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**Executive Board  
First Regular Session**

**Rome, 21 - 23 January 1997**

## **DEVELOPMENT PROJECTS FOR APPROVAL BY THE EXECUTIVE BOARD**

### **Agenda item 6**

## **PROJECT NICARAGUA 4515 (Exp.1)**

(WIS No. NIC 0451501)

### ***Assistance to pre-school and lower primary schoolchildren in depressed areas of Nicaragua***

Duration of project	Three years
Number of beneficiaries	375 000
Total food cost	10.9 million dollars
Total cost to WFP	18.4 million dollars
Total cost to Government	5.2 million dollars

All monetary values are expressed in United States dollars, unless otherwise stated. One United States dollar equalled 8.45 córdobas in August 1996.

### **ABSTRACT**

Nicaragua is a low-income, food-deficit country. Nicaraguan schoolchildren face three major problems: i) low school enrolment and attendance, and high drop-out rates; ii) short-term hunger due to insufficient access to food at home; and iii) micronutrient deficiencies due to inadequate dietary intake. The project is targeted to those areas where these problems are most acute and which are food-deficit and least developed. They are the 55 poorest of 140 municipalities in Nicaragua. The project requires 18.4 million dollars to reach 375,000 children over a period of three years.

Two main components in the project address these problems. The first provides a cooked meal and a fortified drink to children at the pre-school level in their communities. The second provides a biscuit and drink to primary schoolchildren in grades 1 and 2. Locally purchased and processed commodities will be used to produce the biscuits. Monetization will be utilized to provide the funds needed to purchase the local commodities, and allow the bakeries to participate.

Parents in the community centres will take charge of food distribution to pre-school children. Women will be trained to carry out the delivery system used under the project. The Nicaraguan Fund for Childhood and Family (FONIF) will provide institutional support to this activity. The school authorities will involve parent-teacher groups to assist in providing the pre-school snack.



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## NOTE TO THE EXECUTIVE BOARD

**This document contains recommendations for review and approval by the Executive Board.**

Pursuant to the decisions taken on the methods of work by the Executive Board at its First Regular Session of 1996, the documentation prepared by the Secretariat for the Board has been kept brief and decision-oriented. The meetings of the Executive Board are to be conducted in a business-like manner, with increased dialogue and exchanges between delegations and the Secretariat. Efforts to promote these guiding principles will continue to be pursued by the Secretariat.

The Secretariat therefore invites members of the Board who may have questions of a technical nature with regard to this document, to contact the WFP staff member(s) listed below, preferably well in advance of the Board's meeting. This procedure is designed to facilitate the Board's consideration of the document in the plenary.

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## PROBLEM ANALYSIS

1. Nicaragua continues to experience severe economic hardship, after having suffered a widespread internal conflict from 1980 to 1990, and having gone from a centrally planned to a market-oriented economy from 1990 to 1996. The country is still carrying out a comprehensive stabilization and structural adjustment programme. The yearly per capita gross national product (GNP) of 340 dollars<sup>1</sup> remains the lowest in Central America.
2. Nicaragua is a low-income, food-deficit country with a population of 4.2 million<sup>1</sup> and a population growth rate of 3.1 percent<sup>1</sup> a year. The last population census confirms that 54 percent of the people live in extreme poverty. Children aged two to nine (700,000) live under very difficult conditions which include insufficient access to adequate food, education, health services, potable water and shelter.
3. Educational indicators reflect the country's poverty. According to UNESCO estimates, the adult illiteracy rate was 34.4 percent in 1995. The average number of years of schooling is 4.5 nationwide. Poor urban dwellers receive three years of schooling, and in rural areas schooling averages only 1.6 years.
4. Approximately 370,000 pupils are currently enrolled in grades 1 and 2 of primary school. This represents 70 percent of the eligible population. It is estimated that some 30 percent (158,571 children) are not enrolled. In these lower grades 50.2 percent of the enrolled students are girls and 49.8 percent are boys. Drop-out rates are high; less than half of the students who enter first grade will complete their primary education. There is no information available to indicate whether girls are subject to a higher drop-out rate than boys.
5. Children are admitted to primary schools at the age of seven, but six-year-olds are allowed to enrol if they have attended pre-primary school for at least one year. Pre-primary schools are organized by the Ministry of Education and by community groups. The formal pre-primary schools reach about 80,000 children aged three to six. The informal system caters to around 110,000 children. The lack of teachers, classrooms, educational materials and proper supervision limits the effectiveness of the informal system. The Nicaraguan Fund for Childhood and the Family (FONIF) provides educational support to only 21,000 children in the informal system, which also receives some assistance from NGOs working in this sector.
6. Protein and energy malnutrition are serious health problems in Nicaragua. Surveys in 1992 showed that 16.9 percent of children under six were moderately to severely malnourished (weight for age), with an additional 20 percent at risk. The national census in 1993 revealed that 23.9 percent of the five-to-nine-year-olds were below the normal height for age; 28.5 percent of children from 12 to 59 months of age suffered from iron deficiency and 67.1 percent from vitamin A deficiency. The nutritional situation is not expected to have improved significantly since 1993.
7. The main problems facing schoolchildren are low food intake and short-term hunger. Two thirds of school and pre-school children arrive in class every day without an adequate breakfast, often after walking several kilometres. A recent study among pre-school children

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<sup>1</sup> World Bank Development Report, 1996.



in project Nicaragua 4515, FONIF component, found that their daily food intake amounted to only 1,065 kilocalories, representing an energy deficit of 30 percent.

8. These nutritional problems reduce the learning ability of schoolchildren, weaken their commitment to school and hinder their active participation in educational activities. Their physical and mental development is stunted, and morbidity rates increase as a result of the children's vulnerability to infectious diseases.

### Previous WFP assistance

9. Project Nicaragua 4515 started in February 1993, at a total cost of 12.3 million dollars. It included two components:
  - a) "Integrated assistance to pre-school children through day care centres" which assists 100,000 children in 1,500 pre-school centres and is supported by FONIF.
  - b) Integrated Programme of School Nutrition (PINE), which started in September 1994 and is carried out by the Ministry of Education (MED).
10. Both components are considered to have reached the planned objectives. The project has helped stimulate enrolment and attendance and reduce the drop-out rate. In addition to relieving short-term hunger, the output has been: a) the establishment of pre-school centres; b) the enhancement of community participation and the creation of parent committees; c) training of staff on the follow-up of children-oriented activities; and d) the introduction of improved education in food, nutrition and health.
11. A recent study by the Ministry of Education showed that the rate of repetition is highest in the lower grades of primary education. In the first year it can be as high as 25.5 percent. On the basis of this study, the new WFP project will concentrate on the first two grades of primary school.
12. The same study indicated that the drop-out rate has been decreasing. In the period 1991-95 it had gone down by 50 percent. The meals provided under project No. 4515 have been credited as one of the factors contributing to this reduction.

## PROJECT OBJECTIVES AND OUTPUTS

### Long-term objective

13. The project's long-term objective is to assist the Government of Nicaragua to a) improve the quality and efficiency of basic education (pre-primary and primary); and b) reinforce the nutritional intake of targeted beneficiaries.

### Immediate objectives

14. The immediate objectives are to:
  - a) contribute to an adequate dietary and micronutrient intake by providing a cooked meal, a biscuit and a fortified drink;
  - b) assist community pre-school children in reaching grades 1 and 2 of the formal school system;
  - c) improve the capacity of beneficiary children to concentrate and to assimilate information by providing dietary support and relieving short-term hunger;



- d) contribute to increasing the rate of attendance in grades 1 and 2 from 70 to 80 percent; and
  - e) reduce the percentage of drop-outs from 20 to 10 percent in the first grade, and from 14 to 10 percent in the second grade.
15. The project focuses on grades 1 and 2 because a) these grades showed the highest drop-out rates; b) the project has limited resources; and c) younger children are more nutritionally vulnerable.

## Outputs

16. The project's expected outputs are:
- a) improving the diet of 125,000 community pre-school children through the provision of meals and fortified drinks, and biscuits with a fortified drink for 250,000 formal-sector students (pre-school and grades 1 and 2);
  - b) improving the intake of vitamin A (serum retinol) and iron (adequate haemoglobin level) in 80 percent of the beneficiaries;
  - c) increasing attendance, and reducing drop-out rates to 10 percent in the first and second grades of lower primary school;
  - d) increasing by 10 percent the number of children promoted from pre-school to lower primary school;
  - e) strengthening 1,850 centres managed by FONIF in order to enable them to have their own management and coordination committees; and
  - f) providing 9,250 person-days of training in 1,850 non-formal pre-school centres.

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## ROLE AND MODALITIES OF FOOD AID

### Functions

17. Food aid will be used as an incentive to increase children's school attendance and encourage families to enrol and maintain their children in school. It will allow women to dedicate more time to productive activities by providing day care, and will catalyze community efforts to establish and manage the community centres.
18. Food aid will have an important function in providing a nutritional supplement and dietary support to ensure a more active participation of children in classroom activities. It will contribute to compensating children's nutritional deficiencies.
19. The high-energy protein (HEP) fortified biscuit and nutritious drink will prevent short-term hunger, increase children's concentration and reduce the incidence of anaemia.

### Food inputs and commodity justification

20. During the life of the project (three years), WFP will supply the following commodities: a) for the meal: 5,063 tons of corn-soya blend, 2,125 of sugar, 3,300 of rice, 1,650 of beans, 825 of vegetable oil and 2,475 of maize; b) for the biscuits, 9,150 tons of unrefined vegetable oil will be imported for monetization, as explained in paragraph 36. These commodities have proven acceptable in Nicaragua in earlier projects.



21. Community pre-school component. This component comprises 82,500,000 full meals and drinks for 125,000 beneficiaries over three years. The daily ration is broken down as follows:

Commodities	Daily ration	Fat	Protein	Calories
		(grams)		
Meal				
Rice	40	0.2	2.8	144
Maize	30	1.2	3.0	144
Beans	20	0.3	4.4	84
Vegetable oil	10	10.0	0.0	135
<b>Subtotal</b>	<b>100</b>	<b>11.7</b>	<b>10.2</b>	<b>507</b>
Drink				
Corn-soya blend	25	1.5	4.5	95
Sugar	10		0.0	40
<b>Total</b>	<b>135</b>	<b>13.2</b>	<b>14.7</b>	<b>642</b>

22. **Primary school component.** Commodities will be purchased for the preparation and distribution of 120 million biscuits and drinks for 250,000 beneficiaries. The ration consists of:

Item	Daily ration	Fat	Protein	Calories
		(grams)		
Biscuit	50	14.5	4.4	245
Cereal drink				
Corn-soya blend	25	1.5	4.5	95
Sugar	10		0	40
<b>Total</b>	<b>85</b>	<b>16.0</b>	<b>8.9</b>	<b>380</b>

For pre-school children the daily ration provides 25 percent of the energy, 30 percent of the protein, and 100 percent of the vitamin A and iron minimum daily requirements.

23. The HEP biscuit is currently fortified with iron and vitamin A. In the expansion of the project, thiamine, riboflavin, niacin, folic acid and vitamin B12 will also be added in order to reach 50 percent of the daily requirement of these vitamins for this age group.

### Food aid modalities

24. The biscuit will be produced in local bakeries, using local commodities purchased with funds generated from monetization. The commodities required for processing the biscuit will be purchased locally because such a procedure: a) is more cost-effective; b) saves on ocean freight, estimated at one million dollars; c) serves as an incentive to local production; and d) generates income at the community level.



## PROJECT STRATEGY

### Implementation strategy

25. The project's strategy centres on using the proceeds from monetized oil to produce a nutritious biscuit and a glass of cereal drink from locally procured commodities. A survey was conducted by the Ministry of Health to determine the most severely malnourished areas based on a poverty map developed by the Emergency Fund for Social Investment (FISE). The project will provide the commodities needed to prepare a complete meal and drink in community pre-school centres, and biscuits in formal schools located in those areas where malnutrition was found to be most severe.
26. The same type of rations as those distributed in the ongoing project will be provided in this phase: a cooked meal for the community centres and biscuits for the formal school system. This is based on the consideration that in the non-formal schools the community can be made responsible for the preparation of meals; in the formal school system this facility is not available. Biscuits, which need no preparation, are therefore a suitable alternative. In addition, all schools will serve a cereal drink.
27. The drink will be served at the beginning of the school day. The cooked meal or the biscuits will be provided mid-morning.
28. The production and quality control of the biscuit will follow the system used during the first phase. The cereal drink and the biscuit are fortified with micronutrients. The Ministry of Health and the Department of Food Technology of the University of León (UOL) will monitor the quality of the biscuit.
29. UOL has developed cereal drinks made from local commodities and participates in the current phase of the project by providing the composite flour needed for preparing the biscuits. A feasibility study carried out by the Central American Nutrition Institute demonstrated that appropriate equipment for composite flour production would reduce the actual cost by 20 percent. The study also confirmed the ability of UOL to manage the operation. Therefore, to enhance the biscuit production capacity and reduce costs, it is proposed that WFP provide UOL extruder mill mixer (EMM) equipment as a non-food item contribution.
30. For the centres, community participation is an important part of the implementation strategy. The involvement of the community will enhance the sustainability of this component after phasing out of WFP's support.
31. A Country Strategy Outline (CSO) is under preparation, to be submitted to the Executive Board at its Second Regular Session. This CSO will focus on support to pre-primary and lower primary education as well as on food security and sustainability.

### Food logistics

32. The WFP commodities will be shipped to the Port of Corinto. The food logistics agency of FONIF will arrange for customs clearance and transport to the regional warehouses.
33. For the community pre-school centre component, 75 percent of commodities will be transported to León and 25 percent to Managua. The transport of commodities from the regional warehouses to the centres will be arranged with the assistance of the local authorities and community representatives. The food will be distributed bimonthly to the





community pre-school centres. All WFP commodities will be consumed directly in the pre-school centres.

34. As regards the formal school component, all commodities will be purchased locally from generated funds. The Food Technology Department of the University of León will procure the ingredients, process the composite fortified flour to be used for the biscuits and arrange transport to the bakeries involved in producing the biscuits. The bakeries will be supervised by the University.
35. The WFP country office will arrange training in warehouse management and food storage, particularly for community pre-school centres. To this end, the office will be strengthened with two United Nations Volunteers. This approach will ensure maximum efficiency in food handling and reduce losses.

### **Generated funds**

36. The objective of monetization is to fund the purchase of local commodities and the production of biscuits. A total of 9,150 tons of unrefined vegetable oil will be sold in the local market. The c.i.f. cost has been estimated at 750 dollars a ton (FOB purchase price of unrefined vegetable oil at 600 dollars, transport at 135 dollars and port expenses at 15 dollars a ton). Since the sale value of this commodity has been estimated at 800 dollars in Nicaragua, the proposed monetization is considered to be cost-effective.
37. It is estimated that a yearly quantity of 3,050 tons of unrefined vegetable oil will be monetized, for three years. The funds will be disbursed according to an annual project expenditure programme. The control of disbursements will be the joint responsibility of the country office and the Government of Nicaragua. A committee composed of representatives of the project partners and WFP will be created. It will approve the use of funds, including the purchase of local commodities.
38. Monetization of WFP-supplied commodities will be the responsibility of ENIMPORT, a Nicaraguan import-export company. Sales will be conducted on the basis of commercial bids. This follows both WFP's and Nicaragua's regulations and legal framework. An interest-bearing bank account will be opened in the name of the project.
39. The monetization of 9,150 tons of unrefined vegetable oil is expected to generate 7,320,000 dollars. From this amount, 3,366,840 dollars will be used for the local procurement of ingredients for the biscuits, while the remainder (3,953,160 dollars) will cover all the costs related to producing and transporting the biscuits.
40. The local procurement of ingredients, amounting to 46 percent of proceeds, will include 2,064 tons of wheat flour, 744 of soya flour, 804 of rice flour, 1,044 of vegetable fat (shortening), 1,200 of sugar and 144 of baking ingredients (including salt and yeast).
41. The amount required for the production of the biscuits (3,953,160 dollars or 54 percent of proceeds), is broken down as follows: a) 2,753,160 dollars for baking in the local bakeries; b) 450,000 dollars for flour processing, quality control and bakeries supervision; and c) 325,000 dollars for packaging and 425,000 dollars for transport.
42. Imported corn-soya blend will be used at the initial stage of the project. However, as soon as it is possible to produce locally a cereal blend for the drink at a competitive price, this will replace the imported corn-soya blend. The local cereal drink is known as "horchata".





## BENEFICIARIES AND BENEFITS

43. The direct beneficiaries will be 375,000 children within the FONIF and PINE components. They are broken down as follows:
- a) FONIF component (children two to six years old): 125,000 children in non-formal pre-school community centres will receive a full meal 220 days a year for three years.
  - b) PINE component (children five to nine years old): 210,000 children in lower primary formal schools and 40,000 in pre-school centres will receive one 50-gram biscuit and one cereal drink, 160 days a year for three years.
44. The selected school and pre-school centres are located in the poorest municipalities with the highest rates of malnutrition. These centres are educationally least-developed according to the poverty map of 1995. Priority will be given to children from single-parent families and living in selected regions most affected by the civil war.
45. Nicaragua comprises a total of 140 municipalities. The project is targeted to approximately 55 of the 70 poorest municipalities which are concentrated in the following provinces: Estelí, Nueva Segovia, Chinandega, Madriz, Boaco, Río San Juan, León, Matagalpa, Jinotega, and depressed areas of Managua. (See the map in Annex II).
46. The project will assist: a) 3,650 out of 6,000 public schools; and b) 1,850 community centres. Any increase in the number of beneficiaries will be covered by the Government with its own resources.

### Anticipated effects of the project on women

47. The pre-school centres provide opportunities to care for children, so that women may undertake income-generating activities in agriculture and other sectors. The centres are open three to eight hours a day. In connection with project activities, the role of women is significant. Women play an important role in the decision-making process, since they are involved in the establishment, management and administration of the centres as well as in day-to-day activities (cooking, cleaning and distribution). This does not represent a burden, since a shift system is used, scheduled according to their availability.
48. The majority of the parents in the centres are organized in committees composed mainly of women. These will benefit from training courses in health, child development, food handling, nutrition, small project management and community organization. Special attention will be given to improving the literacy skills of the mothers of children attending pre-school centres. The literacy programme will receive support from MED, UNICEF and NGOs. In the project's next stage, the United Nations Fund for Population Activities (UNFPA) will provide training in "responsible parenting". The World Bank and the Inter-American Development Bank (IDB) will also support training in integrated child care.
49. The project's monitoring and evaluation (M&E) system will pay particular attention to the enrolment, attendance and drop-out rates of girls in the schools supported by the project. In addition, it will ensure that there is equal attendance of boys and girls.

## PROJECT SUPPORT

50. The schools in the areas covered by the project have also attracted support from the World Bank, IDB, UNICEF, UNFPA, UNDP, and bilateral donors.



51. The International Bank for Reconstruction and Development (IBRD) funds a basic education project (1996-98) at a cost of 39 million dollars, including a 34-million-dollar loan to the Government. This quality improvement project, started in January 1996, aims to: a) provide educational materials and textbooks to elementary schools; b) expand non-formal pre-school education by supporting community centres; and c) build or rehabilitate schools and provide basic sanitary services. The Government of Nicaragua, through the Fund for Social Investment and Emergency (FISE), will be in charge of the rehabilitation and/or building of schools and child community centres. The target population will be children who receive nutritional support under the project.
52. IDB will provide 3.8 million dollars and Norwegian Aid three million dollars for a project to support community pre-school education in Nicaragua from 1997. The project will support: a) community centres for children, providing early stimulation, health, day care and nutritional education; b) training of mothers in home education; c) the empowerment of women and the reinforcement of the role of men in child care; d) the provision of teaching materials, games and furniture; and e) training in small business. The IDB project has been designed to support the initiatives of project 4515 (Exp.1).
53. UNFPA will supply 300,000 dollars to develop training in parental responsibility for parents involved in the project. UNDP will provide training in hydroponics. UNICEF has allocated financial assistance for up to 30,000 dollars to be utilized for literacy programmes directed at the mothers of children involved in the project.
54. The micronutrient component of the project, with an estimated cost of 800,000 dollars, will be financed by the Canadian International Development Agency (CIDA) through the Micronutrient Facility. The factors contributing to CIDA's support are the efforts made by WFP to target the project activities to the poorest areas, the cost-effectiveness of the monetization, and a suitable M&E system to monitor nutritional progress.
55. Since 1994, the European Union (EU) has supported project 4515 by financing a drink as part of the PINE component. In 1996, the EU changed its approach from a glass of milk to horchata and has committed funds to finance this drink until mid-1997. Project 4515 (Exp.1) will be able to serve 250,000 of the beneficiaries currently receiving this drink.
56. NGOs are directly or indirectly supporting the child community centres with teaching materials and training expertise in health, hygiene, gender, credit management, nutrition, hydroponics, family gardens and reforestation. Among these are Save the Children, Feed the Children, Soy Nicaragua (SOYNICA), Support Centre for Programmes and Projects (CAPRI), CARE, Movimiento Comunal, and Funds for Civil Development (FUNDECI).
57. In consultation with authorities from Local Systems for Integrated Health Care (SILAIS) and the Ministry of Education (MED), a thorough training programme in nutrition will be carried out for municipal delegates, school principals and local health centres.

## LTSH

58. A new land transport, storage and handling (LTSH) matrix was produced in June 1996. The cost of LTSH is estimated at 40 dollars a ton. The commodities to be transported locally will total 15,338 tons. The corresponding amount needed to finance LTSH is 613,520 dollars.



## Non-food items

59. **Primary school component.** The purchase, installation and functioning of the Extruder/Mill/Mixer (EMM) system are essential in particular for the phasing out and sustainability plan. The cost of the equipment, estimated at 225,000 dollars, represents slightly over one percent of the total budget. For the community pre-school component, measuring cups and ladles costing five dollars each for nearly 2,000 centres will be needed. The total cost will be 20,000 dollars.
60. The different items of the micronutrients programme amount to 800,000 dollars; out of this total: a) 636,075 dollars will be needed to purchase the required micronutrients; b) 128,250 dollars will be for monitoring and evaluating the status of micronutrient utilization; c) 20,000 dollars will be used for the deworming programme; and d) 15,000 dollars will be spent on the following medical and anthropometric supplies needed for assessing the nutritional and micronutrient status of children: anthropometers, scales, haemoglobinometers, blood reactives, syringes and U tubes.

## Monitoring and evaluation (M&E)

61. A computerized M&E system was established in the first phase of the project, in 1993. It provides information on the following aspects: a) beneficiaries (gender and number); b) food handling and logistics; c) monetization; d) educational infrastructure and nutritional indicators; e) community participation; and f) preparation of reports.
62. A consultancy firm in charge of M&E for the current phase will provide the support for M&E activities at a cost of 10,000 dollars a year for three years. The firm will be responsible for reinforcing the existing system, which will include project objectives, outputs and indicators on which to measure progress.
63. The process for gathering data and reporting will be strengthened through a series of indicators that have been developed for the collection of basic information. Monitoring will follow *in situ* supervision of the project activities and objectively assess verifiable indicators.
64. It is proposed that the nutritional assessment be carried out by the technical group of the Ministries of Health and Education, local consultants and local WFP staff. They were involved in the nutritional study produced for project 4515 in 1995, with support from the Institute of Nutrition for Central America and Panama (INCAP)/Pan-American Health Organization (PAHO).

## PROJECT FEASIBILITY AND SUSTAINABILITY

65. The feasibility of the project was assessed and confirmed by an appraisal mission conducted in May-June 1996 by WFP, PAHO, INCAP and UNESCO. The mission examined the previous phase of the food aid programme of project 4515, and planned the execution of the extension phase. It also examined the experience acquired in manufacturing, storing and distributing the biscuit, as well as the feasibility and acceptability of a drink made from local commodities. The mission concluded that the project was technically feasible and the drink acceptable to the beneficiaries.



### Technical feasibility

66. A technical and economic study on the production of nutritious foods in Central America was carried out in 1993-94. It tested the concept of composite flours for the production of highly nutritious food. The study showed the feasibility of developing and implementing this type of food industry in Nicaragua with local commodities. The investment needed was economically feasible and will be taken into consideration as part of the strategy for phasing out the project, which involves the Government assuming greater technical and financial responsibility over time.
67. At the present time, 22 bakeries are producing the biscuits needed for the project. The existing capacity is sufficient to produce and distribute the planned number (120 million) for the 250,000 beneficiaries. The nutritious biscuit is well accepted by the target group.
68. The modality used for the production of the biscuits, through local bakeries, as shown in the first phase of the project, brings a series of positive elements: simplification of the distribution logistics, boost of employment (400 part-time jobs, mainly for women), better economy for small industries, and contribution to the development of the agroindustrial sector through the production, processing and marketing of local commodities. This approach proved to be technically and economically feasible for the long-term sustainability of the school feeding programme.

### Economic viability

69. Horchata is economically viable for the local communities to develop and manufacture. The further industrialization and commercialization of the local drink will have a positive socio-economic effect, and enhance the project's economic viability.
70. The ration for the community pre-school centres conforms to the economic and nutritional parameters. The previous total ration, at 220 grams, was considered too large. A ration of 135 grams (see paragraph 21) has now been proposed for this new phase. Rice has been reduced to 40 grams, maize to 30, beans to 20, and milk has been replaced by corn-soya blend because of its lower cost and relatively similar nutritional value.

### Social viability

71. The main support to the FONIF component was provided through community participation in the first phase of the project. Local communities helped in planning the expansion phase, and have shown their willingness and capacity to contribute to project activities, not only in the preparation and distribution of meals and drinks, but also in providing local food to complement the WFP commodities.

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## RISKS

72. As a result of the experience gained from the implementation of the first phase of project 4515, there are no difficulties foreseen in logistics and execution. Trained human resources are available, together with a flexible and functional logistic infrastructure.
73. The Government is committed to the development of human resources. It fully supports the project. It is envisaged that the new government officials, elected in December 1996, will continue this support.



74. The EMM is a relatively new technology for Nicaragua, introduced for processing the cereal flour needed to manufacture biscuits and horchata. Despite the fact that UOL has the capacity to handle this technology, additional training and support may be needed in order to guarantee its implementation and increase the actual production capacity. INCAP will be approached to support the installation of the EMM system, and to supply the necessary training.

## Environment

75. The manufacture of biscuits by PINE instead of the distribution of a full meal will ensure that no fuelwood is used for food preparation. This will contribute to the preservation of forestry resources in Nicaragua.

## DISINCENTIVES, DISPLACEMENT AND DEPENDENCY

76. The project envisages 1,100 tons a year of rice imports against an average production of 100,000 tons since 1992. This is less than 1.1 percent of production. The project will import 825 tons of maize annually against a production of 280,000 tons, less than 0.03 percent of production. Corn-soya blend imports by WFP remain insignificant against the above-mentioned corn production and the yearly soya production of 21,000 tons. Thus, no disincentive to local production is anticipated. On the contrary, the local purchase foreseen will promote local production.

77. Commercial imports in 1995 were 49,700 tons for rice, 3,700 for pulses, 3,300 for maize and 36,400 for vegetable oil. The WFP annual imports of sugar, pulses and vegetable oil will not displace commercial imports. In the case of vegetable oil, the WFP import is a negligible percentage. As regards pulses, domestic production barely meets local demand, and almost none would be available for local purchase by the project.

78. Dependency on imports will not be created because the Government has revitalized agricultural production as part of its development strategy. Agricultural production grew by 10 percent between 1994 and 1995 and constituted 23 percent of Nicaragua's GDP. The annual production of maize rose from 240,000 to 280,000 tons. Modern irrigation systems have been introduced to increase sugar production. The local purchase of Nicaraguan commodities is envisaged (see paragraph 40) in the case of wheat flour, soya, rice flour, vegetable fat and sugar. This strategy will promote local production. The three-year time limit on the project is to avoid dependency on external commodities and allow the beneficiaries to benefit progressively from nationally funded programmes.

## PROJECT COSTS

79. The costs of the project are as follows:

PROJECT COST BREAKDOWN			
	Quantity (tons)	Average cost per ton	Value (dollars)
<b>WFP COSTS</b>			



<b>PROJECT COST BREAKDOWN</b>
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	Quantity (tons)	Average cost per ton	Value (dollars)
<b>A. Direct operational costs</b>			
Commodity <sup>1</sup>			
- Unrefined vegetable oil	9 150	600	5 49
- Maize	2 470	200	495 00
- Corn-soya blend	5 060	325	1645 47
- Rice	3 300	285	940 50
- Vegetable oil	825	900	742 50
- Sugar	2 120	440	935 00
- Beans	1 650	450	742 50
<b>Subtotal commodities</b>	<b>24 580</b>		<b>10 99</b>
Transport			
- Ocean Transport	24 580		3 25
Superintendence			65 06
- Land transport, storage and handling (LTSH)		40	613 52
<b>Subtotal direct operational costs</b>			<b>14 92</b>
<b>B. Direct support costs</b>			
Non-food items			
- EMM (Extruder/Miller/Mixer)			225 00
- Kitchen utensils			20 00
- Vehicle (1)			30 00
- Computer and printer			5 00
- Technical assistance: 3 UNVs			60 00
- Anthropometric equipment			35 00
- Micronutrients			636 75
- M&E and nutritional census			153 25
<b>Subtotal direct support costs</b>			<b>1 16</b>
<b>Total direct costs</b>			<b>16 08</b>
<b>C. Indirect support costs</b>			
- Contribution to ordinary office administrative costs (14.5% of A + B)			2 33
<b>Subtotal indirect costs</b>			<b>2 33</b>
<b>TOTAL WFP COSTS (A + B + C)</b>			<b>18 42</b>

<b>GOVERNMENT COSTS</b>
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<b>PROJECT COST BREAKDOWN</b>
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	Quantity (tons)	Average cost per ton	Value (dollars)
- LTSH at 40 dollars a ton for 15 338 tons			613 52
- Food distribution			380 00
- Support staff			1 20
- Supplies and equipment			200 00
- Horchata production (cereals, etc.)			1 00
- Office equipment			250 00
- Maintenance and operations			900 00
- Monitoring and follow-up			190 00
- Installation infrastructure and maintenance of Extruder/Miller/Mixer			500 00
<b>TOTAL GOVERNMENT COSTS</b>			<b>5 23</b>
<b>TOTAL PROJECT COSTS (WFP and Government)</b>			<b>23 65</b>

<sup>1</sup>This is a notional foodbasket used for budgeting and approval purposes. The precise mix of products and exact quantities to be supplied to the project, as in all WFP-assisted projects, may vary over time depending on the availability of commodities to WFP and domestically within the recipient country.

## COORDINATION AND CONSULTATION

80. The Ministry of External Cooperation will be the channel of communication between WFP and the Government. The creation of a coordinating unit comprising representatives of the United Nations and all participating agencies (UNFPA, UNICEF, UNDP, IDB and World Bank, FONIF, MED, INCAP/PAHO) will enable more effective channelling of information, optimization in the use of resources and better cooperation at the local level.
81. The project summary has been discussed with the European Union, and USAID and CIDA representatives in Nicaragua. It has been prepared on the basis of the recommendations of the appraisal mission and technical comments received from the relevant United Nations technical agencies. CSD clearance has been requested.

## RECOMMENDATION OF THE EXECUTIVE DIRECTOR

82. The project is recommended for approval by the Executive Board.





## ANNEX I

## INDICATORS FOR ASSESSING NUTRITIONAL IMPACT AND MICRONUTRIENT DEFICIENCY

TABLE 1

NUTRITIONAL VALUE OF PROPOSED RATIIONS					
	Protein	Kilocalories	Fat (grams)	Vitamin A (Ration equivalent grams)	Iron (mg)
<b>PINE Component</b>					
HEP Biscuit (50 g)	4.4	245	14.5	271	13.0
Drink (corn-soya blend 25 g /sugar 10 g)	4.5	135	1.50	129	4.5
<b>Total</b>	<b>8.9</b>	<b>380</b>	<b>16.0</b>	<b>400</b>	<b>17.5</b>
Percentage of RDA	24	21.6		100	100
<b>FONIF Component</b>					
Ration (meal)	10.2	507	11.7	33	8.8
Drink	4.5	135	1.50	367	4.5
<b>Total</b>	<b>14.7</b>	<b>642</b>	<b>13.2</b>	<b>400</b>	<b>13.3</b>
Percentage of RDA	80	40		100	100

1. The following anthropometric variables will be used to assess the children's nutritional status: height for age (HFA), weight for age (WFA) and weight for height (WFH); body weights and the heights will be converted to z-scores which will be used as an indicator for the nutritional status of the children, as shown in Tables 2 and 3. Serum retinol levels will be utilized to assess the vitamin A nutritional status. In the case of iron deficiency, the level of haemoglobin will be used to establish the degree of anaemia.
2. The same team that participated in the first nutritional study carried out in 1995 will proceed with the follow-up to monitor nutritional progress through the selected indicators. Three studies will be produced, at the beginning, at mid-term (included in the proposed mid-term evaluation), and at the end of the project to assess the nutritional impact of the programme.



**TABLE 2**

<b>NUTRITIONAL STATUS</b>		
<b>INDICATOR</b>	<b>INTERPRETATION</b>	<b>CLASSIFICATION</b>
Stunting (HFA)	HFA with z-scores < -2 Standard Deviations from the National Child Health Survey (NCHS) gender-specific reference median	Chronic undernutrition
WFA	WFA with z-scores < -2 Standard Deviations from the NCHS gender-specific reference median	Underweight
WFH	WFH with z-scores < -2 Standard Deviations from the NCHS from the NCHS gender-specific reference median	Acute undernutrition

**TABLE 3**

<b>DEFINITION OF MICRONUTRIENT DEFICIENCY</b>		
<b>Micronutrient</b>	<b>Indicator</b>	<b>Classification</b>
Vitamin A	Serum retinol levels ranging between: 20.1 - 30ug/dl. and 10.1 - 20ug/dl. 10ug/dl or less	mild moderate severe
Iron	Levels of haemoglobin: Hb = 7.0 - 10.9g/dl. Hb = <7.0g/dl.	Anaemia mild or moderate severe



TABLE 4

<b>NUTRITIONAL STATUS</b>			
<b>Objectively verifiable indicator</b>	<b>Actual state</b>	<b>Changes foreseen in three years</b>	<b>Means of verification</b>
Stunting (HFA)	31% of pre-school children (2-6 years old) with delay in height	Reduction from 31 to 20	Three evaluations: initial, middle and final
	23.9% of schoolchildren (5-9 years old) with delay in height per age	Reduction from 23.9 to 20%	
WFA	16.9% of pre-schoolchildren (2-6 years old) underweight	Reduction from 16.9 to 10.0%	Three evaluations: initial, middle and final
	13% of schoolchildren (5-9 years old) underweight	Reduction from 13 to 10%	
<b>STATUS OF MICRONUTRIENT DEFICIENCY</b>			
<b>Objectively verifiable indicator</b>	<b>Actual state</b>	<b>Changes foreseen in three years</b>	<b>Means of verification</b>
Serum levels of Vitamin A	67.1% prevalence of vitamin A deficiency in children 12-59 months old	Reduction from 67.1 to 30.0%	Three evaluations: initial, middle and final
Haemoglobin level	28.5% total prevalence of anaemia in children from 12 to 59 months old	Reduction of prevalence from 28.5 to 15%	Three evaluations: initial, middle and final

### **Micronutrient component: problem analysis and justification**

3. The national survey of 1993 on micronutrient deficiencies showed that 7.9 percent of children from 12 to 59 months old suffer a severe vitamin A deficiency; 23.4 percent, a moderate; and 35.8 percent, a slight deficiency. This represents a total of 67.1 percent, which is indicative of a serious public health problem. The prevalence of anaemia in children from 12 to 59 months old lies in the range of 28.5 percent. Vitamin A deficiency increases the risk of morbidity and mortality among children, whereas iron deficiency affects their development and learning capacity.
4. The Government of Nicaragua is planning, as a short-term strategy to overcome micronutrient deficiency, the fortification of sugar with vitamin A, and of salt with iodine and iron. The fortification of foods for use in pre-school and school feeding programmes will enhance and complement the national strategy, whose objective is decreasing vitamin A and iron deficiency. Monitoring and evaluation of children's nutritional status within the FONIF and MED components is an essential activity that allows the assessment of the effects of fortified food on the children's micronutrient status.



5. Table 4 shows the logical framework that will be used to better assess the progress of nutritional indicators. The cost of fortifying foods for the FONIF and MED components, covering 375,000 children, is presented below.

**TABLE 5**

<b>COST OF FORTIFICATION</b>	
<b>Micronutrient</b>	<b>Cost/year (dollars)</b>
Vitamin A	0.253
Thiamine (B1)	0.032
Riboflavin (B2)	0.053
Niacin	0.067
Folic Acid	0.016
B12	0.053
Iron	0.040
<b>Total</b>	<b>0.514 dollars X 375 000 children X three years = 578 250 dollars</b>
<b>Other costs</b>	<b>Dollars</b>
Annual cost of micronutrients	578 250
Operational costs (10 percent)	57 825
Equipment for anthropometric and biochemical evaluation	15 000
Monitoring and evaluation	148 925
<b>Total</b>	<b>800 000</b>

