIIRO would be necessary, and it would be easier for officials to be gatekeepers for such assistance than to be expeditors. If the assistance of NCFN is needed, should NCFN receive funding from USAID to cover the cost of participation?

An organization such as FIIRO, which is government funded but also receives industrial contract funding, could see the SUSTAIN assistance as competitive to their own efforts. The team got the impression that FIIRO is chronically underfunded, which situation would tend to aggravate such an attitude. Furthermore, FIIRO could understandably favor its own approach, Soyogi, to the detriment of other competitive approaches to the market.

IV. FOLLOW-ON ACTIONS

In view of the generally prevailing conditions in the country, namely a seller's market where demand is greater for most products than existing supply, manufacturers will be more interested in products with higher profit margins. In this environment, it is questionable whether any of the companies interviewed will be interested in entering the low cost weaning food market without considerable assistance and incentive.

Because of the clear need, however, it seems appropriate for SUSTAIN to undertake the following action plan:

- (1) SUSTAIN prepares and distributes, with the cooperation of USAID Lagos, invitations to the firms selected by the local consultants, including those visited by the SUSTAIN/WINS team, to submit proposals for a business entry in the low cost weaning food market. The invitations should contain example formulations and nutritive requirements for the products. The invitations should indicate that SUSTAIN is prepared to assist qualified firms with technical and marketing expertise aimed at helping them overcome the formidable barriers to market entry described in this report.
- (2) SUSTAIN prepares a short list of candidate firms from the submitted proposals.
- (3) SUSTAIN provides structured assistance to the short listed proposals on a prioritized basis.

Lisabi Mills in particular should be encouraged to submit a proposal for low cost weaning food based on extrusion technology. Lisabi is very well suited to undertake such a project and could obtain side benefits for its other product lines in the course of receiving SUSTAIN assistance on the extruded weaning food.

The Nigerian-American Chamber of Commerce should be contacted by SUSTAIN to explore the possibility of the Chamber helping encourage the submission of proposals from the Nigerian private sector. One of the company officials visited by the SUSTAIN team is the current President of the Chamber.

NCFN should be encouraged to promote the introduction of a range of competing types of low cost weaning foods. USAID should encourage NCFN to establish a symbol of approval for weaning foods, and assist the popularization of such a symbol. If NCFN does take such a step, SUSTAIN could provide assistance in the design and implementation of a marketing program for communicating that symbol.

WINS team nutritionists on this mission expressed interest in a powdered biscuit that could be the base for an appropriate weaning food. Temitope Bakery, one of the firms visited, has available biscuit making capacity at the present time. Temitope's production, however, is limited not by market demand but by availability of wheat flour since the imposition of a government ban on wheat imports. If adequate raw materials become available, this excess capacity could disappear. The relative economics of the production and marketing of weaning foods versus biscuits would require additional study. In the long run this approach will have to be viable not on the basis of "free" capital equipment available, but with account taken of the cost of equipment amortization.

WINS team members also recommended SUSTAIN assist the Soyogi program being carried on by FIIRO. One commercial implementation of Soyogi is being undertaken, but it is not falling into the low cost category. Other commercial implementations of Soyogi could be submitted by the implementing private firms as candidates for SUSTAIN assistance as outlined above.

The SUSTAIN team finds little utility in USAID support for continuing nutrition studies and surveys in Nigeria unless they can be shown to result in actual sale and use of nutritive foods. Although this team's time for study of the in-country situation was relatively short, the team saw little evidence that public sector activities will by themselves successfully address this need without the participation of private sector firms.

Donald L. Maxwell
SUSTAIN Team Leader

Jack R. Sinunu
SUSTAIN Team Volunteer

Appendix A

SCOPE OF WORK

Joint WINS/SUSTAIN Assessment of the Potential for Manufacturing and Marketing of a Low Cost Weaning Food in Nigeria.

I. Background

This assessment is the outcome of site identification missions to Nigeria undertaken by Bibi Essama, Director of the Women and Infant Nutrition Field Support (WINS) project (August 5-8 and September 4-6, 1991), Dr. Marian Zeitlin, Faculty member at Tufts University School of Nutrition and subcontractor for the WINS project (August 6 - September 7, 1991), and Carolyn Coleman, Technical Officer for the Sharing U.S. Technology to Aid in the Implementation of Nutrition (SUSTAIN) and Food Technology and Enterprise (FTE) projects.

As a result of discussions held with the AID Affairs Officer (A.A.O.) in Lagos and members of the National Committee on Food and Nutrition, it was recommended that an assessment of the potential for local manufacturing and marketing of a low cost weaning food be conducted and funded through the WINS and SUSTAIN projects. It was determined that such an assessment would facilitate private sector involvement in optimal infant and young child feeding through the production of a low cost weaning food, help fill information gaps identified by the joint World Bank, UNICEF, and A.I.D. Mission to Nigeria on Nutrition and Food Security (May 5-28, 1991), and support objective IV.1 of the work program of the Nigerian National Council for Food and Nutrition (NCFN). This objective is to assess the potential nutrition impact and commercial viability of low cost weaning foods (soy, ogi and eko elara).

In order to obtain background information on the existing food manufacturing infrastructure in Nigeria for use in preparing the scope of work for this assessment, the WINS project was requested by the AAO to conduct a preliminary review of local manufacturers of weaning foods and related children snack foods. The review covered the two urban areas of Lagos and Kano, which have the largest concentrations of industrial food manufacturing in the South and the North of the country.

The preliminary WINS-funded review was conducted by two local consultants - Dr. Oluwole Olatunji and Ms. C.F. Kupoluyi of the Federal Institute of Industrial Research, Oshodi (FIRO), Lagos, in close collaboration with Dr. Marian Zeitlin. The review provides useful information concerning the local manufacturers of weaning and children's snack foods, and their level of interest in weaning food production, the production technology(ies) used by them and the characteristics of their products.

The current feasibility study builds upon these preliminary findings and involves a broader assessment of opportunities for and constraints to the development and marketing of a low cost nutritious weaning food product in Nigeria. Specific objectives of this assessment are described in the following section.

II. Scope of Work

A. Purpose of the visit

A team from the WINS and SUSTAIN projects will visit Nigeria for 10 days (from October 17-27, 1991). The basic purpose of the visit is to conduct an assessment of the weaning food situation in Nigeria and determine whether and how the present physical and marketing infrastructure can be used to produce and market a low cost and nutritious weaning food.

B. Specific objectives

Specific objectives of the mission are to:

1. Assess the current needs, capabilities and willingness of local manufacturers to produce a low cost weaning food. Specific points to be covered include:
 - 1.1 characteristics of their products, including nutrient composition and cost per 100 calories and per gram of protein;
 - 1.2 manufacturing information, including production capacity, market share, type, source and vintage of equipment, packaging and storage facilities;
 - 1.3 cost and supply information, including sources of supply and cost of raw materials, supply problems and their potential solutions;

- 1.4 current marketing structure and strategy(ies) including wholesale and retail outlets, characteristics of sale agents, wholesale and retail costs at different stages, turnover of stocks, interactive process with market vendors, advertising;
 - 1.5 consumer characteristics, i.e. who buys the product, and how often they use it;
 - 1.6 assessment of the development potential of the manufacturing infrastructure including availability of equipment and spare parts, appropriateness of the technology(ies), available source(s) and cost of additional equipment;
 - 1.7 assessment of the financial viability and managerial capacity of the firm and of manufacturers' perceptions of their needs and constraints.
2. Assess the feasibility of selected plants converting or expanding their present machinery/equipment to produce an acceptable, nutritious weaning food, at a price that is affordable to low income families. This objective will include a determination of the type(s) of low cost weaning food products that the manufacturers are able and willing to manufacture, their nutritional and ingredient formulations and how the product(s) will be marketed. In identifying the type(s) of weaning food product lines that might be developed, emphasis must be placed on locally grown cereal grains and other staples rather than on imported food commodities such as wheat. The following specific points will be covered:
- 2.1 physical plant conversion requirements and/or adjustments;
 - 2.2 nutrient composition and ingredient formulation and of the recommended weaning food product lines and their cost implications;
 - 2.3 sourcing of ingredients (i.e., are ingredients available throughout the year? Can they be sourced from the private or public sector, or both?)
 - 2.4 business analysis and planning (i.e., cost of production of the weaning food(s) and management requirements);
 - 2.5 marketing: distribution in bulk or prepackaged form? Research and development requirements as they relate to consumers' acceptance of the product(s);

- 2.6 macroeconomic environment: cost of doing business in Nigeria as it relates to fiscal, monetary and labor policies (e.g. tax regime, exchange rates, interest rates, and wage indexation).

C. Activities

The assessment team will fulfill its scope of work through site visits to selected plants, meetings and discussions with representatives of the food industry, government officials, members of the NCFN, the AAO in Lagos, the World Bank and other organizations involved in nutrition activities in Nigeria. Existing documentation on the weaning food situation in Nigeria will also be reviewed.

Because of the limited time available for this assignment, site visits will be limited to manufacturers and food markets in the Kano and Lagos greater urban areas, which have the largest concentrations of industrial food manufacturing in the North and South of the country. The manufacturers to be visited will be drawn from the list of manufacturers who were identified during the preliminary review funded by the WINS project. The report of this review will be provided to the team before the onset of this assessment.

The first working day will be devoted to briefing sessions with the AAO in Lagos, members of the NCFN and representatives of other agencies, as appropriate, and to developing the outline for the integrated report. The team will present its findings to the AAO and the NCFN on the last day of the mission.

A detailed schedule of activities will be prepared by the NCFN and the FIRO staff, in consultation with relevant government and private sector representatives. Since this scope of work provides for a 6 day work week, it is suggested that visits to some manufacturing companies be scheduled on Saturday of the first work week.

III. **Team Composition and Level of Effort**

The AID Office of Nutrition, through the WINS and SUSTAIN projects, will provide U.S. technical consultants with expertise in the following areas:

- weaning food product development and promotion: Dr. Fred Billerbeck, Ms. Peggy Sheehan and Dr. Marian Zeitlin
- marketing: Dr. Jack B. Sinunu and Dr. Amy Sampson

- financial and market analysis: Mr. Jide Zeitlin
- food technology: Dr. Fred Billerbeck and Dr. Amy Sampson
- manufacturing hardware and equipment: Dr. Fred Billerbeck
- microenterprise/small-scale enterprise development: Dr. Amy Sampson
- infant and young child feeding and nutrition: Drs. Amy Sampson and Marian Zeitlin

The total level of effort (LOE) anticipated to fulfill the above scope of work is 55 person days of U.S. technical assistance and 35 person days of local technical assistance, as outlined in Table I.

As shown in Table II, the WINS/SUSTAIN team members have been paired with local counterparts who have agreed to contribute their technical expertise and local experience for the completion of specific tasks of Nigerian counterparts. Accordingly, local expenses (honoraria, in-country travel) associated with their participation in this assessment will be covered by the WINS project.

The following Nigerian counterparts have agreed and/or have been recommended to collaborate with the WINS/SUSTAIN team on this assessment:

- Dr. Olu Ogunye, Chairman of the NCFN and Director of Medical and Pharmaceutical Sciences in the Federal Ministry of Science and Technology. Dr. Ogunye will review and approve the scope of work as well as the work schedule and, as necessary, provide his technical input to the assessment.
- Dr. F.A.O. Asinowo, Assistant Director at FIIRO and member of the NCFN, will draft the work schedule and work with the WINS/SUSTAIN team as available. It should be noted that Dr. Asinowo has been commissioned by the NCFN to pursue the development of commercial weaning foods.
- Dr. Nike Grange, faculty member at the University of Lagos and member of the NCFN, will work with Drs. Marian Zeitlin and Amy Sampson on the nutritional formulation of the weaning food product(s) and with Ms. Peggy Sheehan on ingredient formulation.

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- Professor Tola Atinmo of the University of Ibadan and Dr. Tade Aina of the University of Lagos will review the scope of work and work schedule for the visit and advise the team members during the assessment, as appropriate.
- Dr. Oluwole Olatunji, food technologist and Research Director at FIRO and Mrs. C.F. Kupoluyi, market analyst at FIRO will plan and coordinate the site visits to local manufacturers and food markets and accompany the SUSTAIN team members, as appropriate. Additionally, Dr. Olatunji will work with Dr. Billerbeck as indicated on Table II.
- Dr. Christian Imosili, Executive Director of the Association of Food and Beverage Manufacturers and a Market Consultant from UNILAG (to be designated) will collaborate with Dr. Jide Zeitlin on the market profitability/financial analysis task and advise the team on private sector issues, as appropriate.
- Mr. Kayode Taiwo, Lecturer in Sociology at the University of Lagos, will deal with issues of social/cultural acceptability and cost of the proposed weaning food formulation(s), in collaboration with Drs. Marian Zeitlin, Amy Sampson and Nike Grange.

IV. Deliverables

The output expected from this consultancy is an integrated report, to be prepared jointly by the WINS and SUSTAIN project team members, and their Nigerian counterparts. Dr. Marian Zeitlin, coordinator of the U.S. assessment team, will have primary responsibility for integrating the various report components into an integrated document.

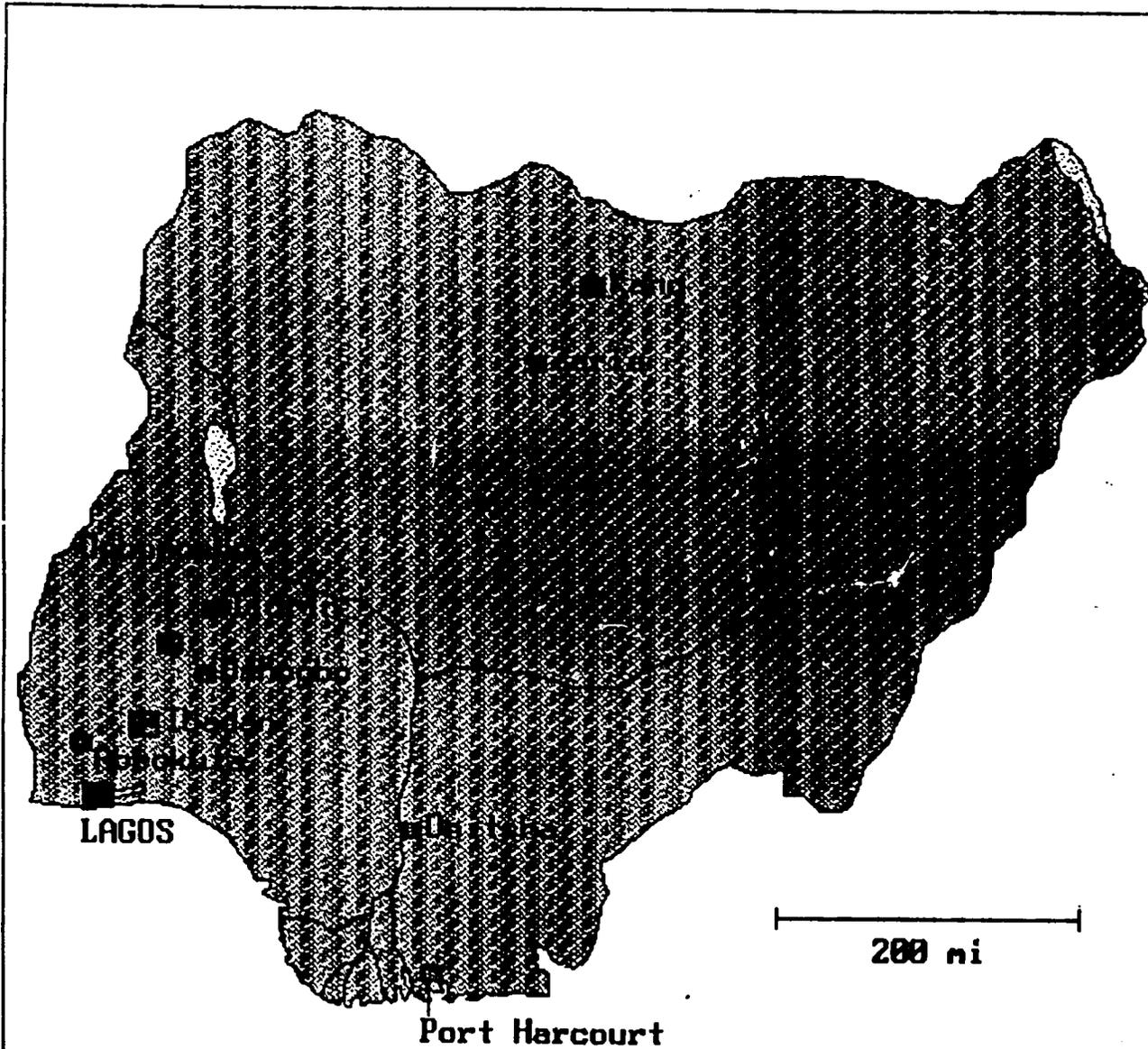
The report must cover all the points/issues listed in the scope of work and include a tentative plan of action for a follow-up intervention. The report (in draft) will be submitted to the NCFN and the AAO for their review and comments a day before the debriefing session(s). A more comprehensive report will be prepared in Washington by the SUSTAIN/WINS team following the review of the draft by A.I.D./Washington, and Education Development Center, Inc. and the National Cooperative Business Association - contractors for the WINS and SUSTAIN projects. The final report will incorporate suggestions and comments made by all the reviewers. It will be officially submitted to the A.A.O. and the NCFN three weeks following the completion of the field assignment.

TABLE I: SUSTAIN/WINS TEAM COMPOSITION

AREAS OF EXPERTISE	Anticipated LOE	Funding Source
NUTRITIONIST - Dr. Marian Zeitlin	10 person days	WINS
MARKETING SPECIALIST - Dr. Jack Sinunu	6 person days	SUSTAIN
MARKETING/FINANCIAL ANALYST - Mr. Jide Zeitlin	7 person days	WINS
FOOD TECHNOLOGIST/ HARDWARE AND EQUIPMENT SPECIALIST -Mr. Donald L. Maxwell	6 person days	SUSTAIN
FOOD AID MANAGEMENT SPECIALIST/FOOD TECHNOLOGY - Ms. Peggy Sheehan	6 person days	SUSTAIN
NUTRITIONIST/SMALL-SCALE ENTERPRISE DEVELOPMENT/ MARKETING - Dr. Amy Sampson	10 person days	WINS

TABLE II: NIGERIA ASSESSMENT TEAM

<u>Tasks:</u>	<u>Team Members:</u>
1. Assessment Coordinators	Drs. Osinowo, Atimo and M. Zeitlin
2. Assessment of needs and capacity and interest of local manufacturers in weaning food production	
● Physical plant/Hardware technology/Product	Drs. Maxwell and Olatunji
● Packaging and Storage	Drs. Maxwell and Olatunji
● Marketing	
- Distribution from producers to vendors (wholesale and retail outlets	Drs. Sampson, Taiwo and Sinunu
- Advertising	Dr. Sinunu and Ms. Kupoluyi
- Consumer Acceptability	Dr. Sinunu and Ms. Kupoluyi
● Business/Financial Analysis and Planning	Mr. J. Zeitlin and Dr. Imusili
● Nutrient Composition/ Cost Analysis	Drs. Zeitlin, Grange and Taiwo
● Ingredient Formulation including sourcing	Ms. Sheehan and Dr. Sampson
3. Assessment of needs and capabilities of local traditional "pap makers"	Drs. Sampson, Grange, and Ms. Sheehan



NIGERIA

Population
115.3 Million

Area (sq mi)
356,667

City Population

- Over 1,000,000
- Over 500,000
- Over 100,000
- Under 100,000

- Capital

NIGERIA

Government

■ **Type: Federal Republic**

■ **Government Leaders:**

PRESIDENT Ibrahim BABANGIDA (1985)

■ **Major Political Parties:**

None

NIGERIA

Major Imports	Major Exports
Machinery Vehicles Iron & Steel Textiles Paper Products Chemicals Foodstuffs Fuels	Petroleum Cocoa Rubber Timber Tin Palm Kernels
■ Balance of Trade (1988): -\$1,013,000,000	

NIGERIA

Natural Resources	Agricultural Products	Major Industries
Petroleum Tin Columbite Iron Ore Coal Limestone Lead Zinc Natural Gas Marble Fish	Sorghum Yams Millet Cassava Corn Plantains Sugarcane Palm Products Beans Rubber Melons Cocoa Wheat Soybeans Peanuts Cotton Grains	Beverages Tobacco Vehicles Foodstuffs Textiles Chemicals Pharmaceuticals Rubber Iron & Steel Printing Footwear Building Materials Lumber

Appendix B

SUSTAIN PROGRAM

The program **Sharing U.S. Technology to Aid in the Improvement of Nutrition (SUSTAIN)** provides access to U.S. expertise in food processing to help improve nutrition in the developing world. Technical assistance is provided at no charge by professionals from U.S. firms and universities who agree to donate their time and expertise to the project. The program is made possible through financial support provided by the U.S. Agency for International Development (AID). It is managed through a cooperative agreement between USAID and the National Cooperative Business Association (NCBA).

The program helps improve food quality, expand production, and lower operating costs of locally grown and processed foods by providing technical assistance in the following areas: (a) food safety, quality, and sanitation (b) food preservation and storage (c) food fortification (d) weaning foods (e) packaging (f) marketing (g) food technology equipment and (h) environmental technologies.

NCBA was founded in 1916 and is a membership association representing America's 45,000 cooperative businesses. NCBA promotes the cooperative model as a time-tested, self-help vehicle for revitalizing failing economies and developing new ones, based on local needs and conditions. Known overseas as CLUSA, NCBA has worked overseas with its own member co-ops, U.S. AID, World Bank, UNDP, and other donor agencies to promote development and joint ventures in the third world.

How the Program Works

SUSTAIN receives requests for assistance from individual food enterprises, research institutions, and U.S. AID offices. SUSTAIN is able to solve many problems by providing information that exists either in technical literature or in the "memory" of a company. If the problem cannot be addressed without an on-site visit, SUSTAIN volunteers may be sent to provide short-term technical assistance. Workshops and conferences can also be organized in the region to help address food technology issues. The program does not fund product or equipment acquisitions.

The program publishes a quarterly newsletter (*SUSTAIN Notes*) on food technology issues. It is provided gratis to approximately 1400 recipients in more than 50 countries.

SUSTAIN volunteers and technical material are provided at no charge. If SUSTAIN sends a team of volunteers, the requesting company or host organization only pays in-country expenses (in local currency). The costs for international travel and SUSTAIN consultants are paid by SUSTAIN and supporting U.S. companies and institutions. Due to budget constraints, priority is given to requests that can demonstrate an ability to address malnutrition and undernutrition problems in the local community.

Appendix C

CONFIDENTIAL - PROPRIETARY BUSINESS INFORMATION

Permission to widely disseminate the business information given below was neither sought nor obtained from the business owners. The SUSTAIN team regards the information as released for the purpose of the weaning food assessment only.

BUSINESS SUMMARIES OF IDENTIFIED POTENTIAL MANUFACTURERS

The following are listed in chronological order of visits by the WINS/SUSTAIN/FIIRO/NCFN delegation. These firms were selected on the basis of preliminary evaluations by local consultants Dr. Olatunji and Mrs. Kupoluyi.

C.N.: **JHY Foods Limited**

F.A.: 3, Ojeimevien St., off Oregun–Ojota Rd., Oregun, Lagos.

M.D.: Chief Julius Adeluyi (Prince Juli)

E.D.: About 1987

The plant was visited on Saturday when the plant was not operating. The team met with Chief Juli Adeluyi ("Prince Juli") in his office in Ikeja in the outskirts of Lagos.

Ownership, Market trends/History: An attorney with a degree in pharmacy, "Prince Juli" is the president of the Pharmaceutical Society of Nigeria and of the Nigerian–American Chamber of Commerce. He travels frequently to the U.S. and Europe. He is heir to the throne of Ekiti. He refers to the production of King Snacks as a hobby. He dreams of expanding production to four or five rural locations, as a rural experiment, speaking of the need to privately bring together all of the technical requirements for each such operation. In his chain of rural pharmacies, he notes that most of the urban food products on the shelves, particularly for babies, are unaffordable and rural mothers look at them wistfully.

JHY Foods is the only public corporation (P.L.C.) of the firms interviewed, with about 4000 shareholders. His was the first indigenous company to be put on the stock exchange. He was then the chairman of the Indigenous Business Association of Nigeria.

Product characteristics, current: Corn meal snacks, brand name is "King". From a cost–nutrient point of view King Snacks corn curls are inexpensive but not viewed as a food appropriate for babies.

Product characteristics, potential: The by-product powder from the grinding of the corn grits for the snacks is very fine and white and much in demand by market women. About 25% of the corn comes off in this by-product. After analysis it may be found that this powder is mainly from the corn germ and that it has a relatively high protein content. From this powder a baby food might be manufactured. The method of manufacture remains open, as does its nutritional impact.

Raw Materials: The main raw material for King Snacks is maize, either as whole grain or as premilled grits. Other minor raw materials are sugar, coloring and additives. The maize is obtained locally within the country, especially from the north. The price of the maize is quite unstable, fluctuating over a wide range.

Manufacturing: At the present time, JHY makes approximately 50,000 per day individual serving-size packets of expanded maize snack, sold under the "King" brand name, from 1.4 tons of maize. The factory has five Korean-made collet-type extruders; filling and sealing are all done by hand. The operation employs 127 people. Prince Juli has his own laboratory for quality control and development, presumably in connection with his pharmacy products. The firm owns vacant land adjacent to the plant for future expansion and warehouse. The plant has its own generator and water supply.

Until recently JHY prepared their own corn grits from whole maize. The corn grits are now purchased. The operation generates a sizable amount of by-product which was given away.

Sales/Distribution: Products are sold country-wide on an ex-warehouse basis to all levels of distribution from supermarkets to the various local open markets. There are currently no sales agents for the products.

Promotion/Advertising: Because the demand outstrips supply, there is little need for promotion or consumer advertising at this time.

Competitors: Although the company was the pioneer in the particular snack production, there are currently not less than 5 competitors in Lagos alone.

Interest in proposed product: The company is very interested in the proposed project, as its snack is aimed at the low income class and the generality of the people, a low cost baby food would fall in line with its ideology. Prince Juli would look favorably on packaging a nutritious low-cost ogi utilizing the by-product. In such an event, he would appreciate formula and technical assistance and possible investment.

C.N.: Temitope Bakery and Catering Services, Ltd.

F.A.: Sagamu-Benin Expressway, Sagamu, Tel: (037) 640433

M.A.: P.O.Box 328, Sagamu, Ogun State 640044

Cable: Bake-Loaf Lagos

M.D.: Chief M. Abiodun Ogunyanwo

Res.: Ogunsanwo St., Makun, Sagamu, Tel: (037) 640022

Res.: 5, Egun Street, Lawanson,

Surulere, Lagos, tel: 1-834474

E.D.: 1968.

This company's head office and factory are located in Sagamu, about 100 km from Lagos. The delegation met for several hours with Chief Ogunyanwo, Chairman and M.D., and his son, National President of Temitope.

Ownership, market trends, and history: Temitope is a private limited company. At present it is exclusively in the biscuit business using the brand name "Temitope". Chief Ogunyanwo is the president of the Nigerian Bakery Association of Nigeria, the Master Bakers of Nigeria. The day to day management of the factory is in the hands of two of his sons, of whom Tim Ogunyanwo is the general manager. The company started with bread, confectionery and catering, and made the transition to biscuits using other ingredients in addition to wheat when import of wheat flour was banned.

Some preliminary work on baby foods was done at an earlier stage, when they had an Indian manager who wanted to use the scraps from the biscuits to make baby food. Someone from the University of Ife was helping them with the formula, which work was not completed.

Product characteristics, current: From a cost-nutrient point of view Temitope biscuits are the least expensive on the market, already about as low in cost per 100 calories as ogi. The most common size, available in all markets sampled, is the common round biscuit, sold in cellophane bags of six (?). The other size has a similar faintly sweet flavor but the size and shape of oyster crackers.

Product characteristics, potential: For cost reasons, the fat content of the biscuits currently is lower than desirable for a baby food. The formula also would need enrichment with soy or another legume product to improve its protein composition, and with vitamins and minerals. The amount that these additions would add to the cost would have to be carefully examined. However, even without enrichment this food would be higher in fat and protein and more difficult to dilute than the ogi the babies now receive.

Since the biscuits already are used to quiet crying babies, the taste acceptability of biscuit powder by babies should be high. Impact on nutritional status would depend mainly on the amounts fed to babies and toddlers. This food might not entirely replace ogi but could play a snack-type role of increasing the frequency with which the child was fed nutrient-dense food. There is research showing that frequency of consuming snacks correlates positively with nutritional status.

Ingredients: The biscuits are made with composite wheat and maize flour, using fat from Lever Bros. and imported chemicals. The company has experimented with soyabean (from Taraku Oil Mills, Makodi, Benue State) and with cassava starch for which the main problem is availability. Maize can be purchased from farms nearby and can be processed either at the plant or in nearby facilities. Soy can be purchased locally but cannot now be processed in house. Sorghum and millet flour are more expensive than maize at least in the South of the country. Sorghum and cassava flours may have a bitter aftertaste. They experimented successfully with a wheatless biscuit called Choco-sar (?), which was successful during the acute wheat shortage, but which did not sell well when some wheat came back on the market. They would need technical assistance in formulating the appropriate mix of new flours and other weaning food ingredients.

Manufacturing: The factory has a Baker Perkins biscuit line with a band oven roughly 120 ft long, as well as Rose Forgrove wrapper sealers. They also have 4 Bosch form/fill/seal machines. Biscuits and biscuit snacks are packed in clear plastic films, 96 units per shipping carton.

The factory employs about 200 people, down from 465 when the bread bakery system was operating. The idle bread system consists of dough mixer, sheeter, dividers, rounder, and 4 Werner Pfleiderer "Matador" batch ovens with a capacity of 200 loaves each. There are also 2 each slicers and wrappers, as well as pans and racks, and an unused grinder which could be used to crush biscuits.

The plant currently runs at 60% capacity for biscuit manufacturing. Idle bread ovens might also be used in baby food manufacture, although it was mentioned that, if and when wheat flour becomes again available in adequate quantities, Temitope would reactivate their bread business and utilize their idle equipment. There currently is a 16 hour workday.

Sales Distribution: Most of the biscuits are delivered by the company's own sales distributors to wholesalers.

Advertising: They used to advertise but do not currently do so. Because of the imbalance between demand and supply, there is no need for advertising or promotion.

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Competitors: Biscuits produced by eight other companies were identified in stalls of market women in Lagos. Temitope staff estimate that they have about 20 competitors.

Interest in Proposed Product: The Chairman expressed interest in the broad concept of a biscuit-based weaning food.

C.N.: LISABI MILLS (Nig.) Ltd.
F.A.: 378, Ikorodu Rd., Maryland, Lagos
M.A.: P.O. Box 404, Yaba, Lagos.
Tel.: 960102, 965744, 967076
Man. Dir.: Dr. J.K. Ladipo

Est. date: 1938, custard line came on about 1980, discontinued Ogi line about 1980.

Dr. Ladipo is a modern, aggressive business man with well conceived long-term strategies. Recently he invested in modern equipment, part of which has not yet been put on stream, for the production of snacks, cereals, and baby foods. The team got the impression that Ladipo runs an efficient and more automated operation, since the total number of employees is only 80. Dr. Ladipo receives "SUSTAIN Notes". He is interested in locating used process equipment in the U.S., especially packaging equipment.

Ownership, market trends, and history: The company is a family business going back three generations. Dr. Ladipo has a Ph.D. in Food Science from Cornell. He now runs the factory with his brother. The founder's dream was to develop local raw materials. Along the way the company has produced ogi, bean flour, yam flour, pepper, egusi (melon seed) and a variety of other products such as "pawa", a dry "amino-acid balanced" mix of maize, yellow maize, sorghum and wheat (for which the balance in fact would remain imperfect). The founder worked in a research institute under colonial rule, in which local products lacking export potential were completely neglected.

However, after the company itself went beyond the cottage level of production the founder's dream was hard to sustain because manufacturing cannot compete with cottage industry in the production of local foods. For example, Texaco had an automated gari production unit at N900 per ton, when the cottage level price was N600. Supermarket products have a 25% mark-up over open market products, for such staples as yam flour, etc. Cerelac survived recent hard times because of millions of dollars of external market support. Custard survives because it has the image of a Western food and has no competition from products wrapped in leaves and cheap plastic. The factory's ogi powder, which was discontinued, did not have 1% of the sale of

custard. The bean flour was discontinued because technical problems with the process (now apparently solved somewhere in the East) made it difficult to use in cooking.

Before the SAP, affluent Nigerians preferred to buy more expensive high grade LISABI yam flour, egusi, and pepper in super markets. Since the SAP, even the affluent had gone back to the market vendors for these daily staples. Ladipo explained that he changed the focus of the company in 1985 from his father's original mission of "producing local foods" to "using local raw materials" to produce foods that could compete. Part of this process is an exploration of ways in which factory made look-alikes for certain traditional products, such as corn grits flavored to taste like gari, could be made competitive by using less labor-intensive production methods.

He also said he believes that the poor will insist on purchasing prestige products such as NUTREND for their status value. He said it had taken LISABI eight years to establish the GOLD brand name for custard.

Product characteristics, current: Custard powder, Wheat-O, yam flour. From a cost-nutrient point of view the current product lines are not suitable for babies. The custard is in three flavours— banana, chocolate and vanilla—is composed essentially of corn starch, minerals, vitamins, coloring and the flavours. The Ogi is obtained direct from corn. The wheat-o is from whole wheat.

Product characteristics, potential: There is no telling how Dr. Ladipo would evaluate the profitability of an appropriate business plan for a new baby food product. This firm certainly has better equipment and more on site expertise than any of the other firms visited. However, LISABI has no existing or proposed product at the present time that could be made into a healthful baby food with relatively minor adaptations. Dr. Ladipo is looking to make a soy custard if he could purchase deflavored and defatted soy flour. The company experimented briefly with a soy custard but did not have access to a sufficiently flavorless soy flour. He states that the defatting would be needed to prevent rancidity of the custard powder, but this factor might be overcome by appropriate formulation and/or processing. Fat is a key ingredient required in a baby food, so a fat-free soy custard would not be appropriate as a baby food.

Raw Materials: The raw materials for the Ogi are either corn or sorghum while corn starch, vitamins and minerals are used for the custard powder. Wheat is the only raw material for the wheat-o and beans and yam tuber for the flours. The corn and wheat are obtainable from the north of the country while corn starch is obtained from producer companies, mainly from Lagos. The availability of the raw materials is highly dependent on the pricing which fluctuates daily.

Manufacturing: Custard is available in consumer size plastic bottles as well as family size plastic buckets. Buckets are popular with consumers because of reusage. They also pack

Wheat-O powder and yam flour (hand sifted in the plant) in plastic pouches under the Lisabi name. The original machines were imported but recently, a number of them have been improvised or modified. There are a new Clextral BC-82 twin-screw extruder and new Buhler flaking rolls installed and awaiting accessory equipment and commissioning.

The existing plant operation includes blending and packing, including pouching operations. The firm pouches sugar and maize grits as a sideline. There are very high standards of hygiene and safety in the plant.

Capacity is about 40 tons of Custard powder per month. About same for Ogi when it was produced. Extensive storage facilities and room for factory expansion exist at the site. There was no indication of underused capacity; on the contrary, expansion of new and state-of-the-art equipment attest to a desire for aggressive growth.

Sales/Distribution: The distributors such as John Holt, etc. directly supply to departmental stores and supermarkets. The company has sales representatives both desk and field. Market Outlets are departmental stores, open markets and supermarkets.

Promotion/Advertising: Modest advertisement is done through the press (magazines, dailies) and exhibitions including consumer shows.

Competitors: Even though there are a number of competitors in the Custard Powder market, the Gold custard is considered the leader quality-wise.

Interest in proposed project: The company is very interested in purchasing second hand equipment through SUSTAIN. Dr. Ladipo had read about this possibility in SUSTAIN Notes.

The SUSTAIN team feels that Lisabi has the greatest capability of any firm visited to make and market some form of low-cost weaning food. This opinion is based on the breadth of the firm's technology, its history, sanitary standards, and aggressive management. When asked privately what he thought of soy-ogi, Dr. Ladipo said he thought major marketing campaign would be needed to make it succeed.

C.N.: DOMINO STORES LTD.

C.A.: 13, Commercial Ave., Yaba, Lagos

M.A.: P.O. Box 431, Yaba, Lagos.

Tel.: 862558

Telex: 22243 NFS NG.

FAX: (01) 863092

M.D.: Mike Murray Bruce

Business Dev. Manager: Roy-H. Murray Bruce

The team met with Mike Murray Bruce and his brother Roy who impressed the team as two sophisticated marketing executives. They were extremely candid and generous in sharing with us details of their business plan for the launch of a new Soyogi scheduled for March 1992.

Ownership, Market trends/History: Unlike all other firms visited, Domino at a present is a distributing, not a manufacturing company. However, it is in the throes of starting to manufacture Soyogi under license from FIIRO. Domino has or is setting up a separate firm, Buckingham Mills PLC, to carry out the Soyogi venture. The father of the Murray brothers worked with Nestle. The firm currently is a Nestle distributor and claims to be open with Nestle about their current expansion plans.

Six to nine months after launch, Domino's plan to expand into an adult family ogi targeted at literate urban consumers. No immediate plans were mentioned to expand into low-priced ogi for mass consumption, but a possible rationalization for their decision to manufacture an upscale product packed in a durable container is an eye to export to other West African countries.

Product Characteristics, Potential: From a cost-nutrient point of view this product has two problems. The first is one of formulation: the present formula has only 17.5% of calories from fat. The second is the fact that it will initially retail at 80-85% of the price of the Nestle product Nutrend. The tin package will make up 40% of the total cost. Subsequently, there is a plan to make refill packs, in polyurethane bag, but such a plan could be delayed. Apparently the previous FIIRO formulation, which had 20-25% of calories from fat, changed with addition of sucrose, a move that was based on consumer research.

An additional potential problem with this food is that it will be just as subject to dilution as the regular ogi, although the pictures on the tin show a thick, spoon-fed pap. Taste and acceptability are expected to be very similar to the regular ogi.

Manufacturing: Locally sourced equipment will be used to manufacture the product, including a locally made flash dryer. It is estimated that they will have the usual start-up problems experienced by companies entering manufacturing with equipment that has not been tested at the scale at which they plan to produce the product. The product will be packed in lithographed tin cans under the brand name, "Mamajoy".

Sales/Distribution: This product is positioned to compete with the existing major upscale weaning food brands by pricing 20-25% below these market leaders. The primary target is the semi-educated women in the upper middle income group.

Promotion/Advertising: The launch will be supported by extensive TV advertising developed by a subsidiary of a major world class advertising company (Saachi & Saachi).

Interest in proposed project: Domino would be interested in receiving assistance with social marketing through hospitals and clinics, and in help to reformulate the fat content of the product through FIIRO, if such reformulation proves to be required.