

PN-ABH-518
70668

EXECUTIVE SUMMARY

**AN ASSISTANCE STRATEGY
TOWARDS THE IMPROVEMENT OF NUTRITION IN PERU**

**Raleigh, North Carolina
September 1983**



SIGMA ONE CORPORATION

EXECUTIVE SUMMARY

AN ASSISTANCE STRATEGY

TOWARDS THE IMPROVEMENT OF NUTRITION IN PERU

By
David L. Franklin
Marielouise W. Harrell
Jerry B. Leonard
Frank Araujo
Eliane Karp-Toledo
and
Cutberto Parillon

with the assistance of

Ralph L. Franklin
Wilfredo Bravo
Heather L. Franklin
Ines de Reverditto

This is an executive summary of "An Assistance Strategy towards the Improvement of Nutrition in Peru" which can be obtained through USAID, Lima.

INTRODUCTION

Peru continues to experience a nutrition problem of major proportions. Half of the population in both urban and rural settings suffer from chronic undernutrition as a consequence of inadequate diets. These conditions are aggravated by recurrent episodes of acute malnutrition arising from frequent illnesses and economic and ecological crises. The proximal causes are widespread poverty and a dysfunctional public health system. These in turn are a consequence of long standing development policies. Public institutions, particularly in the health sector, have been ineffective in implementing their stated objectives and have failed to prevent or ameliorate the impact of diseases. These effects are manifested as high mortality and growth retardation in the survivors.

Evidence from the last three decades indicates that many persons in all regions of the country have adapted to conditions through stunted skeletal growth. Many that failed to adapt died at an early age. The adult population has failed to achieve its genetic potential in stature. Peru suffers from a pattern of frequent economic and ecological crises. Food consumption is inadequate in energy and nutrients, unemployment and underemployment are high, and the health of the population is poor. Several regions have recently experienced disaster conditions which will continue to require action to prevent mass starvation and death.

This strategy presented herein has been developed from a multidisciplinary nutritional assessment which included field work in every region of the country and an extensive review of documentation. It is based on the concept that the symptoms of malnutrition are a consequence of the human body's attempt to equilibrate between nutrient intake and the use (or waste) of

nutrients by growth, activity and disease. This process occurs within a physical, social, economic and behavioral environment where persons seek to achieve the maximum possible well-being under conditions of resource scarcity. Human behavior at the household level is the proximal determinant of nutritional status as a response to incentives and constraints; public policy and programs can, therefore, seek to improve the nutritional status of a society through enhanced incentives, information, services and sometimes the provision of goods such as food or productive resources.

This perspective means that, except in cases of specific pathology, malnutrition occurs as a consequence of poverty, and its eradication involves the eradication of poverty. Poverty itself, however, has many expressions, particularly in Peru. Some of the poor are poor because they lack effective demand over market goods and services, others are poor because they lack access to publicly provided services, and others because they lack the human or physical capital necessary to engage in more productive activities.

Because poverty in Peru is widespread and has many causes including endogenous policies and exogenous events such as world market conditions for commodities and ecological accidents (earthquakes, floods, droughts and erratic ocean currents), the recommendations for a nutrition strategy are directed at incorporating explicit nutritional considerations into the various development and policy initiatives of the government and the cooperating international organizations. As such the strategy has been developed within the framework of the view that good nutrition is both a cause and a consequence of successful developmental programs and policies. As such, nutrition is not ancillary but central to general and sectoral developmental activities. The focus of the strategy is, therefore, to seek ways for enhancing the positive nutritional impact of existing developmental activities and to

identify those programs and policy areas which may be subject to modification in the light of nutritional considerations.

Throughout the development of the strategy two principles were involved: 1) that to the extent possible the elements of the nutrition strategy should be sustainable through the private actions by households and communities and that public action should be directed only at stimulating and complementing private initiative; and 2) that the elements of the nutrition strategy be feasible within the existing institutional and political framework of Peru. The strategy is focused on enhancing the structure of incentives facing the household sector and on enhancing and strengthening existing institutions; the elements of the strategy do not require the creation of new institutions.

The strategy consists of five main elements:

- o Establish nutrition as central to the development process.
- o Prevent the diseases that cause and aggravate malnutrition.
- o Increase food consumption and production.
- o Mobilize community and private resources.
- o Improve the operational efficiency of the health system.

Policy analysis is required to quantify the direct and indirect impacts that economic and sectoral policies and programs have had and can have on the nutritional behavior of private individuals. A National Nutrition for Development Project should be implemented to complement the agricultural and other institutional development activities currently underway. The prevention of nutritional related disease should be promoted by extending the coverage of potable water in urban and rural areas, by undertaking a massive immunization

campaign and by promoting environmental sanitation. Increased consumption and production of food should be focused on the poor in all regions with emphasis on the urgent problems of the rural population. This effort should seek to increase food consumption and to increase incomes through improved rural employment. Labor market issues and the problems of unemployment are central to the low effective demand for food and services everywhere. Research on labor economics as well as on the economics of food consumption is urgently needed. Projects for food production in the Sierra and improvement of the agricultural marketing system are of high priority.

Furthermore, this strategy proposes that health and agriculture related actions be promoted and developed through community based self-help approaches. These should be coordinated by the regional development corporations in order to facilitate the needed process of decentralization. There is also an urgent need to improve the efficiency of the health system; this can best be accomplished by integrating private and public services with community based self help approaches.

A NUTRITIONAL ASSESSMENT OF PERU

A large proportion of the Peruvian population has lived (and died) under conditions of marginal to inadequate food intake for a long period of time. The diets of the poor are inadequate in calories and other nutrients. The foods that are available for the diets in different parts of the country are varied; in most cases, diets with sufficient energy would be sufficient in most or all other nutrients. This long standing marginality of the average diet is periodically and frequently aggravated by nationwide, regional and household level crises, which interact with a skewed distribution of income to create significant and appreciable food problems for many in the population.

Poor health and sanitary conditions further aggravate the food consumption situation for individual households and for entire communities. These factors combine to present a pattern of chronic under-nutrition with recurrent episodes of acute malnutrition arising from frequent illnesses and economic and ecological crises. This pattern manifests itself as high mortality and growth retardation in the survivors. The anthropometric evidence, while sparse, suggests that many persons in all regions of the country have phenotypically adapted to these conditions through stunted skeletal growth so that their body size fails to achieve even a modest estimate of their genetic potential.

The number of persons existing under these inframarginal nutritional conditions is large: perhaps more than half of the population is at risk. There exists great regional variation in the extent of the problem, but no region nor city is exempt. It is estimated that 25% to 40% of Lima households were not spending enough to purchase a nutritionally adequate diet in 1977/1978. The prevalence of malnutrition in other urban areas and in the rural areas may be twice that of Lima. A deep economic recession and the effect of climate related disasters of flooding in the northern coastal areas, prolonged drought in the southern highlands and reduced catches by the fishing industry have recently exacerbated this situation.

The recent crisis is an extreme expression of what has been a pattern of living for Peruvian households. Agriculture, including the irrigated sector, is drought prone; the performance of the fishing industry is erratic; natural disasters are not uncommon; the economy is fragile and highly dependent on the variability of commodity markets for exports and imports; and within these wider phenomena, low and middle income households are exposed to the periodic crises of disease, death, unemployment, under-employment and sometimes erratic changes in the structure of economic incentives.

Accordingly, the nutrition problem of Peru is a problem that affects different population and occupational groups differently at different times, but persistently affects large numbers of households repeatedly over the years. The nutrition problem is therefore not restricted to particular age groups or locales but rather to whole families within their functional and geographic insertion into the productive and socio-cultural processes of the country.

Nutritional Status Information.

Indicators of nutritional status, whether based on anthropometric, biochemical, clinical, food intake, morbidity or mortality data, are a biological integration of all the factors and processes that determine the ingestion and use of nutrients by the body. Any indicator is only a proxy for the "true" nutritional status of an individual, because "nutrition" is a consequence of complex interactions between biological, physical and social systems.

Table 1 presents the estimates of malnutrition as measured by the conventional weight for age (Gomez) criterion by region for the 1950's through 1983. Approximately 30-50% of the rural children were moderately or severely malnourished in the early 1950's as compared to 20-40% in 1972, dependent on the specific region under study. The regional patterns of the malnutrition are consistent in the thirty year span, i.e., the Sierra and Selva pre-schoolers are more severely affected than the coastal children, and the children in Lima are significantly better nourished than children in other coastal cities. Data on the nutritional status of Peruvian children in the last decade is extremely limited. Several small studies have been conducted since the 1972 ENCA survey; no countrywide or even total regional specific measurements are available, however. Recent findings from a study in urban Lima and a rural

Table 1. Percentage of Malnutrition in Peruvian Preschoolers by Conventional Gomez Criterion of Weight for Age Between 1950's and 1983

	N	1950's ^a			N	1972 ^c			N	1978-1983		
		Normal	Grade 1	Grades 2 and 3		Normal	Grade 1	Grades 2 and 3		Normal	Grade 1	Grades 2 and 3
COASTAL												
Lima	* 16728 ^b	70	25	5	-	81	17	2	123	72	20	8 ^d
Northern (Carquin)	48	63	33	4	-	54	35	11	-	-	-	-
Southern (San Nicolas)	61	57	33	10	-	72	24	4	-	-	-	-
Total Region	-	-	-	-	-	65	28	7	-	-	-	-
SIERRA REGION												
Southern (Chacan)	12	8	50	42	-	43	36	21	86	35	23	42 ^e
Central	459 ^b	20	48	32	-	43	36	21	-	26	42	32 ^f
Northern (Vicos)	16	31	44	25	-	35	44	21	15	27	40	33 ^g
Total Region	-	-	-	-	-	44	37	21	-	-	-	-
SELVA REGION												
High Jungle (Yurimaguas)	17	29	53	18	-	44	38	18	-	-	-	-
Low Jungle (Iquitos)												
Private School	111	45	53	2	-	32	45	23	-	-	-	-
Public School	164	2	43	55	-	32	45	23	-	-	-	-
Total Region	-	-	-	-	-	38	41	21	-	-	-	-
TOTAL REPUBLIC	-	-	-	-	-	56	31	13	-	-	-	-

* Where possible, for comparison purposes, the nomenclature of ENCA 1972 was used; specific locales surveyed in the 1950's are given in parentheses.

a Sigma One Corporation estimates obtained from anthropometric measurements in: Trulson, M.F. et al., 1956, Huenemann, R. and C. Collazos, 1954, Huenemann, R. et al., 1954.

b 1965-1969 Survey. Eider, Ravines, and Ramirez, 1969.

c ENCA, 1972

d Flora Tristan, 1978; Anderson et al., 1980.

e Waqra, 1978; Anderson et al., 1980.

f Hernandez, V. and G. Arnauld, FAO, 1981.

g Sigma One Corporation Nutrition Strategy field work, 1993

Sierra community (Anderson et al, 1979) indicate that the proportion of rural children moderately or severely malnourished (40%) as measured by the criterion of weight for age, was significantly higher than that of the urban children (8%). Data collected in the 1980's are primarily from the southern Sierra region and these indicate that 30-40% of the pre-school population suffer from severe or moderate malnutrition.

There are limitations of the weight for age measurement, particularly its confounding of acute with chronic malnutrition; to remove this confounding, the prevalence of chronic malnutrition is measured by height for age indicators and acute malnutrition is measured by weight for height indicators. Height data for the 1950's indicated that over 50% of the surveyed children in the Coastal, Sierra and Selva regions were either moderately or severely stunted. More recent analyses (Graham et al. (1980), Frisancho et al. (1980)) indicate that the prevalence of the children having skeletal stature well below acceptable norms is extremely high in both the rural and urban areas of Peru. "The apparent severe fall in the growth rates of infants in both urban and rural settings, despite marked differences in feeding practices, calls for further investigation into its causes. Undoubtedly infection, particularly intestinal, plays a prominent role and its control might well take priority over any other 'nutritional' measures" (Graham, 1980). The majority of the children (50 to 80%) measured in the 1950's had average or above weights for heights with the exception of the Sierra and Selva preschoolers of ages 0 to 3 years. Approximately 40% of young Sierra preschoolers were acutely malnourished as well as chronically malnourished. In 1975-1976, 16% of the Sierra children under 2 years old were classified as acutely malnourished. The Selva region also had a relatively high percentage of children with low values of weight for height in both the 1950's and 1975 (12% and 19%, respectively

for children under 2 years old). Field observations and limited measurement in the 80's suggest that the situation has worsened since the mid 70's.

Therefore, the sparse evidence is consistent throughout the last three decades: children in the Sierra have been found to exhibit the growth retardation effects of chronic malnutrition leading to permanent stunting for nearly half of the surviving population. Children in the urban coastal areas, suffer less severe cases of acute malnutrition and appear to recover. Limited observations by the nutrition strategy field teams (June and July 1983) indicated that children throughout the country appeared to be suffering from acute cases of malnutrition as a result of disease and low food intake which have resulted from the recent crises. This picture is consistent with a historical pattern: acute cases of malnutrition develop around the age of two and recur with varying frequency as a function of economic and health conditions; most urban children are able to recover so that weight appears to be normal for height, although sufficient growth retardation occurs that weight for age measures continue to be classified as mildly or moderately malnourished; rural children, particularly in the highlands and jungle, exhibit substantial growth retardation to be classified as "stunted" or chronically malnourished. The effects in rural children are believed to persist beyond the age of ten so that achieved adult heights are substantially below the genetic potential of the population (Frisancho et al. 1980).

Food Consumption.

Archeological evidence (Antunez de Mayolo, 1981) suggests that the pre-Colombian dwellers of Peru had achieved food sufficiency and security through the domestication of a great number of edible vegetable and animal species which allowed them to exploit the great ecological diversity of the

terrain. In the last three decades, adequacy of food availability appears to be marginal and recently even the diversity of the diet has deteriorated. Table 2 presents the composition and adequacy of national food consumption for selected years since 1947. The level of food energy available has averaged less than 90% of the level recommended for Peru (2400 calories per capita per day) by the Food and Agriculture Organization of the United Nations.

The problem of food inadequacy has not been and is not currently localized to the rural areas. The average Lima diet in 1972 consisted of 1,944 calories per person per day whereas the rural diet consisted of 1,958 calories per person per day. Each of these was at approximately 82% of recommended levels when consideration is made of the higher energy requirements in the Sierra. The trend of real income growth has been stagnant and its distribution has worsened since 1972; therefore, it is reasonable to believe that an even greater percentage of the population is consuming below recommended levels. While the national diet would probably still be adequate in other nutrients if it were adequate in energy, the field observations indicate that many households have responded to the present crisis through further specialization to cereals in the form of wheat products and rice. This dependence on a few commodities is a response to declining real incomes and shortfalls in the supply of other domestically produced foods.

Throughout Peru rural dwellers are highly dependent on rural labor markets or on migratory work for their incomes (Figueroa, 1978) and even many land owners in rural areas are dependent on the market place for their food. Agricultural product and factor market conditions are important determinants of food consumption, even by so-called subsistence households. Table 3 shows that prototype diets of different composition (e.g. quinua, canihua in the southern Sierra and wheat and rice in Lima) would require the same level of

Table 2. Composition and Adequacy of National Food Consumption for Peru
in Selected Years Between 1947 and 1982

Percentage shares of per capita calories

	YEAR										
	1947 ^a	1952 ^a	1956 ^a	1959/ 61 ^b	1963 ^c	1967/ 70 ^d	1972/ 73 ^e	1974/ 76 ^{f,g}	1977/ 78 ^f	1979/ 80 ^g	1981/ 82 ^g
Cereals	52	43	39	53	41	34	42	49	50	46	46
Rice	6	7	8	-	-	-	-	13	16	12	13
Wheat and other	46	36	31	-	-	-	-	36	34	34	33
Legumes	7	4	3	3	4	4	5	3	-	3	2
Roots and tubers	15	25	23	14	17	22	17	-	-	-	-
Potatoes	8	17	14	-	-	-	-	7	10	7	7
Other tubers	8	8	9	-	-	-	-	-	-	-	-
Poultry	-	-	-	-	-	-	-	1	2	2	2
Eggs	*	*	*	*	*	*	*	*	*	1	1
Beef & other meats	4	4	3	3	5	5	6	6	3	3	3
Fish	1	1	1	1	1	1	1	2	2	2	2
Milk and deriv.	3	3	5	3	5	6	4	3	4	4	4
Fruits	2	3	4	2	3	2	3	1	1	2	2
Vegetables	2	2	2	1	1	1	2	1	1	1	1
Fats and Oils	3	4	6	6	12	13	7	12	11	11	11
Sugar	9	11	14	14	11	12	13	15	16	16	17
Other foods	-	-	-	-	-	-	-	-	-	2	2
Total Per Capita Calories											
	2062	2123	1983	2449	2400	2190	1997	2261	1941	2067	2175

* less than 1 percent

a ICNND, 1959

b Derived from U.S.D.A. food balance sheet

c Calculated from data reported in Estadística Agraria, Peru, 1964, CONESTCAR

d FAO, Production Yearbook, 1971

e ENCA, 1972

f Ministerio de Agricultura

g Plan de Abastecimiento Alimentario Nacional, Office of the Prime Minister, May, 1983

Table 3. Cost of a Nutritionally Adequate "Low Cost Diet"
For Selected Areas in Peru in July 1983

	<u>Soles per persons per day</u>	<u>Number of Minimum Daily Wages required to feed a family of 6</u>
<u>COAST</u>		
Lima: Pueblos Jovenes	992	2.5
Chiclayo	1,039	2.8
Trujillo	1,004	2.7
Chimbote	983	2.7
<u>SIERRA</u>		
Huancayo	915	2.5
Huaraz	880	2.5
Arequipa: Pueblo Joven	825	2.1
Cuzco: Rural	894	2.6
Puno: Rural	890	2.6
Puno: Pueblo Joven	1,071	3.1
<u>SELVA</u>		
Tarapoto	1,196	3.3
Yurimaguas	1,330	3.3
Iquitos	1,321	3.3
Pucallpa	974	2.7

Source: Sigma One Corporation, July 1983

per capita expenditures to achieve caloric adequacy. Furthermore, the distribution of nutritional adequacy is directly dependent on the distribution of income and the deterioration in personal incomes which has occurred as a result of the recession and climatological crises has undoubtedly aggravated a pre-existing maldistribution of a barely adequate food supply. The regional disparity of incomes is great. The per capita income in Lima is over five times greater than in the rest of the country. For example, less than 8% of the population in the Department of Puno is believed to earn incomes equal to or higher than the minimum wage. Under-employment is estimated at 49% of the labor force. This means that market dependent households would need to engage over half of their members in the labor force to provide income to purchase nutritional adequacy. This implies that even school aged children would have to engage in income earning activities.

Peru has a had a serious food problem so that today a majority of the population suffers from diets that are quantitatively and qualitatively inadequate to permit them to achieve their genetic potential in physical growth or their biological potential in labor effort. The population has adapted to marginal food intake; the costs are high mortality and morbidity and perhaps lower productivity in the labor force. This adaptation is frequently misinterpreted to say that there is little or no serious malnutrition in Peru; what should be considered is that this adaptive process imbeds within it a high loss of private and social opportunity.

Health and Biological Utilization of Nutrients

The synergism between health status and nutritional status is well known. Diseases interfere in the utilization of nutrients directly and through the effect on the eating (and feeding) habits of individuals. In turn, the mal-

nourished individual is more susceptible to disease and suffers greater damage from specific episodes than the well nourished individual. In particular, even mild or moderate malnutrition can interfere the body's response to infectious disease so that diseases such as measles which are usually non-fatal can lead to high mortality among malnourished children.

In Peru, data on morbidity, mortality and other functional characteristics of the health system are unreliable. The coverage of the health system facilities is biased in favor of metropolitan areas so that even if the information system worked, a large segment of the population would not be represented.

Communicable diseases represent the most serious threat to the nutrition and general health of the population. Illnesses associated with gastro-intestinal and respiratory diseases represent the principal cause of contacts with the health system (35.6%) whereas preventive health activities are minor (6.9%). Gastrointestinal problems of all origins constitute the largest source of reported morbidity.

The composition of morbidity has changed; during the sixties approximately 15% of the morbidity was represented by diseases subject to prevention by vaccinations and 28% by diseases associated with poor environmental conditions; in the seventies the first type has declined to around 11% and the latter has increased to over 36%. Non-potable water, inadequate waste disposal and physical crowding would appear to be increasing their role in the transmission of diseases. The apparent decline in the morbidity from diseases subject to prevention by vaccination should not be viewed optimistically; the absolute rates are still very high by international standards. The percentage of children fulfilling a normal course of vaccinations has been less than 20% in the last several years. Without a doubt, the greater majority of cases of

morbidity in the last two decades could have been prevented. The high morbidity has aggravated the inadequacy of marginal diets and the marginal nutrition has increased susceptibility to disease.

General mortality has declined between the sixties and the seventies from around 18 to 11 per thousand inhabitants. Still, this rate is high in comparison to other South American countries (7.1 for Colombia, 7.7 for Chile, and 6.0 for Venezuela). Infant mortality information is widely believed to be unreported; the rates are very high by modern standards. The Ministry of Health reports that the infant mortality rate has declined from 160 per thousand live births in the early sixties to approximately 100 per thousand in recent years and that infant mortality represents 26% of all deaths in the country and over 60% of childhood mortality. The fact that 50% of all deaths in Peru are related to upper respiratory and infectious diseases could be interpreted to say that the population is undernourished and unable to resist illnesses which are usually non-fatal to a well nourished population.

The absence of clean water for drinking and cleansing and the lack of safe disposal of human and other wastes cause diseases that are wasteful of ingested nutrients. In Peru, over half of the population does not have access to safe water and in some departments fewer than 10% of the households are connected to a potable water system. Furthermore, in rural areas most existing systems are considered unsafe. The disposal of human wastes is even more concerning: only 28.9% of the country's households have a connection to a sewage system. Eleven of the 24 departments have fewer than 10% of their households connected to a sewage system and even in Metropolitan Lima over 40% of households are not connected to a sewage system. It is not surprising, therefore, that most morbidity and mortality is associated with communicable diseases.

THE POLICY ENVIRONMENT

The economy of Peru is at internal and external disequilibrium; public sector deficits have averaged 6.6% of gross domestic product for the last ten years, the deficit for the last two complete years has averaged 8.5% of GDP and the current account in the balance of payments has been in deficit in each of the last ten years. The public sector deficit has also contributed to rapid domestic inflation which is currently at approximately 100% annually. These conditions of external and internal imbalance are a consequence of endogenous policies and their impact on the allocation of domestic resources as well as exogeneous factors which determine market conditions for Peru's traditional exports. Among the policies which have contributed to the present situation are past exchange rate policies, restrictions on and taxation of international trade, consumer price controls, agricultural pricing policies, the intra-sectoral structure of incentives, and an overall industrialization and import substitution policy. These policies have had multiple objectives regarding employment, consumption and the distribution of income. Their general effect has been to favor the migration of resources from agriculture to other sectors and to stimulate the consumption of imported foodstuffs relative to the level which would have prevailed under a more neutral structure of incentives.

It is within this context of economic imbalance and crisis that the nutrition strategy has been developed. By Latin American standards, Peru could (or should?) spend a greater share of its gross domestic product on social sectors including nutrition, perhaps an additional 1% of GDP (Selowsky, 1979; World Bank, 1981). The current environment is such that this action is not likely in the near future, particularly since there is much to be gained from a more efficient use of the existing fiscal and donor resources. For

example, the budgets under the direct control of the ministries of health, labor and education have dropped to below 4% of gross domestic product for 1984. The areas for policy dialogue between international donors and the government of Peru should center on food subsidies, food marketing, private sector involvement in preventive care and community cost sharing in public services as well as effective use of available resources and improving the structure of incentives.

Food Policies

Peru has not had an explicit nutrition-oriented food policy; rather, it has pursued what is essentially a cheap food policy for urban consumers. The motivations are undoubtedly multiple, including control of the effect of food prices on real wages and the cost of living. This is widely reported to have led to an increased dependence on imports to fulfill urban food needs. A recent review of the agricultural policies of Peru conducted by a University of Minnesota Team has concluded that: trade policy in Peru continues to discriminate against agriculture, real import parity prices for tradable crops could result in higher potato prices and improved incomes for small Sierra farms, food price subsidies create distortions to domestic resource allocation and contribute to the budget deficit and inflation and finally food subsidies are an inefficient manner for providing income and nutritional support to poor people (Orden, et al., 1982).

The results of both the Minnesota analysis and observations of the nutrition strategy field teams reflect the fact that there has not been a clear focus for food policy in Peru. The food problems of Peru are viewed principally as problems of dependence on imports and different analysts blame different forces as the cause. Some blame market imperfections and monopoly

control by the food processing industry, others blame supply shortfalls caused by the weather, others blame the lack of credit and still others blame inefficient public sector institutions. Analyses of policy alternatives are few; for example, calls for self sufficiency do not recognize that self sufficiency may come at higher domestic resource costs than acquiring imports through the sale of those commodities in which Peru has international comparative advantage. More analyses are needed on the best use of scarce domestic resources, the role of various foods in regional diets, price responsiveness in supply and consumption by different producer and consumer groups and on the income effects of alternative agricultural policies, especially food subsidies.

In order to favor urban consumers, many countries rely on explicit and implicit subsidies on food as a matter of public policy (Amat y Leon and Leon, 1983; Keeler et al., 1982); these have generally been demonstrated to be of low cost effectiveness for providing nutritional assistance to low income consumers (Reutlinger and Selowsky, 1976; Franklin, 1983). The 1983 fiscal budget of Peru allocates the equivalent of approximately \$200 U.S. millions to subsidize food consumption (20% of the fiscal deficit.) Rice represents 53% of the subsidy budget; imported wheat represents another 32% of the subsidy budget; milk represents another 11%; and the remaining four percent is absorbed by soy oil and maize. Furthermore, Lima receives a disproportionate share of the subsidized commodities: with less than 30% of the population it receives more than 50% of the consumer subsidies. Calculations by the Central Reserve Bank indicate that through 1980, subsidies on food tended to transfer income from the middle income group (50th to 90th percentile) to the lower half and to the upper 10% of the income distribution. However, Franklin (1980) estimated that in 1980 the lowest quartile of the income distribution

was only receiving 20% of the subsidies going to Lima. In addition, the subsidies depressed the retail price of cereals by about 15% and increased calorie intake from cereals by about 2%. The joint effect of these two results is that subsidies are ineffective as income redistribution instruments and as nutritional instruments, since the very poor do not participate as fully in the subsidies as the not so poor.

Since 1980, the subsidies have been directed towards domestically produced rice and the incidence of the subsidy to rice may be even more regressive. Table 4 presents an analysis of the incidence of the subsidy on rice using data from ECASA for the first half of 1983. The calculations were performed according to the method based on comparing the consumers' and producers' prices at import parity in effect in Lima on the 30th of March 1983. The analysis is performed for two grades of rice "superior" and "corriente". In relative terms consumers of high quality imported American rice receive the highest level of subsidization and consumers of domestically produced low quality rice receive the lowest level of consumer subsidies while domestic producers of low quality rice (corriente) receive the highest relative subsidization.

The foregoing analysis should not be used to argue for the elimination of rice subsidies; the analysis merely seeks to demonstrate that food subsidies are instruments of low cost effectiveness and that their incidence is not always clear. Further analyses are warranted because the subsidy budget is large and could represent a more productive resource if applied to other areas of public expenditure, particularly if it were better directed towards the nutritional needs of the poor in urban and rural areas, e.g., improved food marketing systems.

Table 4. Incidence of Subsidies to Rice According to Production Region and Grade of Rice Using Prices in Effect First Half 1983

Price in \$/MT at average official exchange rate

	Imported American	<u>Superior</u>		<u>Corriente</u>	
		Coast	Selva	Coast	Selva
Producers Price Milled Equivalent Placed in Callao	N.A.	369	405	369	405
Import Parity Price	407*	407*	407*	240**	240**
Price to Re- tailer	289	330	330	229	229
Producer's Subsidy %	N.A.	-9.3%	-0.5%	54%	69%
Consumer's Subsidy %	29%	19%	19%	4.6%	4.6%
Retailers Margin as % of Retail Price	8.4%	9.2%	9.2%	0.3%	0.3%

* Based on current PL 480 Contract: Source ECASA

** Quality adjusted price for purchases from Burma and Pakistan

Source: Sigma One Corporation, 1983

Another aspect of food policy that has received much comment but little analysis relates to the marketing and distribution system for domestically produced food commodities. Indirect evidence suggests that marketing margins have increased in recent years; if so, domestic producers and consumers have both suffered at the expense of so called middlemen. Field observations revealed remarkably little geographic dispersion of retail prices for most commodities, including the perishables. There is a need for a clear statement of policy regarding the role of the state in marketing to be transmitted both to producers and consumers. Such policy initiatives require a careful study of the role of ECASA, ENCI, the Agrarian Bank and of the directorate of Marketing within the Ministry of Agriculture.

The Need for a Nutrition Policy

Neither a food subsidy policy nor a food supply policy can address the nutritional needs of the majority of the population. Obviously under present conditions more food is better than less, particularly if it can be purchased with the incomes of the urban and rural poor. A pure food supply policy and the present structure of incentives may be aggravating the income problems of poor farmers and agricultural workers.

Food policy and income and employment policies each have important roles to play in the solution of nutritional problems in Peru, but each will be limited in their impact. If food subsidies could be targetted to the lower half of the income distribution and applied to milk, cereals, sugars, oils and grain legumes, the average price of these commodities would drop by at most an additional 15%. If the demand by the poor is as income elastic as estimated by Amat y Leon et al., (1981) and price elastic (say an elasticity of 1), calorie consumption by the poor would increase from inadequate to marginal, by

increasing at most 20%. The true elasticities are probably much lower so that the impacts would be substantially lower. Attempting to close the nutrient gaps with income growth or income transfers would require a growth in personal incomes between \$80 to \$200 U.S. in real terms depending on where people are on the income distribution scale. With the present income distribution that would require an increase of nearly \$225 U.S. per capita per year in real terms; this growth rate is unlikely from the present perspective of declining aggregate growth and the de-capitalizing impacts of the disasters. Therefore, a multiple front attack is required to increase labor productivity in all sectors, but particularly in agriculture and public and private actions to make maximum use of the available food resources through improvements in the marketing system and most importantly by preserving the nutrients, that are ingested by the poor, through an improved health system.

INSTITUTIONAL FRAMEWORK

It is not surprising that since there is not a nutrition policy in Peru that there is also not an institutional framework for addressing nutrition related policy and program issues. Many institutions have nutritional objectives in their mandates and many individuals within these institutions endeavor to fulfill or even go beyond those mandates, but the simple fact is that nutritional problems are not being directly or effectively addressed by any institution capable of making a substantial impact. All this is not to ignore that food and nutrition issues have been and continue to be the object of seminars, scholarly and popular publications, official pronouncements and the work of high level official groups. These efforts have not, however, resulted in effective nationwide action to solve the country's nutritional problems. The roles of the Ministries of Health, Education and Agriculture

are vital, but each of these has serious operational or philosophical problems. The problems and potentials of the Health and Agricultural sector are fundamental.

The budget of the Ministry of Health absorbs more than 1 percent of the gross domestic product and nearly 5 percent of the central government budget. The public health system is concentrated in urban areas and centered around hospitals; health centers and health posts are viewed as extensions of the hospital system. The system is passive or demand driven, i.e. it waits for the sick to come to it. Professionals within the system have an outdated clinical view of nutrition rather than an understanding of nutrition as a consequence of social and economic, as well as biological processes. The existing staff is also inappropriately deployed regionally and within communities. A lack of administrative skills and disorganization leads to poor targetting of services and contributes to community and user resentment of the system. The public health system is not well integrated with the private system even though many of its professional and paraprofessional personnel serve in both systems. This phenomenon is a conflict of interest; it could become an asset.

Regarding preventive care, only 20 percent of the children have had a full course of vaccinations against childhood diseases. At the present time, the Ministry lacks the management and operational systems to launch a massive vaccination campaign. Potable water could be the single most important contributor towards improving nutritional health. As is well known, the Ministry has been unable to effectively administer a program to extend the coverage of rural potable water systems.

Agricultural sector policy and initiatives are centered on large scale agriculture of the Coast and Jungle. The focus is on capital intensive development and on expansion of the "agricultural frontier" through the incorpora-

tion of new lands. While land and water are undoubtedly scarce resources, there is too much emphasis on these factors and too little on the human resources in agriculture. In both large scale and small scale agriculture the institutional systems need to be oriented towards agricultural development that seeks to save the scarce resources and make more effective use of the plentiful resources - agricultural labor. Research, extension, credit and marketing policies should first reflect this reality of Peruvian agriculture. The institutions that implement these policies need to review their operational plans and administrative procedures for possible biases against labor and against small scale agriculture; such biases have been induced by the structure of agricultural incentives. There is a pressing need for policy analysis that assesses the labor market and income effects of all agricultural pricing, research, extension, marketing, and credit policies. This analysis is needed so that sectoral actions can be redirected towards increased rural incomes as well as increased food and agricultural supplies. Too much reliance is placed on "make-work" projects within the food for work programs. The food for work programs need to be designed with emphasis on the labor market opportunities of the intended beneficiaries; it should not be presumed that they contain within them a "market test" that implies that the rations compensate the participants for the opportunity cost of their time.

The food assistance being provided to the disaster zones, particularly in the Southern Highlands, is a valuable resource for preventing famine and further de-capitalization of the productive base. The impact of these activities could be maximized by maximizing the income value of the ration through the selection of commodities of high economic value. In the longer run, food assistance efforts should be incorporated into supporting the development of community self-help approaches towards sustainable nutritional and economic improvement.

STRATEGY AND PLAN OF ACTION

The magnitude of the nutrition problem in Peru is such that only through leverage on domestic and international donor resources can significant impact be achieved. The strategy is based on the concept that the nutritional well-being of a population is a basic barometer for the success of the development of a society since it integrates the outcomes of many, if not all, social and economic processes. The central element of the strategy is the focus on the household and the community as the actors principally responsible for the prevention and amelioration of the country's nutritional problems. A country's human resources are its primary sources of wealth and development. Public policy must provide the framework and incentives whereby the informed choices of individuals can lead to their achievement of their maximum potential well-being without encroaching on the well-being of other members of the society. Because so many factors have incidence on the nutritional status of individuals and because the health and productivity of individuals can affect the well-being of society, nutrition is a valid area for public action, but only through how public actions affect the nurturing choices of individuals.

With this view, the five components of the strategy are as follows:

1. Establish nutrition as central to development process:
 - A. Promote policy analysis
 - B. Develop the information base
2. Prevent diseases that cause or contribute to malnutrition:
 - A. Extend the coverage of potable water in urban and rural areas
 - B. Immunize against childhood diseases
 - C. Promote environmental sanitation

3. Increase food consumption:
 - A. Increase food consumption and production by rural households
 - B. Increase food production in the Sierra
 - C. Increase agricultural employment and agricultural incomes
 - D. Improve the food marketing system
 - E. Promote urban employment generation
4. Use community and private resources:
 - A. Promote community and household self-help approaches
 - B. Use the private sector
5. Improve the operational efficiency of the public health system

The first component is the key component for Peru; nutrition must be moved from a tangential to a central role in the development process. The first element of this strategy is to promote the acceptance of nutritional outcomes as important as other measures of performance of the economic and social system. Policy analysis must be undertaken to determine how broad economic policies, sectoral policies and employment policies affect the food consumption and other nurturing choices of households and how the structure of economic incentives can be directed towards mobilizing resources in nutritionally beneficial directions. Such policy analysis and dialogue in turn require improvements on the information base on which public and private decisions are based.

Priority attention should be given towards completing a food consumption survey of national coverage. There should not be a separate nutrition infor-

mation system but nutrition related information should be incorporated into each of the much needed continuous information systems in health and agriculture. Consideration should be given to establishing both systems to be operated within INE to assure that the information is collected with appropriate periodicity and to standardized criteria. For the health system, the information system should routinely survey communities on a rotating basis to validate the health system's reporting of morbidity and mortality data as well as data on the prevalence of malnutrition. In agriculture such a system should contain crop forecasts and current market price data.

The second component of the strategy focuses on the most acute problem, the high incidence of preventable diseases that waste nutrients and exacerbate the conditions of chronic malnutrition. Approaches for rapidly extending the coverage of potable water to urban and rural communities must be developed. Also, Peru needs assistance in extending the coverage of immunization for childhood diseases, particularly measles, with urgency. Declining morbidity from these causes could release household resources and public resources for other more productive activities and declining mortality could reduce fertility rates. Systems for safe disposal of human and material waste are urgently needed throughout the country; current disposal systems contribute to the propagation of parasitic infections that contribute to malnutrition.

The third component of the strategy addresses the fundamental development problem for Peru, chronically inadequate or marginal diets for the majority of the population. The basis for this problem is inadequate effective demand due to low labor earnings and unstable employment. The prospects for substantial income growth in the near term are dismal. Accordingly, the households with the most severe consumption and income problems must be assisted to produce more food for consumption at home and for the market. Furthermore, many rural

dwellers are dependent on the agricultural sector for employment and many farmers seek employment on other farms; there is therefore, a need to find sources of employment and increased incomes in agriculture. Finally, the marketing system needs to be made more efficient.

The food and income needs of the rural poor of Peru, particularly in the highlands, are extremely urgent. A project to support food production promotion is desperately needed. These needs include the Coast and Jungle, but priority must be given to the Sierra. Farming systems technologies for the multiple crop environments of the highlands must be developed and promoted in an integrated rural development approach that includes strong nutritional components.

The food consumption problems in Peru are principally the consequence of an anti-employment bias in all sectoral and economic policies and of an inter-sectoral structure of incentives that has punished agriculture and other primary sectors for the sake of industrialization. Within agriculture the bias against human capital in favor of physical capital is accentuated by the intra-sectoral structure of incentives of pricing and investment policies. Small scale agriculture has suffered from the twin disadvantage of disincentives for food production and the lack of jobs in commercial agriculture. Price incentives and service institutions need to be oriented to a more neutral structure of incentives that does not implicitly tax food production and agricultural labor.

The ultimate test of the strategy is the extent to which the private actions of individuals, acting in behalf of their families and communities, result in self-sustaining improvements to the food consumption levels and nutritional health of the population. Peru should promote efforts to develop self-help measures through the various public agencies that have contact with

the population at large. For example, the Ministry of Health should develop the means to train mothers and other caretakers in the diagnosis, treatment and referral of illnesses which can be managed at home, and the agricultural extension service should promote the production and preservation of nutritious foods for at-home consumption. These efforts could be coordinated by community promoters under the leadership of the departmental development corporations.

The fifth component of the strategy involves operational research to increase the effectiveness of service delivery by the public health system within existing budget constraints. An important consideration is the possible devolution or sharing of responsibility between the public institutions and communities and households in order to increase the effective coverage of the services. The inclusion of the private sector--physicians, midwives, pharmacists, etc. in the preventive care system should be studied. To accomplish this, means must be found to create incentives for the private sector to participate in preventive care. Operational research is needed to find operational and financially feasible ways to achieve these extensions.

BIBLIOGRAPHY

- Amat y Leon, Carlos and D. Curonisy. La Alimentacion en el Peru. Centro de Investigacion de la Universidad del Pacifico. Primera Edicion. Lima, Peru. November 1981.
- Amat y Leon, Carlos and H. Leon. Niveles de Vida y Groupos Sociales en el Peru. Centrol de Investigacion de la Universidad del Pacifico. Fundacion Freidrich Ebert. Primera Edicion. Lima, Peru. March 1983.
- Anderson, J.M., B. Figueroa-Gallup and I. Martinez, "Child Care in Urban and Rural Peru, League of Women Voters, 1979.
- Figueroa, Adolfo, La Economia de Comunidades Campesinas: El Caso de la Sierra del Peru. Pontificia Universidad Catolica del Peru, 1978.
- Franklin, David L. Agricultural Incentives in the Dominican Republic, World Bank 1983.
- Friscancho, A. Roberto, K. Guire, W. Babler et al., "Nutritional Influence on Childhood Development and Genetic Growth Control of Quechuas and Mestizos from the Peruvian Low Lands." American Journal of Physical Anthropology 52:367-375, 1980.
- Graham, G.G. et al., "Urban Rural Differences in Growth of Peruvian Children." Am. J. Clin. Nut. Feb. 1980 338-344.
- Keeler, Andrew G., Grant M. Scobie, Mitchell A. Renkow and David L. Franklin. The Consumption Effects of Agricultural Policies in Tanzania. Sigma One Corporation. Raleigh, NC. January 1982.
- Orden, David, Duty Greene, Terry Roe and G. Edward Schuh. Policies Affecting the Food and Agricultural Sector in Peru, 1970-1982: An Evaluation and Recommendations. U.S.A.I.D. December 1982.
- Reutlinger and Selowsky, M. Malnutrition and Poverty, Johns Hopkins Press, Baltimore, 1976.
- Selowsky, M. "Balancing Trickle Down and Basic Needs Strategies" World Bank Staff Working Papers #335, 1979.

Note: The complete bibliography which contains over 250 items is cited in the main report.