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NUTRITION SYSTEMS STUDY UNIT - MOROCCO

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PROJECT PAPER (PP)

Nutrition Systems Study Unit - Morocco

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Part I - Summary and Recommendations

B. Recommendations

1. Summary of Proposed Funding

	Yr 1	Yr 2	Yr 3	Total
U.S. Contributions				
AID contract 73 m/m	197,800	189,900	112,300	500,000
U.S. participant training	45,000	24,000		69,000
Other costs	17,000	15,000	7,000	39,000
Sub-total	259,800	228,900	119,300	608,000
Inflation factor (8%)				49,000
Contingency factor				23,000
Total AID				$680,000
GOM Contributions				
Salaries/Adm.	27,600	27,600	27,600	82,600
In-country transportation	18,600	6,600	6,600	31,800
Office space	18,500	6,000	6,000	30,500
Other costs	25,800	25,300	15,800	66,900
Sub-total	90,500	65,500	56,000	212,000
Inflation factor (8%)				17,000
Contingency factor				11,000
Total GOM				$240,000
TOTAL PROJECT COSTS.				$920,000

2. Total New AID Obligations Requested

Grant Funds: $680,000

C. Description of the Project

This project will provide grant technical assistance to the Government of Morocco to develop at the national level a nutrition planning capability which will devise a national strategy for improving the nutritional status of the population. In 1972 the Prime Minister established an Inter-ministerial Commission on Food and Nutrition (CIAN) to develop and coordinate nutrition programs and policies. (The decree establishing this Commission is attached as Annex B.1.) The composition of the Inter-ministerial Council (CIAN) includes the Ministries of Public Health; Agriculture and Agrarian Reform; Primary and Secondary Education; Cultural Affairs; Interior; Commerce and Industry; Labor and Social Affairs; Information; Finance; and, the Secretariates of State for Plan and Regional Development; Entraide Nationale and Handicrafts; Economic Affairs; and Youth and Sports. CIAN has lacked the analytical and planning competence to develop a comprehensive national nutrition strategy for Morocco. This project will provide CIAN with the necessary nutrition analysis and planning skills. This is in direct response to formal request of April 15, 1975, from the Secretary of State for Plan (PLAN) for such assistance. PLAN has established a cell for nutrition studies and research within the Human Resources Division responsible for nutrition analysis and planning and coordination of appropriate nutrition activities. It is intended that this cell (Cellule d'Etudes et de Recherches en Nutrition - CEREN) assume a more direct staff function to assist CIAN.

AID will provide short and long-term technical experts to assist CEREN to analyze data, identify inadequacies in data, undertake special analyses and studies, and assess existing and proposed policies and programs necessary for the development of a cohesive national nutrition strategy which is to be integrated in the next economic and social development plan.

To facilitate the development of Moroccan nutrition planning and analysis skills, AID will provide participant training for selected Moroccans. A limited amount of AID funds ($25,000) will be used to assist with special local studies necessary to define and evaluate the extent and nature of nutritional needs and assess apparent opportunities to relieve the needs. Partial funding ($14,000) for two conferences on nutrition is provided. If the project activities are accomplished as planned within three years, it is reasonable to expect:

a. that a nutrition planning and programming capability within the Government will be established on a self-sustaining basis;
b. that a national nutrition strategy can be developed;

c. that positive nutrition policies and programs can be articulated in the next national economic and social development plan; and

d. that various nutrition interventions will be underway at the end of the project.

D. Summary Findings

Nutrition problems in Morocco touch many people in complex ways. Solutions will require concerted, informed action by both the Government and the individual family over a period of years. Governmental actions by various ministries will require strengthening and coordination. The political and social realities in Morocco and the accelerating demand for rapid economic and social development strongly suggest the need for systematic and pragmatic assessments of the tradeoffs and compromises between the various interests and national priorities, all of which affect nutrition status in Morocco. The Government of Morocco has indicated, and this project assumes, a serious governmental intent to improve the nutritional status of the economically and socially disadvantaged in Morocco. For the most part those so disadvantaged fall into two groups:

1. the rural poor - the landless, the small dryland farmer, and the traditional herdsman;

2. the urban poor - the unemployed and the underemployed.

Within these groups for somewhat different social reasons women and infants, and children under 5 appear to suffer more accutely from both insufficient nutrition and improper use of existing foods.

The precise measurement of the extent of nutritional inadequacies and their prevalence has been seriously hampered by the inadequacy of reliable data. With such limited data it has been impossible to perform definitive cost benefit or cost effectiveness analyses. It would appear clearly to the advantage of the Moroccan Government to undertake such analyses utilizing unpublished but probably available data.

The Moroccan Government has long been cognizant of nutritional problems among its populace. Various ministries have collectively and individually developed nutrition program responses. These represent a strong foundation of professional interest and experience. However, they have had little significant impact on either preventing nutritional problems or in treating them. That is not, however, to say that the activities and programs are without value. One of the first tasks of CERES under this project should be a thorough review and evaluation with the functional ministries of their existing activities to discover what seems to work best at least cost.

The Government of Morocco is clearly ready for this project. They have investigated and reviewed information on other country nutrition programs and have concluded that a mechanism and methodology for analysing nutrition problems are needed. For the past ten years nutrition improvement has been pursued on a "laissez faire" basis primarily by the Health and Agriculture Ministries. To absorb some of the systemic problems of poverty, various programs sponsored by Entraide Nationale and Promotion Nationale have evolved. A system of retail price ceilings on staples - flour, oil, sugar - has evolved to ease the plight of the urban poor. For families directly reached by these programs, positive nutritional benefits have accrued, largely in the form of income subsidies. However, none of these programs has the financial resources to reach all of those who are in need and some of the activities have little direct impact on the groups most in need of improved nutrition.

This nutrition project will strengthen the Government's ability to analyze and to assess existing needs and to program strategies. The systems analysis approach would seem an efficacious tool for the development of a rational nutrition strategy which is duly cognizant of the complexity of both the problem and its solution. It would also appear that significant nutrition improvement can be attained largely within the framework of existing budgetary resources with minor disruption of any existing programs. The project Design Team, thus, concludes that this project is economically and technically feasible. It will contribute to Moroccan social development and will directly improve the health and nutritional status of women and the nutritional health of Moroccan children. Actual implementation of the nutrition strategy developed under this project is clearly the responsibility of the Government of Morocco. We believe that such implementation is both economically and socially feasible and that the Moroccan Government has the ability and will to do so.

This project meets all applicable A.I.D. criteria.

E. Project Issues

1. Are Moroccan nutrition problems sufficiently severe to warrant A.I.D. assistance?

Discussion:

The extent of nutrition problems described in the 1971 MOPH nutritional survey and the PLAN 1970-71 Survey of Household Expenditures and Consumption indicates serious malnutrition among both urban and rural groups in Morocco. Estimates of infant mortality corroborate the nutritional situation. The nutritional situation and the incidence of malnutrition are similar to those found in other developing countries where A.I.D. is providing national

nutrition planning assistance. Solutions to Moroccan nutrition problems are made more difficult by the climatic limitations on increased food production and the widespread illiteracy which limits access to the target population. This project will provide the GOM with the analytic tools and skills needed to formulate effective solutions to the malnutrition problems.

2. Why was the project designed to provide only nutrition planning and analysis assistance?

Discussion:

Moroccan development planners and technical ministries are aware of the general extent of nutrition problems. As a consequence a number of nutrition related activities are underway to deal with the problem. The missing ingredients have been an analysis of the food and nutrition system which produces the problem and a subsequent assessment of areas wherein program and policy modification will yield maximum improvements in nutritional status. Since many factors contribute to the nutritional status of a population solutions to nutritional problems are usually complex. The first step toward such improvements is an understanding of the various contributing factors and their inter-relationships. It is anticipated that this project will generate specific nutrition interventions which may be assisted by various aid donor groups.

3. What is the commitment and ability of the Interministerial Commission to implement an effective nutrition strategy?

Discussion:

The King has declared his intent to mount programs which improve the standard of living of the people. This project represents one such program. In mounting an effective nutrition strategy, CIAN will be acting to implement the Royal declaration. The seriousness (extent and magnitude) of the nutrition problems coupled with the costs of current programs to assist needy families serves to strengthen Moroccan efforts to design an effective nutrition strategy. PLAN's leadership in this project is another indicator of the commitment of the Moroccan Government to nutritional improvement goals.

4. What is the legal status of the cell for studies and research on nutrition (CEREN)?

Discussion:

PLAN has the authority to organize itself to perform its duties and responsibilities for analysing development problems, preparing long-term economic and social development plans, and coordinating proposed activities

and programs of the various ministries. This includes the ability create CEREN, to coordinate nutrition activities, and to design a nutritional strategy for the next social and economic development plan.

5. Can CEREN function as planned, i.e. as coordinator of national nutrition activities and as effective secretariat to CIAN?

Discussion:

The Human Resources Division in PLAN currently monitors nutrition activities. The Ministry of Public Health has been designated secretariat to CIAN. However, it is expected that when CEREN is staffed and functioning as planned it will be officially designated the secretariat to CIAN. Such designation constitutes a legal technicality since PLAN is an active participant in CIAN and presently reviews and coordinates all Moroccan development plans.

PART II - PROJECT BACKGROUND AND DETAILED DESCRIPTION

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A. Background

1. Setting

Climate and geography have had a profound impact on the development of the country. The country is diagonally dissected by parallel ridges of the Atlas mountains which tend to block moist air flows off the Atlantic creating fairly arid conditions to the south and east of the mountains. The prevailing winds in combination with the proximity of the mountains make rainfall both highly variable and generally scant. The effect of this rainfall was well described by a Moroccan writer:

" If it rains,
If it rains at the right time,
If it rains enough,
If it does not rain too much, then the countryside will be green, the peasants will reap a good harvest. The 25 to 30 millions of quintals of grain will fill up the motmora. The flour mills will work full time. The souk will be more lively. Purchases of cloth, oil, sugar, and so forth will multiply. Tax collection can be effected less painfully. The balance of payments will be in good shape and will not be burdened with the importation of food, a real drain on foreign exchange."

Moroccan agriculture shows a rather clear demarcation line between irrigated areas and non-irrigated areas. The irrigated areas are few in number and small compared to the non-irrigated cultivated areas. Their per unit production, however, is high and is oriented towards fruits and vegetables, which have found a successful export market in Europe and elsewhere. The non-irrigated areas constitute 95% of the cultivable land where the majority of the rural population lives.

In spite of investments and efforts in the rainfed areas, many farmers still use intensive techniques of farming which have not changed for generations. The local varieties of the principal grains - wheat, barley, maize, and rye - are largely immune to local diseases and rusts, and yield consistently under conditions of limited rainfall.

Before World War II, Morocco was a net exporter of cereals. In the two decades after the war, as population increased and investable funds for agriculture went largely into irrigation, production of cereals on rainfed lands remained fairly steady (though subject to wide fluctuations due to weather). In the 1950's the Moroccan Government began to purchase cereals on the world market to make up the growing deficit between production and consumption.

Traditional grazing practices and overgrazing in the cultivable rainfed areas have also limited the introduction of new crop technologies and have reduced meat production and crop yields in some areas.

Two-thirds of the population in Morocco still lives in rural areas where illiteracy is extensive and schooling rudimentary. Although there have been large investments in primary education, 76% of the adult population remains illiterate. In rural culture children contribute economically to the household at quite young ages, and education and schooling seem less important. In rural areas in 1971 literacy among adult men was estimated at 10% while literacy among rural women was no more than 1%.

The population of Morocco has been growing rapidly for the last two decades reflecting a relative improvement in health and nutritional status due in large part to an improvement in the standard of living made possible by improved transportation, communication and the control of major epidemics. Present levels of health reflect both limited access to preventive and curative health services and high fertility. Despite 10 years of family planning efforts by the Ministry of Public Health, family size and fertility remain high. The population is expected to double in approximately 20 years.

Between 1960 and 1971 rural population grew by 1.76% per year while the urban areas grew at an average annual rate of 5.19%. Approximately 46% of the population is less than fifteen and there are approximately 2.8 million infants and children under age 5. CERED (Centre de Recherches et d'Etudes Démographiques) in PLAN estimated in 1972 that 30% of the annual deaths in Morocco occured in infants less than 1 year of age. In rural areas another 24% of deaths occured in children between 1 and 5 years in contrast with only 11% in urban areas. Over 700,000 births occur annually and more than 10% of the babies die within the first year.

Investments in health care have been largely allocated to curative facilities which apparently are not able to effectively serve the rural needs. Infant mortality estimates (IME) vary from year to year. In 1972 CERED estimated the IME at 70 in urban areas and 97 in rural areas; in 1973 the urban rate climbed to 104 while the rural rate reached 120. In rural areas, death rates for adult women appear much higher than for men in the 15 to 45 age group. In 1972, deaths to women in this age group counted for 13.3% of all estimated deaths to women while only 6.0% of male deaths fell in this age category. Deaths due to complications of child birth must be considered the primary cause of this differential.

Nutritional Surveys

Three nutrition surveys and a national household consumption survey conducted between 1958 and 1972 provide some insight into the apparent nutritional problems in Morocco:

1. Ferro Luzzi Survey (FAO), 1958
2. Four Region Survey by Raoult (WHO), 1967
3. National Survey of Child Nutrition, Ministry of Public Health, 1971
4. Consumption and Household Expenditures of Morocco, Ministry of Plan, 1970-71

In 1958, Professor G. Ferro Luzzi, under the aegis of FAO, conducted an extensive survey of nutritional conditions. He found that individual caloric consumption varied greatly and estimated that 20% of the population exceeded their physiological requirements but that 20-30% consumed insufficient calories, primarily children and pregnant and nursing women. His findings on protein consumption were inconclusive.

Professor Luzzi observed that after a high neonatal mortality, child mortality remained roughly stationary until age 1 when the rate began another rise that continued through age 2 years. He noted that during breast feedings, complementary infant feeding was meager and that weaning was marked by an abrupt transition to an adult vegetarian diet.

In 1967, Dr. A. Raoult, a WHO medical nutritionist, published the results of a nutrition survey conducted in four representative regions of Morocco which were known to be disadvantaged. Height and weight determinations of children 1-14 years of age were plotted on Maredith growth charts. Height and weight were essentially normal until the age of 6-8 months when a definite dip occured. Linear growth roughly paralleled that of weight.

In the Southern preSaharian region, 75% of surveyed children aged 6 months - 3 years has either first or second degree malnutrition and each of the other regions about 57%. The nutritional situation was most critical in the South where 32.5% of children measured shows signs of edema in the 3-36 months age group, as compared to an average prevalence of only 15%.

Raoult found rickets in approximately 30% of children from 0-24 months of age and in 44% of the 2-3 year old group - without notable differences between regions. His study confirmed that the period of late breast feeding and weaning were attended by disquieting malnutrition in all the socially and economically unfavored zones but particularly in the preSahara.

In March 1971 the Ministry of Public Health conducted a national nutrition survey designed to evaluate the nutritional status of infants aged 0 - 4 years. A national sample of infants and children was examined in 15 urban sites and 13 rural sites. Meredith growth charts were used and the Ecole Europeane classification of nutritional status was employed: First degree malnutrition (between 90% and 81% of norm), second degree (between 80% and 61% of norm) and third degree or severe malnutrition (61% of norm or less).

At all ages the nutritional problems were greatest in rural areas. A total of 45% of children were moderately malnourished (second degree) and 5.6% severely malnourished (third degree) in rural areas, with corresponding figures of 33% and 2.4% in the urban setting. The rural children were of shorter stature. Height curves for both rural and urban groups showed a greater degree of retardation than the weight curves. Between the ages 10 and 15 months, 9% of rural infants had edema while only 5% of urban children of similar age were edematous. Clinical rickets was found in 2.6% of urban and 4.7% of rural infants. The most important findings were that weight gain and linear growth were generally satisfactory until the second six months of breast feeding and the commencement of weaning, especially between ages of 10 and 27 months.

A national household consumption survey was conducted by the Ministry of Plan between April 1970 and April 1971. Urban and rural households were surveyed in geographic areas corresponding to the 1971 MOPH nutritional survey. The results revealed that the average per capita daily consumption of protein in both urban and rural areas exceeded the theoretical need. And while the national average per capita daily consumption of protein in both urban and rural areas exceeded the theoretical need, actual average daily consumption ranged widely by geographic region, occupation group and household expenditure class. In the Agadir, Tarfaya, Ouarzazate regions daily protein consumption for all groups averaged only 56 grams/person. Urban households averaging less than 864DH ($216)/annual expenditures per person consumed daily an average of less than 85% of required calories and 91% of protein; more than 40% of all urban households fell into this category. Approximately 60% of rural households spent less than 600DH ($150) per person per year and consumed a diet deficit in calories. Rural diets tend to be deficit in calcium, vitamin A, vitamin B and vitamin C, and about 80% of protein needs are met through cereal consumption. In view of the general dietary reliance by poorer groups on cereals to meet caloric and protein needs, malnutrition among infants between 6 months and 36 months is not unexpected. Children at these ages have difficulty in consuming adequate bread and cereals to meet protein needs. Children in these age groups are also susceptible to diahrreas, parasites, colds and infectious diseases which increase their nutrient requirements. The estimated infant mortality and deaths to children under 5 reflect the combined impact of inadequate preventive child health care and the poor nutritional state of many young children.

3. GOM Nutritional Activities

In 1959 following publication of the report by Professor Ferro Luzzi, the Government of Morocco formed CIAN. Its purpose was to facilitate a national response to the nutrition problem by coordinating the activities of the various ministries. A subsequent decree in 1972 broadened the composition of the original Commission. Under this latest decree, issued on August 23, 1972, the Commission was to elaborate a national nutrition strategy and coordinate the nutrition activities of the various members.

The best known nutrition program is probably the school lunch program run by the Ministry of Education since 1957. By 1975, 2,017 schools were feeding 324,000 primary school children (24% of the enrollment) on a regular basis using in part US P/L 480 Title II food donations. Food and nutrition concepts were being taught to primary school children at the fourth and fifth grades. Because of the limited availability of Title II foods and the need to apply these to more nutritionally vulnerable groups, US direct participation in the Moroccan school feeding program phased out in FY 1975. The Government of Morocco expects to continue the program and is seeking assistance from the World Food Program. Beginning in 1966 the Education Ministry also initiated a program of school gardens and small animal husbandry projects to complement its efforts to teach nutrition concepts and to operate the school lunch program. UNICEF and FAO have provided assistance to the Ministry for these activities. By 1975 there were 440 school gardens and 420 small animal husbandry centers.

Similarly, under the aegis of CIAN, a three volume series on hygiene, nutrition and reproduction was prepared for the teacher training schools. Units on nutrition are being included in the professional and sub-professional training curriculums of various governmental service cadres, including health and agriculture technicians and monitrices from foyers feminins.

Only a small proportion of the MOPH budget is allocated to preventive health activities. Malaria surveillance, vaccinations, and contagious disease control programs are largely the responsibility of itinerant nurses acting under the Provincial Medical Officers. In some provinces a separate Public Health Officer acts for the Governor to maintain the quality of municipal water supplies and of meat and foods sold. In rural areas there are approximately 120 health centers and 520 dispensaries operated by the MOPH. Because these rural centers are inadequately supplied and staffed and are overwhelmed by patients demanding cures and treatments, preventive health activities and programs do not receive adequate attention or support. In urban areas there are government hospitals, health centers and dispensaries as well as private facilities. But for a Moroccan family to obtain modern health care, treatment is an expensive and time consuming process involving long waits and little understanding and sympathy from health workers.

Health centers issue prescriptions for expensive medicines the poor cannot afford to buy. The poor then turn to traditional medicine where for a fraction of the cost immediate care and "medicines" are available.

Mothers and expectant mothers constitute a large group in Morocco who are in need of practical, inexpensive advice on child care and family nutrition needs. Beginning in Fall 1975 the Ministry of Public Health plans to initiate a three year training program for applied nutrition technicians to work in the newly organized PSE centers. Initial impact from this training is thus expected in three years.

To provide prenatal and infant care services the Ministry of Public Health operates 283 centers for the protection of mothers and infants. Up to now these centers served expectant mothers and infants only through age 2 with child care and nutrition education counselling. Innoculations - tetanus, DPT, BCG, smallpox - and family planning counselling and services were also provided. Children over two were not considered a special target group and mothers with these slightly older children have had to wait their turn in outpatient clinics. Although the PMI centers have a new name PSE (la Protection de la Santé de l'Enfant) it is not clear whether they will serve all children under 4 or even if they will continue to serve pregnant women and lactating mothers.

With the financial assistance of UNICEF the Ministry of Health has commissioned a commercial edible oil refinery plant (Société d'Exploitation des Produits Oleagineux, SEPO) in Casablanca to develop a protein rich weaning food made from locally available products.

To assist in meeting the needs of the socially and economically disadvantaged, various food distribution programs have evolved under the sponsorship of Entraide Nationale. Entraide receives food aid from Catholic Relief Services at the yearly rate of 39,000 m/t of P/L 480 Title II commodities valued at $11 million. Three programs are directed toward immediate family food needs. Two hundred and fifty social education centers assisted by CRS distribute food to approximately 125,000 needy mothers with children aged 2-5. The food ration is based on the mother and two children in the household. CRS received a $282,000 operational grant from A.I.D. in FY 1975 (1) to develop and train provincial monitrices who will supervise the centers and (2) to introduce nutrition education concepts for the mothers into the program of the social education centers. Food-for-Work programs constitute another nutritionally important program operated by Entraide. Approximately 25,000 families are directly aided by this program which operates in all provinces. Also improving family nutrition are the 117 ouvroirs in which young girls from needy families receive training in handicrafts and home management. Depending upon the skill and imagination of the monitrices the girls may also receive training in literacy, child care, nutrition,

personal hygiene, etc. The approximately 25,000 young women enrolled in ouvroirs receive a food ration and their families thereby benefit. These young women, who are either school drop-outs or have been unable to attend regular school, constitute an important target audience from medium and long-term solutions to the nutrition problems of Morocco. Other food aid is offered to 25,000 children in orphanages, including also approximately 3,000 children in special facilities under the auspices of the Moroccan League for the Protection of Children. Cash-for-Work programs sponsored by Promotion Nationale employ approximately 100,000 otherwise unemployed or under employed workers annually to implement provincial infrastructure development projects. These Cash-for-Work, Food-for-Work, the social educational and ouvroir programs are nutritionally important to the economically disadvantaged reaching more than 275,000 households or nearly 11% of all households in one way or another.

To increase the availability of sufficient food through modern agricultural techniques requires trained agriculturalists. The Ministry of Agriculture operates 5 schools of agriculture, 3 with departments of human and animal nutrition. The most developed human nutrition department is at the Hassan II Institute of Agronomy and Veterinary Sciences in Rabat. The curriculum for these programs calls for the students to perform extensive field survey work in rural areas so as to develop an awareness and understanding of the agricultural and nutritional problems in rural Morocco. The nutrition staff at Hassan II as well as the nutrition service of the MOPH offer a substantial resource for the development of cadres working with rural households and particularly mothers and children.

4. U.S. Assistance

U.S. assistance to Morocco with a nutritional impact has focused on three priorities:

1. increased food production,
2. reduced birth rate, and
3. immediate food aid to needy groups.

In the next few years U.S. agricultural assistance will focus on the problems of developing and increasing food production for the relatively more disadvantaged rural farmer. Such an approach is wholly consistant with national nutrition improvement goals and a concern for the rural poor. After approximately ten years of effort the Moroccan Family Planning program is beginning to gather momentum with A.I.D. assistance. Reducing the high birth rate is critical to achieving within the next 3-5 years a significant improvement in the nutritional status of pregnant and lactating women and of children between 6 and 36 months of age. It is hoped that food aid through U.S. P/L 480 Title II will continue at existing levels and that it will be increasingly targeted to the groups most vulnerable to malnutrition, namely children age 0 to 4 years.

In 1973 and again in 1974, representatives of the Office of Nutrition, Technical Assistance Bureau, A.I.D., visited Morocco to review nutrition activities and programs. They urged the Government of Morocco to activate the Interministerial Commission and to proceed with the development of a national strategy. It was concluded that the most efficacious means would be to create within the Ministry of Plan a nutrition systems study unit which could focus on the problems and design a national nutrition strategy which would involve all the various concerned ministries in coordinated programs. This 197 report was well received by the Government of Morocco. On its own, CIAN despatched a team (Health, Plan, and Entraide Nationale) to observe the Tunisian nutrition program, initiated a study of other country responses to nutrition problems, began a survey of current Moroccan government programs in nutrition and requested A.I.D. assistance in developing a nutrition planning and research cell in the Ministry of Plan.

B. Detailed Description

While the precise extent and nature of nutrition problems in Morocco cannot yet be fully documented, it is apparent that in certain areas and among certain groups serious nutritional problems exist. This project is designed to contribute to the goal of promoting and improving the nutritional status of the Moroccan population. Since the problems of undernutrition affect to a greater extent those who are socially and economically disadvantaged, measurements of nutritional status which are focused on these groups should be sensitive to positive changes over time. Although there are currently a number of Government programs directed toward social and economic development and the relief of the socially and economically disadvantaged, the net nutritional consequences of these activities have not been assessed.

The purpose of this project is to work with CIAN and CEREN to develop a nutritional planning capability looking toward the implementation of a program that would lessen nutritional disparities among Moroccans and reduce the prevalence and incidence of clinically measurable nutrition problems. The first step toward a national nutrition strategy requires two major sets of descriptive analyses - the first involves a dynamic description of the food system from producer to consumer. The second required analysis is intended to delineate the scope and magnitude of nutritional needs in Morocco and to identify more precisely the parameters of needs among the Moroccan population. (The existing research studies and facilities, noted in Part A and referenced in Annex B, while contributing substantially to our understanding of various aspects of the nutrition problem in Morocco, have some notable gaps which make the prescription of solutions tentative at best.)

Since 1959 the Government has officially provided an action framework for national nutrition programs largely in response to observed nutritional problems. In this period the Government has initiated, in the context of its economic and social development planning, a number of programs with positive nutritional benefits. However, until quite recently economists and development planners were quite convinced that the most cost effective means to improve the standard of living including nutritional status, was to invest in capital intensive industry and the supporting infrastructure required for a modern society. In Morocco, as in many countries of the developing world, it has become more and more obvious that the benefits of such investments do not necessarily flow equally to all segments of society. These issues will be discussed more fully in Section III of this paper.

This project is intended to assist the Interministerial Commission (CIAN) to design and implement a realistic national nutrition strategy. The March 1972 governmental decree confirmed CIAN's existence and charged CIAN specifically with the elaboration of a national policy on nutrition and food and the coordination of all necessary actions. The MDPH was designated as the Secretariat to CIAN. The decree defined two technical working sections - one to coordinate applied nutrition and nutrition education activities and one to coordinate research on nutrition needs and food behaviors. Subsequently various teaching materials for nutrition education were developed and integrated into various training curriculums in health, primary schools, agriculture, ouvroirs, foyers feminins, etc. Little or no action was taken to implement the charge of the second technical group to coordinate research on the nutrition problems or promote nutritionally improved diets. The Secretary of State for the Plan who is a member of CIAN, has organized an informal Nutrition Systems Study Unit attached to the Human Resources Division. It is expected that this Unit, which will be called CERREN, will have the duties and functions described below in assisting CIAN to carry out its responsibilities:

1. Determine the extent and nature of the problems of nutrition in Morocco

a. collect and analyze existing information related to nutrition status and identify additional data needs;

b. sponsor and support necessary study and research to identify and locate population groups within Morocco whose diets are inadequate;

c. sponsor and encourage surveys on the existing flow of food from producer to individual in order to identify leakages in this flow which might be susceptible to modification; for example, increased food requirements due to disease, food spoilage in warehousing, etc.;

d. sponsor and support necessary studies to determine more precisely the nutritional needs of various groups and the availability of foods or feasibility of producing the foods necessary to meet these needs.

2. Elaborate with other interested ministries a national strategy on nutrition which will be included in the next national plan for economic and social development.

a. develop a methodology for analyzing the nutritional impact of present GOM budgets and the multifacated nature of contributing factors and probable solutions;

b. examine and analyze the intervention effects and the interrelationships between sectors in order to identify actionable programs and their priority;

c. determine selection criteria for nutritional projects;

d. assist the various ministries in the design of priority nutrition studies and interventions;

e. develop a methodology for evaluating nutrition projects

3. Coordinate the nutritional activities being carried out by the various Ministries

a. prepare the agenda for the meetings of CIAN and provide detailed notes and reports on the CIAN decisions and discussions;

b. follow-up on the implementation of nutrition activities and coordinate information exchange among representatives of other ministries on nutrition programs and activities;

c. act as a reference center for the exchange, collection, and dissemination of documents and publications on nutrition to the various ministries.

A.I.D. technical inputs are designed to assist the GOM and CIAN to design and implement a flexible nutrition strategy. PLAN currently has responsibility for coordinating the activities and programs in nutrition of the various Ministries. This project will provide (1) the necessary training in nutrition systems analysis and planning in the U.S., and (2) a technical advisory contract team to work with CERKN and the Government to assist in the development of a comprehensive rational nutrition strategy.

A contract team composed of 2 long-term advisors for 30 months each and approximately 13 man/months of short-term consultants is planned. The contractor team will work with CERKN. A senior economist cum nutrition planner is sought as contract chief of party. He should be experienced and skilled in systems analysis, particularly in the analysis of nutrition and food systems. The second technician sought is an agricultural economist/nutritionist with particular expertise in food systems and marketing analysis. These two will focus their efforts on the analysis of the present nutrition system, from farmer to consumer, and the development of the nutrition analysis technology needed for the articulation of a national nutrition strategy. Thirteen man/months of short-term consultants will be provided in order to carry out specific technical studies or analyses. It is expected that the contract team will devote a minimum of 10% of their effort to the on-the-job training of the CERKN professional staff. A critical project assumption is that an experienced contractor can be identified who can recruit, or has now available, properly qualified French speaking staff. In any event, as

a contingency, funds for a French language total immersion course have been included in the budget.

Three long-term participant training programs in the U.S. are designed to further expand the nutrition analysis and planning skills required by Moroccans for the elaboration of their nutrition strategy into feasible economic and social development projects. Three short-term training and observation programs for senior level GOM officials are planned during the life of the project to facilitate Moroccan participation at high level training seminars and workshops.

To highlight the nature of the nutrition problems and the research and analysis in progress, two national level working conferences are tentatively planned - one in January 1977 and the second in July 1978. Books and reference materials will be needed by CEREN in conjunction with the establishment of a reference and documentation center which will act as a clearing house for information on nutrition. A sum of $9,000 has been budgeted under contract services for such supplies. For the contractor and CEREN to function effectively, certain office equipment - calculator, typewriter - and special equipment for nutrition analyses will be required. Twenty thousand dollars have been budgeted in the contract for such equipment. To retain some flexibility outside the contract, $25,000 has been allocated for funding special studies from either U.S. or local research groups. Possible uses for these monies might include a special market analysis of food prices in conjunction with a private researcher, or the development and field testing of radio messages on nutrition.

It is planned that the bulk of assessments and evaluations of existing programs will be organized and carried out by the appropriate functional Ministry. The AID/W Office of Nutrition has available additional resources and short-term consultants to assist in special program areas; availability and utilization of such resources are assumed. Certain of these study areas are likely points for future intervention and would be elaborated in the nutrition strategy and implementation plans. Among these AID/W resources are food technologists, mass media and nutrition education specialists and nutrition status survey expertise.

USAID and the GOM are considering the feasibility of initiating a national nutrition status sample survey of children aged 6-72 months. Such a survey undertaken during the first part of CY 1976 would be expected to validate the assumption that infants and young children constitute a priority group requiring additional nutrients. It could be expected to also identify geographic areas where problems are more acute.

A second critical project assumption is that the position and function of CEREN be regularized and adequately staffed. Under present authority PLAN is a member of the Interministerial Commission. In the past year it has been decided that the Secretariat of the CIAN will rest with the Secretary of State, Prime Minister's Office, in charge of Planning and Development rather than with the MOPH. This will provide for better coordination of the nutritional programs and activities of the concerned ministries, and will provide the overview needed in formulating a national nutrition strategy consistent with national goals and priorities. CEREN will serve as the permanent Secretariat of CIAN and will be located in the Plan.

The seriousness of the present state of food and nutrition matters gives much validity to the desirability of strengthening the ability of CIAN to coordinate the implementation of a nutrition strategy. Cures for nutrition problems are expensive. Solutions to nutrition problems must come not from food hand-outs or foreign donors but from an equitable resolution of problems in the operation of the local food system which result in many malnourished children and adults. Solutions to these problems are to be found in the modification of existing economic, social, educational, and health policies. Such an approach requires serious analysis and determined leadership.

The GOM has accepted the challenge of attempting to solve the nutrition problems and has formally requested A.I.D. assistance; that there are uncertainties and risks in a planning project cannot be denied. Some faith is necessary that it will be possible to move from plans and strategies to policy changes and cost effective programs that make a significant difference in nutritional status.

PART III - PROJECT ANALYSES

III. Project Analysis

A. Technical Analysis

1. Human Resources Development

The population of Morocco represents an existing and a potential resource for both economic and social development. Unfortunately investments in human capital unlike many investments in infrastructure tend to produce results only in the long term. Present data suggest that prior year Moroccan investments in human resources, e.g. the education system, are just now at the point of producing a solid sustained contribution to the Moroccan Government and its economy. However, the bulk of the population of Morocco is still largely rural and illiterate and consequently has received only limited benefit from Moroccan investments in education. Improving this human resource has proved difficult.

Results from investments in education have shown remarkable progress when compared to the educational status in the 1950's. Nevertheless this progress obscures the fact that the absolute number of illiterates in the population has risen dramatically over the past 25 years - this despite increases in primary school enrollments. With population growth rates near 3% per year, investments in the expansion of primary schools - in teachers, buildings, and supplies - would need to increase dramatically to meet present unmet requirements and keep up with the numbers of children reaching school age by the year 1985. The Government is presently attempting to develop a comprehensive strategy for human resource development which will eliminate the major inequities in the present system.

At present, the bulk of the rural population is trapped in a vicious cycle of poverty. For many, job opportunities in Moroccan cities and in Europe have offered some escape. This is in turn creating some new problems in rural areas where, contrary to the conclusions one might reach on the basis of the high maternal mortality rates, adult women aged 19-45 outnumber men. It is not entirely clear how this affects the Moroccan family or rural agricultural productivity, but it is clear that there are both negative and positive effects on rural life and nutritional status.

Certain sections of the population would be expected to suffer more severely the effects of inadequate nutrition than others. For the most part, those most directly affected fall into two groups: (1) the rural poor - landless laborers, small dryland farmers, traditional herdsman - and (2) the urban poor - the unemployed and the underemployed. For somewhat different social reasons within these groups, women and children under age 5 appear to suffer more acutely from both insufficient nutrition and improper use of existing foods.

Under the existing conditions of excess rural labor and seasonal underemployment, it is difficult to assess the impact of poor nutrition on rural labor productivity. It is certain, however, that both acute and chronic disease episodes increase the requirement for food. Existing Moroccan health statistics do not lend themselves to precise calculations of such increased food needs, but in rural areas it is probably safe to assume that there is a significant increase in nutrient needs for many persons.

Employed family members, are more likely to receive their full share of the family food supply during periods of scarcity. Ignorance of the food needs of the family and preferences for animal protein probably contribute to unbalanced family diets during periods of shortages.

2. Nutritional Status

In 1959 Ferro Luzzi clearly observed widespread malnutrition in Morocco, particularly in the rural areas, and identified the dietary problems of the infant during the latter stages of breast feeding and during weaning. In other studies, although constrained by inexact age data, it was observed that Moroccan infants, particularly in rural areas, began a growth decline between ages 6-12 months. After the sixth month, the volume of maternal milk is insufficient to meet the infant's rapidly rising nutrient requirements. Although some foods, especially cereal, may be added to the Moroccan infant's diet while still breast fed, in general the infant is not meeting his protein and caloric needs and malnutrition becomes evident between 6-12 months. The abrupt weaning of Moroccan infants to typically adult vegetable diets, particularly in rural areas, exacerbates his nutritional status. The cumulative effects of nutritional deficiency appear even greater during the second year of life when the child becomes susceptible to infections.

Malnutrition is basically due to inadequate intake of food. Since most adults consume a sufficient quantity of cereals, which usually contain 8 to 12% protein, and moderate quantities of legumes and vegetables, protein deficiency is uncommon among them. Very young children, who sustain increased nitrogen losses due to frequent infections, require a greater proportional amount of protein than adults. However, based on the results of the Moroccan nutrition surveys and a presumed household distribution of food not favoring the infant, it appears that the Moroccan infant suffers from an overall food deficiency rather than a protein deficiency, per se. If protein needs of the child are met, energy needs are usually met also.

Rickets is common in Morocco. Young children not served by the health services do not usually receive Vitamin D, either in food or as a supplement, and ironically may not be exposed to sunlight because of the type of clothing worn, crowded urban conditions, or inadequate child care practices. Massive dosages of vitamin D are now regularly dispensed in health centers and dispensaries in Morocco.

Anemia is mentioned in all the studies. Although neither hemoglobin or hematocrit determinations were done, it is certainly reasonable to assume that iron deficiency anemia is widely prevalent, perhaps accompanied by parasitic infections or genetic abnormalities. Anemia leads to the aggravation of other diseases and thereby contributes to overall morbidity and mortality.

Malnutrition can start before birth, often because of an inadequate intake of nutrients by the expectant mother. Indirect evidence of this is provided in other developing countries by the high number of children with birth weights under 2.5 kg. Low weight at birth is a considerable threat to infants living in poor environmental conditions and it is also established that mental retardation is common in children with low birth weights. Obtaining accurate birth weights is an important means of better judging subsequent child growth and of indirectly assessing maternal health and nutritional status.

In field studies to assess nutritional status of children, heavy reliance must be placed on linear measurements (height, skinfold measurements, etc.) and weight. Food intake data on individual children is difficult to obtain. The simplest and most readily understandable criteria of disturbed growth is probably the relative weight and height of the child, computed by relating the actual weight and height to reference weight and height norms for the age and sex of the subject. Chronic under-nutrition can result in stunting as measured in height deficit for age which is thought to reflect the cumulative effects of past malnutrition.

3. Determinants of Nutritional Status

Geography has a profound impact on the nutrition problems of Morocco, but attempts to correlate malnutrition with geographic areas are difficult. Opinions differ greatly as to where nutrition problems exist and their relative magnitude. The problem does differ between rural and urban areas because it is affected by different sets of factors in the two areas. The national household budget and consumption survey of 1970-1971, conducted by FLAN, revealed a significant difference in the average household consumption of nutrient equivalents between rural and urban areas. Variations due to local customs, seasonality and year-to-year variability in weather exert important influences on nutritional status in rural areas. In the cities, it appears that the greater availability and diversity of consumer goods compete with food in household budgets: urban diets may even decline nutritionally by shifts to processed foods.

Morocco has one of the best road and rail systems in the developing world and modern means of communication have made all parts of the country accessible, including the mountains and desert. Moreover,

even in the mountains, villagers are used to walking long distances to weekly markets. Geographical remoteness would not be a constraint to the implementation of a well planned nutrition strategy targeted to the rural poor.

Climate and weather are environmental factors which very much affect the nutritional status of most of the population. Their particular impact is on the conditions of agricultural production in the rainfed areas of traditional cultivation and, therefore, upon rural consumption. The major feature of the environment is the rainfall pattern, which determines the cropping and herding practices followed by the people. The rainfall prevalent over the arable lands of Morocco is both limited and variable and therefore restricts the acreage sown and the yields as well as the types of crops that can be grown. Rainfall imposes a limit on the density of rural population in non-irrigated areas. But this is a relatively high density which can be supported by present average yields and land productivity.

A comparison of maps showing rainfall data for the period 1933-1963 and population density in 1971 reveals that the 200 mm to 600 mm zone average annual rainfall contained roughly 80% of the communities with a rural population density of more than 60 persons per square kilometer and 75% of the communities with a rural population density of between 20 and 59 persons per square kilometer. Areas between 200 and 400 mm annual rainfall are best cultivated using specialized dryland techniques which conserve the limited moisture. Areas receiving less than 200 mm of annual rainfall lie mainly on the Sahara fringe and are too dry for regular cultivation. Thus, the rainfall parameters define both the density of population and the agriculture technology which can be profitably utilized.

Much of this discussion is based on average data. Yet rainfall, temperature, and other environmental factors prove extremely variable from year to year. Peasant farmers know this and stock up grains after a good harvest in preparation for the bad year they know will follow. That the variability of weather also induces variability in countless other transactions, for example, creating uneven demand for credit and fertilizer, should encourage a coordination of GOM activities designed to even out hardship due to periods of scarcity. Presumably, local and regional authorities would be aided in their task by a strong provincial system of reporting scarcity due to seasonal conditions or yearly crop variabilities.

The distribution of land, which often becomes a political issue, is nevertheless a key determinant of rural incomes and thereby family nutrition status. The disparity in land ownership is illustrated in the following table:

Table 1

Rural Household Distribution by Land Ownership in the Early 1960's

Size of land holding	No. of households (thousands)	Total hectares (thousands)
Landless	300	-
Possessing less than 2ha	680	550
Possessing between 2 and 4ha	205	627
Possessing between 4 and 10ha	165	1,086
Possessing between 10 and 20ha	41	586
Possessing more than 20ha	15	538
Total	1,406	3,387

Source: IBRD report No. 329-MOR "Current Economic Position and Prospects of Morocco" February 7, 1974, Vol. II - table 7.4.

Stated another way 21 per cent are landless; 48 per cent own less than 2 hectares; 15 percent own between 2 and 4 hectares; 12 per cent own between 4 and 10 hectares; 3 per cent own between 10 and 20 hectares; and 1 per cent own more than 20 hectares. According to this data taken in the early 1960's 69 per cent of rural households had less than 2 hectares each or 16 per cent of the total land surveyed, while 4 per cent of households owning more than 10 hectares each had 33 per cent of the total land surveyed.

The wealth and income of a household determine its access to food or the means to produce food and hence nutrition status. Not all families in a village have equal access to the resources necessary to produce a living for themselves. Some have more land than others; some more cattle. This results in wide differences in household consumption, even of staples like cereals as is indicated in the following table:

Table 2

Rural Household Cereal Consumption by Socio-economic Status of Household

Socio Economic Status of head of household	Number in sample	Number of persons in household	Cereal consumption (grs/person/day
small owner-operator (less than 1ha. irrigated land, 1 bullock)	47	6.9	651
Medium owner-operator	39	7.6	692
Big owner-operator (more than 12.5ha. dryland or 5ha. irrigated land, plus 2 bullocks)	30	12.9	915
Small landlord (same property classification)	36	6.9	736
Medium landlord	35	7.6	725
Big landlord	11	7.9	778
Other rural inhabitant	26	5.4	526

Source: Pierre Baron, "Esquisse Nutritionnelle du Maroc Rural", Bulletin Economique et Social du Maroc, No. 126 (January 1975), Table 2 p. 59.

In Morocco additional income would permit both urban and rural people to improve their diet. Differences in income result in part from differential access to resources, such as land, particularly in agrarian societies. But rural income is also affected by other factors, such as price and yield variability. Increases in income not only permit the family to purchase more or better food but may also permit the family to invest in education or improved sanitary equipment, which in themselves tend to improve nutritional status. For rural people, who may be better off because they produce a portion of their own food, there is evidence that their diet is nutritionally unbalanced and would improve with additional income.

Despite the prevalence of three meals per day and a large total consumption of cereals, the average rural household lives on a diet with inadequate protein. Fish and milk in the diet are rare. In the rural household consumption survey conducted by MARA (Ministry of Agriculture and Agrarian Reform), eggs were consumed less than once a week in 90 out of 238 cases, weekly in 47 cases, and more than once a week in 101 cases. Legumes and lentils are regularly consumed by most households but not in quantities adequate to compensate for animal protein deficits. Meat was consumed less than once a week in 76 out of 263 cases, weekly in 101 cases, and more than once a week in 86 cases; in this connection home-produced eggs and meat, mainly poultry and goat, are consumed at least weekly.

Besides differential access to resources and variability of crop production, income is affected by prices. In Morocco the Government helps to determine agricultural prices, through both fixed price regulations and control of imports and exports of cereals and other basic agricultural commodities. The state cereals purchasing agency, ONICL, has retained this policy of low retail prices for staple grains. This has contributed to a remarkable stability in the cost-of-living for the growing numbers of urban consumers. However, the Moroccan Government can maintain this fixed low retail price only at a considerable financial drain.

Cereals, primarily barley, durum wheat, bread wheat and maize, in that order - and pulses - broad beans, chick peas, peas and lentils - constitute the staple diet of the Moroccan people. Despite its natural endowment of reasonably good land resources, Morocco currently is a deficit producer of several food staples. In fact, modest improvements in agricultural management and practices could reverse this situation so as to provide surpluses in good crop years. For example, the country in good rainfall years produced enough cereals to satisfy domestic needs and even export some barley and oats. In poor rainfall years cereals had to be imported. Since 1966, following a succession of poor harvests, Morocco has become a net importer of bread wheat, barley, maize and various other cereal products. The ratio of the total value of Morocco's agricultural export to that of its agricultural imports fell steadily from 1.80 in 1969, reaching 0.55 in 1974. (Source: Ministry of Agriculture, Division of Economic Affairs, Statistiques Agricoles, June 1975)

4. Nutrition Education

Government officials cite education as a key to solving the nutrition problems in Morocco. There can be no doubt that nutrition education is needed by the adult population. Topics to be covered should

include the food requirements of family members, improved food production, storage handling, food preparation, and improved household health and sanitation measures. Reaching the rural household with beneficial services and programs is difficult. Many local observers feel that lack of family income is the single important factor in the slow acceptance of change by the disadvantaged. That may be, but lack of education and literacy reduces the options open to both men and women and their ability to absorb new technology. Lack of properly trained service personnel is often cited as a limiting factor. In fact, however, until more students are flowing through the educational system, it would appear that middle level manpower shortages will continue.

In the school year 1966-67 a total of 998,023 children was enrolled in the primary grades. By 1973-74 the total primary enrollment had reached 1,283,726 representing an increase of less than 30% in seven years which is a rate just barely ahead of population growth rates. Ten to twenty percent of the total enrollment repeats at each class level, and drop-outs are high (but decreasing.) Drop-outs and those not attending school present a challenge to educators and planners alike, because a part of the family nutrition problem reflects ignorance of the nutritional values of foods and the food requirements of various family members.

With more than 40% of the children not in school and with literacy at less than 25% of the rural adult male population and less than 2% of rural adult females, educational programs requiring literacy are doomed to failure. Specially designed educational messages and themes using radio, and perhaps television, are required for an effective public information campaign. Such messages must be carefully tested, be simple but not simplistic, and provide priority messages which can be reinforced at all points of contact between the target audience and public service personnel. Assistance and services advertised must be available or disappointment and skepticism will further erode confidence in Government. This suggests that public information and educational programs require careful planning and coordination with service organizations.

The existing school programs in nutrition and school gardening offer both a current model and a longer term solution to prevention of nutrition and health problems. Vocational programs in foyers feminins and ouvroirs, and cultural activities as well, have an important role to play in creating an awareness of means to improve the nutritional status of the family. Public health and social education services reaching mothers have different but complementary roles.

One potential resource which is rarely considered in governmental service programs is the element of self-help embodied in utilization of the energy and self interest of the groups for whom services are intended. Community interest and participation can be heightened by awareness of the needs and the social and economic costs of malnutrition. Man, as well as woman, need to understand how health and nutritional status affect child development and how the size of the family affects both the health and nutritional status of the mother and the child. Services for women and children are presently limited by the availability of trained personnel. Volunteers when properly trained can lend the extra hands needed to extend the out-reach capacity of present services. Professional personnel will, however, require training in the proper use of volunteer assistance.

5. GOM Response to Nutrition Problem

This project is designed to afford multiple responses to existing nutrition problems so that alternative solutions can be carefully analyzed to maximize impact on target groups in cost effective ways which are politically and socially feasible. Such an approach to short and long term program solutions will be more effective and less costly in the long run. Experience has shown that project strategies which focus on a single solution to a nutrition problem without proper analysis and understanding of the primary and underlying causal factors are frequently ineffective or wasteful.

Because the PLAN has a unique position within the GOM in coordinating economic and social development plans and programs, strengthening its ability to undertake nutrition analysis and planning was considered the necessary first step in assisting the Moroccan Government to improve the nutritional status of its population. Within the GOM, the project can draw upon the strength of the centralized governmental structure which is capable of highly coordinated action. Since independence, the Government has coordinated national economic planning. As a result today there exists within the Government a technical expertise in planning. Moreover, the GOM's decision as early as 1959 to establish CIAN reflected a readiness to think of nutrition as a national problem requiring action by such ministries as Public Health, Agriculture, and Education.

Nevertheless, in spite of renewed authority from the Prime Minister in 1972, CIAN has lacked a sense of national direction. This would appear due in large part to the limited technical nature of the programs proposed by individual ministries to alleviate the problem. Various foreign donor agencies would seem to have encouraged such responses. Health and social welfare donors have sought prescriptive cures, treating the visible problem but unable to conceptualize cost-effective preventive programs.

In contrast, development planners and economists have tended to ignore the visible nutrition problems and have concentrated on projects which would "trickle down" to the people. This produced projects which emphasized gross output, GNP per capita, and high cost-benefit ratios; distribution effects and social impact were often not considered. Planners thought nutrition would improve with increased per capita income. The special needs of young children and fertile women had little consideration in macro-economic development plans.

These development theories are being reviewed and questioned as the world's food and population problems become more acute. To arrive at an optimum balance between social development and economic development goals, analytical techniques made possible by the computer offer national planners in developing countries an appropriate tool for analyzing options and alternatives and thereby improving the quality of decision making. Informed decision making considers the effects and impact on all population groups and attempts to optimize positive benefits to the whole society. In part because CIAN has not had available the necessary data, or data in an appropriate form, to make many policy decisions on implementable programs, the nutritional status of the bulk of the rural population has probably not improved significantly over the past 25 years.

To provide direction to the Government's nutrition efforts, this project will assist PLAN to establish a "cell" of expert planners who are well acquainted with the nutrition problems of Morocco and are able to seek coordinated solutions from the vantage point of both national interest and the various sectors and disciplines whose activities affect nutritional status.

AID assistance to this cell presents an opportunity for maximum impact at modest cost. The analysis of Moroccan nutrition problems, the identification of linkages between sectors, and the assessment of present GOM resources and programs are the key tasks confronting CEREN and CIAN in the development of an active national nutrition strategy. Many of the current GOM interventions in the fields of agriculture, public health and education are not having a significant impact on the nutrition problem, and the mounting cost of imported grain to meet the requirements of a growing population constitutes a visible drain on GOM resources. Therefore, the action proposed by this project, i.e. assistance to CEREN, comes at an appropriate time. The GOM plans to reflect the results of the nutrition analyses and studies undertaken during this project in

its next social and economic development plan. Initial planning for the next plan period starting in 1978 will begin in 1976. It is expected that this project will make a significant contribution to the ultimate plans which are developed.

The project can and should utilize on-going GOM research in several ministries in nutrition-related fields (a description of this research is contained in Annex B4). Unfortunately, the research organizations involved have tended to view their respective roles in isolation from one another, and communications among them has been minimal. Coordination by CEREN of the research effort will doubtless increase as each organization recognizes its critical role in the development and implementation of an effective nutrition strategy. A coordinated research effort can serve as a solid foundation on which to base national level policy decisions aimed at improving nutrition in Morocco. It is important that coordination of nutrition research efforts by CEREN sustain the integrity and independance of the cooperating research organization to ensure valid research while at the same time they provide leadership to avoid duplication of effort and ensure utility of results. The apparent dimensions of the nutrition problems are complex and dictate to a large extent the types of nutrition intervention that are possible and desirable.

B. Social Analysis

1. GOM Social Goals

Morocco is a predominantly agricultural society attempting to modernize. Over the past 20 years, a trained cadre of governmental leaders and civil servants has been developed, and present social and economic development plans reflect a pragmatic view of the country, its prospects, its problems, and the requirements for extending development benefits to a greater proportion of the population.

The fabric of Moroccan society appears to be in the midst of change. Adult women outnumber men; many men have moved to cities or to Europe to accept jobs. Many households are thus extended families or primary groups headed by women who are widowed, divorced or whose husbands are working elsewhere. One observer estimated that as many as 25% of adult women are de facto heads of households. The woman's traditional role is one of household manager, child bearer and child rearer. When family resources are limited, there is little to manage. Child bearing ability is an important aspect of Moroccan woman's self-image. Sensitivity to both men's and women's real roles in the midst of a changing society as opposed to idealized images is difficult to build into service programs.

Governmental goals are almost always overlapping, competitive and often ambigous. Rationalizing social, political and economic goals and integrating them into feasible development plans is a responsibility of central and regional planning authorities. The results of the subsequent policies frequently have both negative and positive effects upon the population for whom they are intended. The institutional framework provided by CIAN and strengthened by the analytic capability of CERED provides a means of rationalizing policies and action programs in a nutrition context so that the net results will be socially and economically beneficial.

This project contributes directly to the enhancement of rational social planning capabilities. It will contribute to goals which the GOM itself perceives to be important. Among the goals stated in the current Moroccan Five Year Plan 1973-1977 are:

a. to complete mobilization of productive capacity to achieve a maximum growth rate, and

b. a more equitable distribution of the fruits of this expansion in a just social context.

Adequate nutrition can assist in mobilizing the productive capacity of the people, especially in disadvantaged sectors. Moreover, the improvement of the nutritional status of the disadvantaged clearly represents one way of reducing disparities among groups.

2. Social Disparities

The nationwide household consumption survey in 1970-71 used eleven socio-economic strata to provide some insights into the problems of nutrition in Morocco. The distribution of households by such categories based on annual expenditure is shown in Table 3. Households in five socio-economic groups averaged 383 DH ($96) or less in monthly expenditures per household. These disadvantaged groups constitute 62.45% of all households. The average monthly expenditures for all households was 448 DH ($112).

Table 3

Distribution of Moroccan Households by Socio-Economic Group and Average Monthly Expenditures

Socio-economic group	% of all households	Average monthly expenditures in dirhams
Technicians & professionals	3.93	873
Higher admin. officials	0.62	2,307
Office employee	1.44	1,079
Venders & small business men	9.21	564
Farmer-owners	35.40	383
Farm workers	11.27	250
Industry & Mine workers	9.01	562
Transportation & service workers	13.34	509
Artisans & craftsmen	7.59	299
Other active population	3.18	271
Non-active population	5.01	375
Average-Morocco		448

Source: Adapted from PLAN Consumption and Household Expenditures of Morocco - Vol. I, p. 30 April 1970 - April 1971.

Expenditures on food represent a large item in both rural and urban households; however, the 1970-71 data compared to a similar survey conducted in 1959-60 showed that average food expenditures had declined as a proportion of total household expenditures. Rural households which constitute 68% of all households accounted for only 46% of total spending. Fifty percent of all households consumed or spent less than 20% of the total. Twenty two percent of the households expended less than 1800DH/year or 5% of the total. Such households do not appear able to purchase an adequate diet.

Table 4

Comparison of Households Expenditures in the 1970-71 Survey with Household Expenditures in the 1959-60 Survey

	Type of Expenditures	Urban	Rural	Total
1970-1971	Food-Beverages	44.7	63.5	54.0
	Clothing	8.3	11.6	10.4
	Housing	22.6	15.1	18.9
	Household Maintenance; health and child care	5.8	3.4	4.6
	Transportation, amusements, etc.	17.6	6.4	12.1
	Total	100%	100%	100%
1959-1960	Food Beverages	59.7	75.9	70.2
	Clothing	7.6	8.1	7.9
	Housing	18.5	5.3	10.0
	Household Maintenance; health and child care	4.9	2.3	3.2
	Transportation, amusements, etc.	9.3	8.4	8.7
	Total	100%	100%	100%

Source: La Consommation et les Dépenses des Ménages au Maroc, Avril 1970-Avril 1971, Volume IV, p. 9.

3. Groups Most Vulnerable

While all members suffer from malnutrition within disadvantaged households, children and women seem to suffer most. Infants and children under 4 are extremely vulnerable to infections when they do not receive an adequate diet, and the infections increase their requirements for food. It is extremely difficult for infants and young children to consume sufficient cereals to obtain adequate protein. Vitamin A and vitamin C deficiencies and inadequate calcium in the diet compound the problem of ensuring normal child growth and development. Children of higher birth order and those with older mothers are less sturdy and less able to adapt themselves to sub-optimal nutrition health conditions. Proper child spacing and adequate nutrition for the mother can help, but each additional child under 5 in a household reduces the amount of time which can be devoted to any individual child and to the management of the household.

4. Social Services

Nutrition improvement activities with both immediate and long-term impact must be carefully designed on the basis of an assessment and analysis of needs, resources at hand, and impact. In the short-term better coordination and communication between service agencies coupled with an assessment of relative cost effectiveness of existing programs are in order.

Actual values and attitudes are extremely difficult to change. An effective nutrition strategy will enhance the status of Moroccan women and all disadvantaged people in the long run. Policies and programs deriving from a nutrition strategy will increase the household availability of food, the knowledge of how it should be distributed, and the actual distribution within families. Certain themes might be used to promote improved health and nutrition practices. These should be carefully studied and analyzed in a coordinated public nutrition education effort and precise messages developed and tested drawing upon such themes as:

- the special food needs of infants and young children;
- the importance of a healthy mother for strong healthy children, including food needs during pregnancy and lactation, child spacing, regular prenatal care;
- the importance of breast feeding, food supplementation and gradual weaning to adult diets;
- home hygiene and food preparation tips;
- the value of proper care of the sick child, of vaccination, of sunshine;

balanced diets for good health and nutrition on a limited budget.

Using such themes, it may be possible to draw upon the community leadership structure to support more fully the concept of community responsibility and participation programs. Families and communities must look together in development programs including those emanating from a nutrition strategy. They often understand the problems but proposed solutions which involve deferred and indirect benefits resulting from changed practices are often misunderstood.

Social services having direct nutritional benefits for various groups are detailed below:

	Coverage	Type of nutritional Impact
1. Entraide Nationale		
Socio-education centers	125,000 families (250,000 children)	Immediate & long-term
Ouvroirs (vocational training)	25,000 families	
Orphanages	25,000 children	Immediate
Development projects Food-for-Work	25,000 families	Immediate
2. Education		
Cantine scolaire	324,000 children	Immediate
Nutrition Education Classes (Primary)	468,000 children	Long-term
School gardens	440 schools	Long-term
Animal husbandry projects	420 schools	Long-term
3. Promotion Nationale		
Work projects	100,000 families	Immediate
4. Ministry of Public Health		
PSE (MCH)	135,000 mothers & children	Immediate & Long-term
Day Care Centers	3,000 children	"
Family Planning	75,000 families	"
5. Youth and Sports		
Foyers Féminins (home economics)	24,000 girls	Long-term
Other programs	75,000 young adults	
6. Interior		
Foyers Féminins (home economics)	25,000 girls	Long-term

Other supporting social services must be carefully assessed and planned in order for real improvements in health and nutritional status in rural areas to take place. For example, one problem in extending health services to rural areas is the lack of doctors. Doctors in private service can earn 10 times their government salaries. With their years of training and obvious social and economic expectations, it is not difficult to understand why doctors are reluctant to work and live in rural areas. Several partial solutions to the problem of inadequate medical personnel in rural areas come to mind:

a. increased reliance on paramedics and trained volunteers;

b. supervised practical rural field training of medical and para-medical students during their courses;

c. salary incentives and quicker promotions for those serving in disadvantaged provinces;

d. experimentation with prepaid contractual services between community and doctors.

However, any such measure as might be undertaken should be analyzed and field tested before being implemented on a large scale It is possible that several different alternative strategies may prove efficacious in different regions of Morocco.

Under this project, while some activities should focus on immediate treatment of existing nutritional problems, planning for longer term solutions is essential. An effective nutrition strategy embodies both immediate and long range interventions, i.e., coordination of existing efforts and activities and a longer term assessment and analysis of the total nutrition system and its components. Social changes and nutrition improvement activities are underway in Morocco. This project will attempt to accentuate positive changes and reduce negative side effects in the long run.

C. Economic Analysis

1. Development Programs

Morocco, probably no more or less than other developing countries, has been exposed to strategies and models of development that have not worked. For example, the Secretary of State for Planning, Taïeb Bencheikh, in 1968 traced the history of agricultural planning through a "colonial" model, a "socialist" model, a "technocratic" model and a "regional planning" model. The merits of the latter "model" may be judged by the Government's own progress figures: the forage production program in 1973-74 attained only 15% of its targets; efforts to persuade farmers in rainfed areas to change their cropping pattern attained only 60% of the target.

Improved efficiency of governmental development program through the reduction of duplication in action and research, the identification of cost effectiveness of program interventions, and the subsequent reduction of costs for curative programs can be expected within a nutrition strategy. Program interventions based on a pragmatic understanding and knowledge of the nutrition system are required.

Since substantial research and program activities with both positive and negative effects on nutrition and the understanding of nutrition problems are underway, it is important that they be reviewed, encouraged and stimulated with minimum disruption of personnel and on-going programs. This is inevitable, but can be minimized by effective CIAN leadership. Such behavior in no way obviates the necessity for careful review of all continuing and new research and programs in nutrition-related fields. This review is one of CEREN's legitimate functions.

This project is economically justified on the basis of the benefits to be derived from the implementation of a coordinated national nutrition strategy. These benefits assume timely project implementation and significant improvement of the nutritional status of the population within 5-7 years. They also assume the Government will continue to implement a vigorous family planning program. The present social and economic costs of no strategy and poor integration of programs are considerable. The benefits, of course, must be weighed against the costs. The effective coordination and implementation of a national nutrition strategy will require a concerted team effort by the GOM Ministries and CIAN.

The direct immediate benefits from the project, consisting of trained GOM staff, research studies, and development of a methodology for analyzing the nutrition problem have been set forth in the project description and the Logical Framework. These benefits can be achieved largely through the application of the planned inputs.

The indirect benefits are much wider in scope and should accrue to the GOM and the Moroccan population upon development of appropriate interventions and their implementation growing out of the research and analysis of the nutrition subsector.

It is difficult to estimate accurately the real costs of present governmental interventions impinging on nutrition, particularly in agriculture. However, the implementation of a nutrition strategy will lead the GOM to re-examine some present policies affecting the nutritional status.

2. Grain Subsidies

The GOM intervenes in the purchase, distribution, and export of cereals through an agency now called the Office National Inter-professionnel des Céréales et Légumes (ONICL), which has existed since 1937. In the internal economy, the role of ONICL is to operate what is officially described as the "commercialized" sector of Morocco's cereal distribution system. Grain flowing through ONICL accounts for an estimated one-quarter to one-third of the country's consumption, and this obviously includes virtually all consumers living in urban areas. Control is maintained by the enforced retail ceiling prices on flour and bread. Currently these prices are well below free market levels. The "commercial" mills which legally receive all their grain through ONICL controlled channels are paid fixed fees for milling operations and wholesale distribution. At the supply end, ONICL contracts with grain wholesalers and farmer cooperatives to purchase grain, paying fixed prices plus a fixed markup. If storage is involved, ONICL pays a monthly storage fee as well.

ONICL is administered by a semi-governmental council which includes the Ministries of Agriculture, National Economy, Finance, and Commerce, on the one hand, and representatives of producers, wholesalers, and millers, on the other. ONICL recommends to the GOM the level at which purchase prices should be fixed. The prices are then fixed by government decree.

During the 1972-1973 crop year, when bad weather affected output of all cereals, ONICL was apparently able to meet consumption needs by a combination of fresh purchases and by releasing grain held as buffer stocks. Subsequently, a rust problem reduced the 1973-1974 bread wheat crop, but did not affect the normal output of durum wheat, barley, and maize (barley production was above normal). When the 1974 autumn rains failed and a bad harvest was forecast, the Government officially estimated its import needs at two million tons of cereals.

As of October 1975, ONICL's procurement of wheat from domestic sellers was reportedly "very small," estimated as well under 25% of total domestic production. Moroccan grain producers (farmers) seem less and less willing to sell to ONICL's agents in spite of the increase of about 30% in procurement prices effective in 1973-1974.

A reduction of direct budget expenditures to maintain the retail prices of grain, sugar, and edible oil could evolve from an analysis of the pricing system and the development of a more rational system of incentives to the farmers. The grain price situation and ONICL's operations were discussed above. Parallel GOM interventions affecting sugar and edible oil add to the total expenditure in this field. In 1974 the GOM spent about US$415 million, or 7% of GNP and 26% of its operating budget, on these food subsidies. This is justified by Government as a necessary cost to maintain price stability. Foreign exchange saved through development of domestic food production may be partially counted as a potential benefit emanating from a coordinated nutrition strategy. The nutritional needs of the urban population who currently benefit from retail price subsidies could be partially met by increased domestic production and marketing of staple foods. It seems likely that a coordinated nutrition strategy would involve increased emphasis on agricultural productivity of the rainfed area. This should increase the availability of cereals and other staples marketed in towns and cities. Under present circumstances there is little surplus output which reaches the buying agents of ONICL.

In the absence of reliable data on grain production in the rainfed area, it is difficult to estimate the potential for channeling present surpluses available in village markets into ONICL graneries. However, since Moroccan farmers are presumably responsive to higher prices for their output, it may be assumed that higher farm prices through either the re-direction of GOM resources presently used for overseas grain purchases to domestic producers, or the mechanism of a free market, could increase domestic food production.

In the rainfed area, tapping the potential for increased production implies application of carefully designed techniques of cropping, moisture conservation, etc. In an experiment in a rainfed area of northern Morocco an FAO team was able to increase the value added per hectare from 80 DH to 300 DH simply by instituting a rotation involving long periods of fallow with short periods of intensive cultivation. Recently the Government has expressed interest in a wider test of similar applied technology and has requested A.I.D. assistance.

Technical measures of this kind, must be tested and applied with consideration of the people involved. The Moroccan experience to change cropping patterns in rainfed areas demonstrates the difficulty

of introducing new technology. Higher incomes from farm production would allow rural families to purchase additional goods and food to make up for existing deficiencies. This should stimulate the rural economy and increase demand in rural areas for goods and services.

The first requirement for realizing the potential for increased production of the rainfed sector is a more precise knowledge of how the sector operates, and especially of how producers decide how much surplus to sell, when, to whom, and so forth. Such knowledge is at present in scarce supply within the GOM, even in ONICL. One of the tasks of CEREN should be to provide this critical data.

3. Health Subventions

Another example of costly planning may be selected from other branches of Government. The Ministry of Public Health budget for preventive medicine might have been scrutinized and compared with the proportion of the population in rural areas which such interventions reach. The estimates of infant mortality in rural areas demonstrate that a large majority of rural children are not reached.

The Ministry of Public Health operates 283 child health centers. In 1974 they collectively serviced approximately 135,000 new born infants or an average of 40 per center per month. After a child reaches 2, he is no longer eligible for special services. Yet the child from 2-3 remains vulnerable to disease and malnutrition. Other GOM agencies are attempting to reach this group. The Ministry of Youth and Sports operates 196 child care centers for pre-school children and the Moroccan League for the Protection of Infants operates 30 child care centers. Entraide Nationale operates 250 social education centers serving 125,000 indigent mothers and 250,000 children between 2 and 5. In actual numbers the Ministry of Health estimated that in 1975 more than 1.1 million children under 5 were moderately malnourished and another 117,000 children were in third degree malnutrition requiring special care and even hospitalization. The efforts of all these social service organizations working together under a well coordinated program could make a significant impact on the nutritional problems of children.

Although comparable cost data for these activities were not immediately available, it should be possible for CEREN to undertake some in-depth cost-benefit and cost-effectiveness analyses of these programs. As long as donated foods are available, these should be utilized to meet immediate nutrition needs and maximize the impact on critical groups. Present Moroccan programs appear to be oriented to immediate needs with only modest attention to the prevention of nutrition problems.

If it requires 8-10 years to begin to change the conditions which cause malnutrition, then 8,000,000 children will suffer. This project hypothesizes that coordinationof program efforts and necessary governmental policy changes can reduce this time by at least one half.

Three illustrations using hypothetical cost data are presented to show the cost of treating children with malnutrition:

1. The costs of a three month rehabilitation of a sick severely malnourished infant can be estimated as follows:

Hospital services 20 days at $25/day including doctors/nurses bed/food	$500.00
Medicines $2.00 x 14 days	28.00
Follow-up clinic visits 10 at $5/visit	50.00
Milk and special foods $2/wk x 12 wks.	24.00
	$602.00

If these costs prevail, and they might if the malnourished child developed measles, pneumonia or severe bronchitis, the cost of three months rehabilitation for 50,000 such children in Morocco in one year would cost approximately $30,000,000 and involve 1,000,000 pediatric hospital bed/days. If 5% of these children survived with grave mental retardation (2,500 children) the cost to society would be substantial.

2. In the first quarter of 1975, 62,455 measles cases were reported. Substantial under reporting is likely since at least 50% of all children under 10 experience measles. Measles is an extremely dangerous disease and for the undernourished child often it leads to serious hearing and sight impairments and rheumatic heart conditions. If only 1% of these reported cases resulted in such complications, the productive adult earnings of 625 children could be reduced by 20-50%.

3. If the cost of a highly nutritious food supplement similar to SEPO being developed by the MOPH is 2 DH ($0.50) per week for the average malnourished child between 6 months and 3 years of age, and if it takes an average of 12 weeks to rehabilitate a child when SEPO is consumed along with his regular diet, the program cost to rehabilitate one million children annually would be 24 million DH or $6 million. This assumes that distribution of the product could be made at no additional cost.

The numbers of children who require special nutritional assistance each year will decrease when mothers understand the food needs of the child and have at hand the appropriate foods to feed the child. This project is intended to enable the Moroccan Government to design a strategy which will make this possible.

D. Financial Analysis and Plan

This project will increase efficiency in governmental operations affecting the nutritionally disadvantaged. Since present programs do not reach all or even most of the nutritionally disadvantaged, increased efficiency in services should mean greater coverage of target groups not budgetary reductions per se.

If the Government is successful in its efforts to increase dryland food production, then resources which are now used to buy foreign grain can be invested in Moroccan agricultural development resulting in substantial financial returns. The Moroccan Government now plans substantial investments in dryland agriculture, and benefits or financial returns from this investment can only be partially attributable to this nutrition planning project. In the longer term project success will mean higher rural incomes, a diminution of social and economic disparities, better utilization of available food resources at the household level, a reduction in malnutrition, and improved health.

By the end of the project, it is expected that some of the financial returns and benefits can be estimated quantitatively. Presently it is not possible to calculate even the cost of nutritionally rehabilitating a small child. This project involves modest recurrent operational costs. AID support in this project covers primarily the costs of the AID contract technicians and the U.S. training of Moroccans. From the beginning the Moroccan Government will assume the costs of operating CEREN.

Project analyses and research performed by other ministries will require budget expenditures but can be justified internally by the need for sound planning of activities which are capable of significant impact on nutrition problems. The annual operating budget for CEREN is estimated at 200,000 DH, or about $50,000 including depreciation of furniture and vehicles, and represents only a minor outlay for PLAN. The analytic outputs of CEREN will be useful in the planning and project design in other divisions of PLAN as well as in the Human Resources Division.

The Summary Cost Estimate and Financial Plan, Table 5 shows that the total cost of this project is $920,000 of which AID's contribution is $680,000.

A detailed breakdown of the U.S. and Moroccan contributions is shown in Table 6.

USAID FY 1976 and subsequent year planned obligations are shown by fiscal year below:

	FY 1976	Interim Quarter	1977
Contract	155,000	233,000	112,000
Other costs			22,000
Participant training	45,000		24,000
Inflation factor (8%)			49,000
Contingency factor			23,000
FY total,.....	200,000	250,000	230,000

Partial first year funding of the contract appears feasible since contract solicitation and negotiation will require approximately 6 months. The contractor is expected to arrive in Morocco in July 1976.

The relationship of project inputs by both AID and the GOM are shown in Table 5.

Estimated project costs do not include estimates for use of AID/W direct hire or contract consultants nor do they include the costs involved in project design. In particular the project intends to utilize the TA/Nutrition resource for a sample national nutrition survey of children under 6. GOM local costs for such a survey and continuing nutrition surveillance have not been included as GOM contribution to this planning project.

SUMMARY COST ESTIMATE AND FINANCIAL PLAN

(US $000)

Source	AID		Host Country		Total
	FX	LC	FX	LC	
AID Inputs					
A. Contract 73 m/m	442	58			
B. Training	69				
C. Other costs		39			
Inflation factor	41	8			
Contingency factor	18	5			
Total AID					680
GOM					
A. Staff salaries				83	
B. Transport				32	
C. Office space				30	
D. Other costs				10	
E. Studies, computer, etc.				57	
Inflation factor				17	
Contingency factor				11	
Total GOM					240
Total	570	110		240	920

DETAILED PROJECT BUDGET
NUTRITION PLANNING AND RESEARCH CELL

	Year 1	Year 2	Year 3 (6 months)	Total
A. U. S. Contributions				
1. Contract 73m/m				
a. Salaries - Overseas				
Ag. Econ/Nutrition Planner	28 000	31 000	15 500	74 550
Economist/Nutrition Planner	32 000	35 000	18 000	85 000
Salary Benefits	6 000	6 000	3 000	15 000
b. U. S. backstopping				
Project Manager 25% x $20,000	5 000	5 000	2 500	12 500
Secretary 50% x $8,000	4 000	4 000	2 000	10 000
Other Admin. Costs	1 000	1 000	500	2 500
c. Short term experts				
5mm/yr x $2,400/mo (3mm in 3rd year)	12 000	12 000	7 200	31 200
d. International Travel				
-Long term Advisors & Families 8 persons arrive	8 000			8 000
8 persons depart			8 000	8 000
-Short term 3 RTs/year	2 500	2 500	2 500	7 500
-Project Manager visit 1 RT/year	1 000	1 000	1 000	3 000
e. Per Diem				
160 days at $35/year	5 600	5 600	2 800	14 000
f. Educational allowance	8 000	6 000	4 000	20 000
g. Books/Reference Materials	3 000	3 000	3 000	9 000
h. Office Equipment	5 000			5 000

	Year 1	Year 2	Year 3 (6 months)	Total
i. Housing & Utilities				
55 months at $1,050/mo	23 100	25 200	9 450	57 750
j. Intensive language				
Training & Cultural				
Studies	3 000			3 000
k. Nutrition Demonstration				
Equipment	5 000	5 000	5 000	15 000
l. Contractor Overhead (60% of salaries)	45 600	45 600	27 800	119 000
Total	197 800	189 900	112 300	500 000
2. Other Costs				
Conferences	7 000		7 000	14 000
Special studies	10 000	15 000		25 000
Total	17 000	15 000	7 000	39 000
3. Training				
Short term & Observations				
2 mo x $3,000/mo x 3 persons	12 000	6 000		18 000
L-T non academic 12 months	15 000			15 000
L-T degree 24 months	15 000	15 000		30 000
Transportation	3 000	3 000		6 000
Total	45 000	24 000		69 000

Summary Total - U.S. Contribution

1. Contract	197 800	189 900	112 300	500 000
2. Other costs	17 000	15 000	7 000	39 000
3. Training	45 000	24 000		69 000
Totals.....	259,800	188 900	120 300	608 000
Inflation factor (8%)				49 000
Contingency				23 000
				$680 000

	Year 1	Year 2	Year 3 (6 months)	Total
B. GOM Contribution (in U.S.$)				
CEREN Salaries				
Director 2,500 DH/mo	7,500	7,500	7,500	22,500
Staff 3 at 2,000 DH/mo	18,000	18,000	18,000	54,000
Secretary at 700 DH/mo	2,100	2,100	2,100	6,300
Sub-total				82,800
Transport				
Chauffeur (2) at 600 DH/mo	3,600	3,600	3,600	10,800
Vehicles (2)	12,000			12,000
Operation & Maintenance 1,000 DH/mo	3,000	3,000	3,000	9,000
Sub-total				31,800
Office				
Rent 2,000 DH/mo	6,000	6,000	6,000	18,000
Furnishings	12,500			12,500
Sub-total				30,300
Diverse				
Computer use	12,500	12,500	12,500	37,500
Office operations	3,300	3,300	3,300	9,900
Special studies	10,000	9,500	-	19,500
Sub-total				66,900
Total	90,500	65,500	56,000	212,000
Inflation factor (8%)				17,000
Contingency factor				11,000
				$ 240,000

Costing of Project Outputs/Inputs

Project 608-0123 Title: Nutrition System Study Unit

Outputs / Inputs	Development of nutrition research activities & studies	Trained Moroccans	Reports and Publications	National Nutrition Conferences	Development of nutrition methodology for Morocco	Establishment of documentation Center	TOTAL
U.S. Inputs							
1 Economist Nut. Planner	65	22	11	22	76	22	218
1 Agr. economist/mktg food system	80	20	10	20	60	10	200
13 m/m short term consultants	13	5	9	13	13	-	53
Commodities	15	-	3	-	5	6	29
Special studies funds	23	-	2	-	-	-	25
Conferences	-	1	1	12	-	-	14
L-T training	-	48	-	-	-	-	48
S-T training	-	21	-	-	-	-	21
Inflation factor (8%)	16	10	3	5	12	3	49
Contingency factor	7	5	1	3	6	1	23.0
Total U. S.	219	132	40	75	172	42	680
GOM Inputs							
Director	6	1	6	2	7	1	23
Prof. support staff	18	3	6	9	18	6	60
Office space	6	5	5	4	5	6	31
Transportation	9	5	-	5	13	-	32
Computer services	15	5	2	-	15	-	37
Other costs	10	1	3	3	9	3	29
Inflation factor (8%)	5	2	2	2	5	1	17
Contingency factor	3	1	1	1	4	1	11
Total GOM	72	23	25	26	76	18	240

PART IV - IMPLEMENTATION ARRANGEMENTS

Part IV - IMPLEMENTATION ARRANGEMENTS

Analysis of Administrative Arrangements

CIAN has existed since 1959. It has met largely at the initiative of one of the Ministries represented on the Commission on an as-needed basis. The official decree required the Commission to meet at least quarterly to review progress. For this project to function as planned, CIAN should meet regularly. The next planned meeting will be held in November 1975 to discuss and review this project. The Secretary of State for Economic Affairs has been acting as chairman of the CIAN meetings for the Prime Minister. PLAN works closely with the Secretariat for Economic Affairs and the proposed creation of CEREN in PLAN has been discussed and tentatively agreed to at high levels of the Moroccan Government. It is believed that the de jure delegation of responsibility for nutrition coordination to CEREN should come after CEREN demonstrated de facto that it is properly staffed and equipped to assume this additional responsibility This is sound and such de jure recognition of CEREN will be a condition for second year project funding. Within the PLAN it has been decided that the appropriate office to coordinate CEREN activities is the Division of Human Resources Planning which comes under the Bureau for Development Plans. Other divisions coming under the Development Plans Bureau are the Division for Productive Sector Planning, the Division for Infrastructure Planning, the Division of Economic and Financial Studies, and the Division of Regional Planning.

The Division of Human Resources Planning coordinates and monitors development plans and operational expenditures in education, training of specialized cadres, labor, public health, culture, youth, sports, Entraide Nationale, Promotion Nationale, and Veteran's Welfare Administration. A nutrition planning capability is clearly required by this office to measure the social and economic cost effectiveness and benefits to be obtained from these plans and operational programs. This project is designed to improve the management capability of CEREN to assess nutrition program needs and improve the cost effectiveness of existing and planned programs to ameliorate nutrition problems. PLAN has the ability and management capacity to create, staff and operate a nutrition planning cell. Coordination by CEREN with other GOM social and human resources programs is practically assured by its position in the Division of Human Resources Planning. The CEREN analysis of existing and planned programs should sharpen implementation processes in on-going programs affecting nutrition status and stimulate increased interest in maximizing results. It is extremely important to the overall project

implementation that the University contractor selected field a team of pragmatic broad guaged professionals. A good French language competency is essential, since the official plan documents and ministerial reports are in French, and French is the language in which most government business is conducted.

Project success depends upon selection of an experienced contractor with overseas experience which will be able to field the necessary long and short-term advisors. The contractor's ability to plan and organize his efforts to assist CEREN and support administratively the team in Morocco will be another important element in achieving the project purpose.

A difficult problem in project scheduling will be the selection of qualified candidates for participant training with adequate English language capability. This is a problem which will require close monitoring by USAID and PLAN to ensure that training starts are accomplished on schedule.

B. Implementation Plans

The Government of Morocco is anxious to begin implementation. At all stages during the drafting of the Project Paper the active participation of responsible GOM officials has been an asset to project development and their ideas and suggestions are included in the narrative. The A.I.D. project design team and the Human Resources Division of Plan where CEREN will be located have met regularly to discuss the role and scope of the project. The Human Resources Division presently has a staff of six in addition to the Director. The establishment of CEREN will add a nutrition unit director and three professional staff.

The project paper will be submitted to Washington in November 1975. If the project is approved expeditiously by AID/W and the funds are alloted in December, the project agreement can be signed by December 31, 1975.

During November/December 1975 the following activities are envisaged:

1. AID/W nutrition survey consultant arrives to discuss feasibility of mounting a national nutrition status survey of children age 6 to 72 months with Plan and other GOM entities;
2. One or two Moroccans enroll in intensive English course at USIS/Rabat;
3. Scope of work for technical services contract is developed and completed by USAID and PLAN;
4. CIAN will review the project proposal, particularly the aspects related to the CEREN functions.

It is difficult now to define which types of short-term consultants will be required. Precise needs should be identified when work priorities have been established and contractor's work plan is submitted. Each consultant should have a defined time-limited scope of work which supplements and complements the work of the contract team. However, short-term consultants in the following fields would be appropriate:

1. Health economist with macro and micro analytic skills to assist with design of cost benefit and cost effectiveness studies of health and other social services reaching disadvantaged groups;
2. Systems analyst - computer programmer to work with CEREN and contract team to develop computer program models for analyses of segments of the nutrition system;
3. Mass media communications specialist with experience in non-formal education for illiterate bilingual groups to work with CEREN and nutrition educators to develop effective strategy for public nutrition education;
4. Curriculum design specialist with experience in para-professional training to explore feasibility of training community volunteers, primary school leavers, etc., in preventive public health and nutrition to augment highly skilled para-medical staff;
5. Econometrician with experience in cost analysis and demand elasticity to assist in design of study to examine the demand for food staples as quality and amount of processing increases;
6. Applied nutritionist to work with CEREN and health/education/entraide/youth and sports/agriculture to develop least cost nutritionally balanced family diets for various regions and seasons;
7. Social survey specialist to assist in design of regional surveys to determine causes of nutritional differences among regions and to examine particularly intra-family distribution patterns;
8. Cereals forecasting specialist with experience in arid lands to assist in design of cost effective system of predicting crop failures and production;
9. Market analyst with grain marketing expertise to assist in analysis of non-governmental grain market, e.g. flow of grain from farms to weekly souks (should be Arabic speaker);
10. Food technologist to assist in design study of commercial feasibility of textured protein products or other commercial type products (meat substitutes and snacks). Source products might be cotton seed or other oil seeds. Any such products could be used in school and institutional feeding programs in lieu of meat and cereal products;
11. Commercial food marketing specialist to assist in design of packaging and market tests for SEPO as well as marketing distribution strategy;
12. Wheat products fortification specialist to assist in design of study of processed wheat products consumed by poorer groups and the cost effectiveness of fortifying one or more of these with essential nutrients.

The Office of Nutrition in A.I.D. Washington has available a separately funded resources to assist Governments in the assessment of nutritional status of young children. A visit by a survey specialist has been requested for November 1975. If a nutrition status survey appears feasible, work can begin immediately on selection of the sample areas, development of the survey instrument, and planning for data collection and logistics support.

It is more important that PLAN begins to identify staff for CEREN. This new staff should be carefully briefed on nutrition problems, on-going nutrition activities and resources which exist within the Government to undertake practical research and nutrition studies. Concomitantly with the signing of a project agreement with the Government of Morocco, a PIO/T for contract services will be issued. AID/W can then begin the contractor recruitment process which will require four months. It is expected that the contractor will begin work in July 1976. The first semi-annual review of the project is scheduled for July and the report of this review should be a useful orientation to the project for the contractor. It is desirable that the contractor have access to the facilities of a large university since this project calls for long and short-term consultants with a high degree of expertise in several scientific fields. Such a contractor is also more likely to recruit competent professionals for project staff who have the requisite language capability as well as technical expertise to contribute to the success of the project. Non-French speaking candidates cannot be engaged for any of the project positions. The Moroccan Government is quite earnest in requesting project personnel who are technically qualified and linguistically competent. Nutrition planning is a specialized field entirely new to Morocco. The success of the project depends heavily on the calibre of experts recruited. For this reason, the Government has asked to participate in the selection of the contractor.

The key performance indicators in the implementation of the project beginning with the submission of the project paper through to anticipated project close-out are listed in Annex D which also includes the Planned Performance Tracking Network Chart showing relationships and time phasing of all significant actions critical to project success including milestone events.

C. Evaluation Plan

At the outset of the project, special efforts will be made to develop baseline data on existing nutrition interventions. At the request of CIAN, its members have been preparing reports on the on-going nutritional activities of their particular ministries. Arrangements have already been made with the National Communicable Disease Control Center from Atlanta, Georgia, to effect a national nutrition survey beginning January 1976. One of the first activities of the contractor after his arrival in July 1976 is the assessment and evaluation of the on-going GOM nutrition interventions. For measurement of particular progress indicators contained in the Logical Framework, data will be gathered throughout the project.

In the course of every day monitoring, feedback will be translated into operational refinements and major replanning if necessary. The contractor will be located within the CEREN division of PLAN with daily contact with the Director and staff of CEREN, weekly contact with the Director of Human Resources, and participation in the CIAN meetings on a quarterly basis or more frequently if required. Contact with USAID will be at least on a weekly basis and probably more frequently, especially at the beginning of the project and at other significant periods critical to project success.

Formal evaluation sessions will be held semi-annually, i.e. in July 1976, January 1977, July 1977, January 1978, and July 1978, and January 1979. The USAID, the contractor, the director of CEREN, and the Director of the Human Resources Division of Plan will compose the evaluation committee. In addition at the mid-project evaluation in January 1978 and at the final evaluation in January 1979, it is anticipated that the Minister of Plan in his capacity as chairman of CIAN, representatives from AID/W (NE/TECH and TAB/N), and the Project Director from the Contractor's U.S. headquarters will participate in the sessions.

These evaluation benchmarks are included in the Project Performance Tracking Network Chart of the Implementation Plan.

Annex F: Draft Project Description for Project Agreement

A. Background

Since 1958 various surveys have been effected in Morocco to discern the nutritional status of the population. These surveys have been sponsored respectively by FAO, WHO, MOPH, and PLAN. The results demonstrate a need for the formulation of a nutrition strategy to alleviate the effects of malnutrition among certain age groups in certain geographical regions. Although the survey results are not definitive and a new national survey will have to be undertaken at the outset of the project, it appears that the groups mostvulnerable to malnutrition are pregnant and lactating women, and children under four from economically disadvantaged families in the dryland areas of the country.

Aware of this serious problem and its deleterious consequences for the quality of life of the people and the effect on development, the GOM reestablished the Interministerial Commission on Food and Nutrition (CIAN) in 1972 under the chairmanship of the Prime Minister. As a result particular nutrition interventions were initiated by member ministries, but there has been a general lack of coordination of effort and the malnutrition problem persists. CIAN has lacked the analytical and planning competence to develop a comprehensive national nutrition strategy. This project will provide CIAN with the necessary nutrition analysis and planning skills. This is in direct response to a formal request from the Secretary of State for Plan (PLAN) for such assistance. Plan has established a cell for nutrition studies and research within the Human Resources Division responsible for nutrition analysis and planning and coordination of appropriate nutrition activities. It is intended that this cell (Cellule d'Etudes et de Recherches en Nutrition CEREN) assume a more direct staff function to assist CIAN.

B. Purpose

The long range goal of this project is to promote and improve the nutritional status of the Moroccan population, particularly for the socially and economically disadvantaged. The particular purpose of this project is to assist the Moroccan Government to design and implement a flexible nutrition strategy whose key elements will be included in the next economic and social development plan.

C. Outputs

1. CEREN will be established in the PLAN as the permanent secretariat of CIAN and will be staffed by four full time professionals. By decree it will be empowered to carry out its mandate.

2. Four Moroccans trained in the United States in nutrition planning and systems analysis will work in CERREN.

3. Nutritional research activities and surveys will be developed.

4. Various studies of factors affecting nutritional status will be undertaken and published.

5. A nutrition methodology for Morocco will be developed.

6. A documentation center on nutrition subjects will be established.

7. To highlight the nature of the nutrition problems and the research and analysis in progress, two national level working conferences entitled Regional Development and Nutrition Improvement will be held in January 1977 and in July 1978.

D. U. S. Inputs

Through a contract with a University or an Agency, the U.S. will provide the following:

1. Sixty man-months of U.S. contract team consisting of an economist skilled in the analysis of nutrition and food systems, and an agricultural economist with particular expertise in food systems and marketing analysis.

2. Thirteen man-months of short-term consultants, including health economist, systems analyst, computer programer, mass media communication specialist, curriculum design specialist, econometrician, applied nutritionist, social survey specialist, market analyst, and food technologist.

3. Thirty six man-months of long-term training in nutrition planning and systems analysis in the U.S. for Moroccan trainees.

4. Six man-months of short-term training/observation in national nutrition program management for senior level GOM officials.

5. Partial support costs for the two national nutrition conferences.

6. Partial support costs for special local surveys and studies.

7. Office equipment and nutrition demonstration commodities.

E. GOM Inputs

1. Economist director of CEREN
2. Three professional staff for CEREN
3. Office space
4. Two vehicles and drivers
5. In-kind costs of surveys and studies including computer service.
6. Partial support costs of conferences.

PROJECT
LOGIC

Project Title & Number: Nutrition System Study Unit 608-0123

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
Program or Sector Goal: The broader objective to which this project contributes: To promote and improve nutritional status for Moroccan population, particularly for the socially and/or economically disadvantaged.	**Measures of Goal Achievement:** 1. Reduction in malnutrition such PCM among the population and especially the most vulnerable groups, nursing mothers and children under 2. Implementation of necessary actions in nutrition by the appropriate public organizations
Project Purpose: To assist the Moroccan Government to design and implement a flexible nutrition strategy whose key elements will be included in the next economic and social development plan.	**Conditions that will indicate purpose has been achieved: End of project status.** 1. A nutrition planning and nutrition program review/assessmen mechanism is functioning in Ministry of Plan (CEREN) 2. New nutrition interventions are being identified and plans for the implementation are developed and coordinated by CIAN and CEREN 3. The nutrition strategy has been integrated in the plan for economic and social development
Outputs: 1. Development of nutrition research activities and surveys 2. Moroccan nutrition planners and economists trained for unit 3. Reports and publications 4. National Nutrition Conferences 5. Development of nutrition methodology for Morocco 6. Establishment of a documentation center on nutrition	**Magnitude of Outputs:** 1. 4 full time Moroccan profess. staff permanently assigned to unit 2. Completion of surveys and research necessary to the identification of appropriate interventions i nutrition 3. 5 Moroccans trained in nutrition analysis and technology 4. Reports and publications 5. Bi-annual national nutrition conference 6. Nutrition methodology
Inputs: US A. Contract Services 1. Chief of party-economist nutrition planner (30 man months) 2. Food systems: Marketing analyst (30man months) 3. Short term consultants (13 man months) 4. Office equipment/nutrition demonstration commodities B. Participant Training 1. MSc in food marketing/distribution systems analysis 2. 1 non-degree nutrition system analysis and planning 3. 3 short term observation/training in national nutrition program management C. Other 1. Conferences (support costs) 2. Special local surveys: Studies GOM 1. Economist director of CEREN 2. 3 professional staff of CEREN 3. Office space 4. [illegible] transportation 5. [illegible] 6. [illegible] and [illegible] equipment	**Implementation Target (Type and Quantity)** A. Total estimated contract cost equipment/commodities included $500,000 B. $69,000 1. $31,000 2. $16,000 3. $22,000 C. $39,000 1. $14,000 2. [illegible] Inflation&Contingency$72,000 1. to be appointed by 1.6.76 90,000DH 2. to be fully appointed 1.6.76 [illegible] 3. to be acquired by 30.6.76 [illegible] 4. [illegible] 5. [illegible] 6. Initial stock for [illegible] etc. valued at [illegible] 7. [illegible] contingencies [illegible] Total [illegible]

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DESIGN SUMMARY
FRAMEWORK

Life of Project:
From FY 76 to FY
Total U S. Funding 680,000
Date Prepared: November 21, 1975

MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
1. Comparison of data from national nutrition surveys before and after the project 2. Statistics from Ministry of Health 3. Reports from C.I.A.N.* on new interventions in nutrition * Interministerial Council on Food and Nutrition	Assumptions for achieving goal targets: 1. GOM has committed itself to improve level and quality of life of the population 2. Recognition by GOM that malnutrition is a national problem 3. Solution of the problem of malnutrition is rooted in economic, social, educational and health policies 4. GOM is prepared to make staff and financing available for the achievement of the goal
1. Reports on the C.I.A.N. meetings 2. Other GOM and USAID reports	Assumptions for achieving purpose: 1. C.I.A.N. is the effective isntrument to develop this strategy 2. All appropriate Ministries will actively participate in C.I.A.N. 3. Ministry of Plan is able to establis an effect ve study unit within its organizat.onal structure
Works and reports of the nutrition survey unit	Assumptions for achieving outputs: 1. CEREN will serve as a technical secretariat for C.I.A.N. 2. GOM commits itself to provide C.E.R.N. with the manpower and budgetary support necessary to its proper operation 3. Implementation and planning should be done in a timely way
Reports of USAID and CEREN	Assumptions for providing inputs 1. that US can identify contractor with French speaking qualified staff 2. that GOM/US inputs are available when needed and as scheduled 3. that PLAN will be authorized to proceed with formation of CEREN and that properly qualified staff can be identified 4. that appropriate participants for US training can be identified

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