BIBLIOGRAPHIC DATA SHEET	1. CONTROL NUMBER PN-AAH-521	2. SUBJECT CLASSIFICATION (695) AS00-0000-G512

3. TITLE AND SUBTITLE (240)

Bolivian nutrition sector assessment

4. PERSONAL AUTHORS (100)

5. CORPORATE AUTHORS (101)

AID/LA/USAID/Bolivia

6. DOCUMENT DATE (110)	7. NUMBER OF PAGES (120)	8. ARC NUMBER (170)
1976	105p.	BL641.1.U58

9. REFERENCE ORGANIZATION (130)

Bolivia

10. SUPPLEMENTARY NOTES (500)

11. ABSTRACT (950)

12. DESCRIPTORS (920)

Nutrition
Malnutrition
Health planning
Program planning
Assessments
Sector analysis
Food habits
Bolivia

13. PROJECT NUMBER (150)

14. CONTRACT NO.(140)

Bolivia

15. CONTRACT TYPE (140)

16. TYPE OF DOCUMENT (160)

16

AID 590-7 (10-79)

BOLIVIAN

NUTRITION SECTOR ASSESSMENT

BOLIVIAN NUTRITION SECTOR ASSESSMENT

TABLE OF CONTENTS

TABLE OF CONTENTS i

INDEX OF TABLES iii

BIBLIOGRAPHY v

FOOTNOTES vi

PART I - INTRODUCTION 1

A. Rationale for a Nutrition Sector Assessment 1
B. Methodology Used in Developing this Assessment 2
C. Tentative Program Proposal 3

PART II - DESCRIPTION OF THE NATIONAL NUTRITION SYSTEM AND ITS SIGNIFICANCE FOR BOLIVIAN NUTRITION STATUS 5

A. Description of Nutrition Status: Types, Magnitude and Distribution of Malnutrition 5
1. Summary 5
2. Discussion 7
B. Causal Factors of Nutrition Status 19
1. Summary 19
2. The Consumer Sub-System 20
3. Food Supply Sub-System 23

PART III - ASSESSMENT OF THE ORGANIZATIONAL CAPABILITY IN THE NUTRITION SECTOR 35

A. Summary 35
B. The Politico-Administrative Structure of the GOB in the Nutrition Sector 36
1. Background 36
2. Current Organization 41
C. Major Problems 51
1. Lack of Good Data 51
2. Limited Human Resources 52
3. Financial and Program Management Constraints..... 56

PART IV - CONTRIBUTION OF THE OTHER INTERNATIONAL DONORS IN THE NUTRITION SECTOR 57

A. The World Food Program and the PL 480 Title II Program 58
B. The IPPNFNP Project and the Mission's Proposed Nutrition Improvement APD Project 59
C. Other Activities 60

PART V - SELECTION OF GOALS AND TARGET GROUPS 61

A. Summary 61
B. The Goals and Targets 61

PART VI - POSSIBLE ALTERNATIVE INTERVENTIONS 68

A. Summary and Discussion 68
B. Possible Interventions 69
1. An Intervention to Reinforce the Nutrition Sector in the National Public Administration.. 70
2. An Intervention in Food Belief Patterns..... 71
3. An Intervention to Change the Health Status of the Bolivian People 73
4. An Intervention to Increase Food and Nutrient Supplies 74
5. An Intervention to Increase Effective Demand for Foodstuffs 77

PART VII - THE MISSION'S PROPOSED PROGRAM IN THE NUTRITION SECTOR 79

A. Summary 79
B. The Mission's On-Going Program 79
1. Current Programs 79
C. The Mission's Proposed Program in the Nutrition Sector 90
1. First Phase: Nutrition Improvement APD Project 91
2. Second Phase: Nutrition Improvement Loan/Grant Project 94
3. Third Phase: National Nutrition Improvement Loan Project 97

INDEX OF TABLES

Table 1:	Estimated Increases in Protein Calorie Malnutrition (PCM).	6
Table 2:	Estimated Increases in Anemia.	6
Table 3:	Comparison of Average Consumption of Calories and Animal Protein.	12
Table 4:	Nutrition Levels for Bolivians by Geographic Area.	13
Table 5:	Comparative Average Consumption of Food in Bolivia.	14
Table 6:	Degree of Adequate Diet for Family and Pre-school Children in Santiago de Llallagua (High Plains) and San Benito (Valley).	15
Table 7:	Nutrition Status of Children (Study Results 1965-74).	16
Table 8:	Minimum Required Diet for a Woman at an Altitude of 3600 meters in Bolivia.	17
Table 9:	Endemic Goiter - Younger than 15 - (1962).	18
Table 10:	Endemic Goiter - Older than 15.	18
Table 11:	Estimated Income Distribution in Bolivia and Latin America.	29
Table 12:	Comparison of Real National Income per Capita Rural and Urban Bolivia, 1958-69 (1958 pesos).	30
Table 13:	Variation in the Gross Domestic Product for Workers.	31
Table 14:	Calories Consumed per Day by Income Group in Bolivia, 1970.	32

Table 15:	Estimated Average Farm Income.	33
Table 16:	Estimates of Tariffs Charged on Transport in Bolivia, 1974.	34
Table 17:	Estimated Availability of Physicians by MOH Regional Health Office and Rural/Urban Location, 1974.	54
Table 18:	Academic Training of Rural Normal Schools Staff, 1971.	55
Chart # 1	Program of Organization for the Nutrition Sector	39
Chart # 2	Organization of Ministry of Planning and Coordination	40

BIBLIOGRAPHY

1) _____. "Agriculture Development in Bolivia: A sector Assessment", USAID/Bolivia, La Paz, August, 1974.

2) Betancourt, Licenciada María Luisa, "Mercadeo de Alimentos", unpublished paper, La Paz, May, 1976.

3) Blacutt Llanos, Licenciado Nicanor, "Factores Económicos que Condicionan la Canasta Familiar", unpublished paper, La Paz, May 1976.

4) _____. "Bolivia: Health Sector Assessment", USAID/Bolivia, La Paz, January, 1975.

5) _____. "Bolivia: Nutrition Survey", Interdepartmental Committee on Nutrition for National Defense, Washington, D.C. June, 1964.

6) _____. "Bolivia: Rural Access Roads", USAID/Bolivia, Project Paper, Washington, D.C. June, 1976.

7) _____. "Education in Bolivia: A Preliminary Sector Assessment", USAID/Bolivia, La Paz, July, 1975.

8) _____. "Estrategia Socio-Económica del Desarrollo Nacional (1971 - 1991), Ministerio de Planificación y Coordinación, Tomo II, La Paz, 1970.

9) _____. "Estudio para la Definición de una Política Nacional de Alimentación y Nutrición en Bolivia", Consejo Nacional de Economía y Planificación, La Paz, Julio, 1973.

10) Grewal, Tina, "Report on Nutrition Program Analysis for Bolivia" (consultant's memorandum), USAID/B, La Paz, November 26, 1975.

11) Kushner López, Dr. Luis, "Nutrición y Embarazo", unpublished paper, La Paz, May, 1976.

12) Le Baron, Dr. Allen, "Bolivian Basic Foods Production and Marketing", USAID/Bolivia, La Paz, May, 1976.

13) Pine, James, "Consultants' Reports plus Annexes", La Paz, April, 1976.

14) _____. "Plan para una Política de Alimentación a ser Entregado en el Desarrollo Econoómico y Social de Bolivia (1976-1980)", Ministerio de Previsión Social y Salud Pública (MPSSP) unpublished paper, La Paz, May, 1976.

15) _____. "Plan Quinquenal 1976-1980: Resumen" (CONEPLAN: La Paz) June, 1976.

16) Plessas, Demetrius J., "Rural Water Supply and Sanitation Services in Bolivia: A Cost Benefit Approach" University of Michigan, Ann Arbor, June, 1976.

17) Royden, Tom C. "A Review of Small Farmer Credit: Bolivia", La Paz, September, 1972.

Footnotes

1. _____. "Plan para una Política de Alimentación y Nutrición a ser integrado en el Desarrollo Económico y Social de Bolivia. (1976-1980)." Ministerio de Previsión Social y Salud Pública (MPSSP), La Paz. 1976. p.13

2. _____. "Estudio para la Definición de una Política Nacional de Alimentación y Nutrición en Bolivia". Consejo Nacional de Economía y Planificación (CONEPLAN). La Paz, Julio. 1973. p.2.

3. _____. "Bolivia: Health Sector Assessment" USAID/Bolivia, January. 1975. p. 309.

4. _____. "Agriculture Development in Bolivia: A Sector Assessment . USAID/Bolivia. August. 1974. pp. 9-11.

5. Ibid., "Plan para una Política..." p. 19.

6. Ibid., "Bolivia, Health Sector Assessment". p. 310

7. Ibid., "Plan para una Política...', p. 19

8. Op. cit., p. 19

9. Ibid., "Agriculture Development... p. 7.

10. Ibid., "Bolivia: Health Sector Assessment", p. 80

11. Op. cit., p. 81

12. Op. cit., p. 307

13. Kushner López, Dr. Luis. "Nutrición y Embarazo", unpublished paper, La Paz. May 1976. p. 5.

14. Ibid., "Bolivia:"Health Sector Assessment". pp. 307, 309

15. Grewal. Tina. "Report on Nutrition Program Analysis for Bolivia" (consultant's memorandum), November 26, 1975, p. 4.

16. Ibid., Bolivia:"Health Sector Assessment" p. 39

17. Ibid., "Agriculture Development..." p. 34

18. Ibid., "Plan para una Política..." p. 34

19. Ibid., "Bolivia: Health Sector Assessment". p. 310

20. Ibid., "Plan para una Política..." p. 35

45. Op. cit., Gráfico 6

46. Op. cit., p. 111-113

47. Op. cit., p. 146, 264, 271

48. Ibid., "Bolivia: Health Sector...", p. 447

49. Ibid., "Estudio para la Definición...", introduction.

50. Ibid., "Education in Bolivia...", III-12

51. Ibid., " Agriculture Development...", p.245.

52. Ibid., " Education in Bolivia...", IV-20

53. Ibid., "Bolivia: Health Sector...", p.327.

54. Op. cit., p. 251.

55. Op. cit., p. 342,346

56. Op.xit., p. 251

57. Ibid., "Agriculture Development...", p.246

58. Ibid., "Education in Bolivia...", IV-99.

21. Ibid., "Bolivia: Health Sector Assessment", p. 312

22. Ibid., "Agriculture Development..." p. 10

23. Ibid., "Bolivia: Health Sector Assessment", p. 65

24. Op. cit., p. 69

25. Ibid., Grewal Report, p. 6

26. Op. cit., p. 69-70

27. Ibid., "Plan para una Política..." p. 8

28. Ibid., "Bolivia: Health Sector Assessment", p. 174

29. Ibid., Grewal Report, pp. 6-8

30. Ibid., "Plan para una Política..." p. 20

31. Ibid., "Plan para una Política..." p. 20

32. Ibid., "Agriculture Development..." p. 71

33. Op. cit., p. 73

34. Ibid., "Bolivia: Health Sector Assessment", pp. 314-315

35. Op. cit., pp. 315-318

36. Ibid., "Agriculture Development...", pp. 88-94

37. Ibid., "Agriculture Development...", pp. 99-109

38. Ibid., "Bolivia: Health Sector Assessment", p. 331

39. Op. cit., pp. 146-160

40. Plan Quinquenal 197601980: Resumen (CONEPLAN: La Paz), June, 1976, p. 276.

41. Op. cit., p. 146

42. Op. cit., p. 276.

43. Op. cit., Gráfico 26

44. Op. cit., Gráfico 28

PART I INTRODUCTION

A. Rationale for a Nutrition Sector Assessment

Only recently has the Bolivian government, with the assistance of international agencies, begun to turn increasing attention to nutrition problems. It is now prepared to consider nutrition concerns as a major sector for socio-economic development planning and, more importantly, to explore approaches which link nutrition problems and their solutions with activities in the other major developmental sectors. The Government of Bolivia's Five Year Development Plan (1976-80) includes a complete chapter devoted to the National Food and Nutrition Plan, and responsibility for directing the execution of the Plan has been placed in the Ministry of Planning and Coordination (MinPlan) in order to assure that the various facets of nutrition are treated adequately.

While the political will and initial organizational structure exist, finding the way probably will be difficult. The first obstacle is an information base insufficient to describe with great accuracy, detail, or specificity the national nutrition situation. A second obstacle is the paucity of program experience in other than traditional nutrition related activities such as supplementary feeding programs. A third obstacle is the apparent absence of the planning and coordinating skills and experience required to execute a multi-sectoral program. We believe AID can be of assistance to the GOB in overcoming these obstacles. Indeed, through our sectoral programs in agriculture, education and health, the Mission already is assisting the GOB in programs which should have a favorable impact on the nutrition situation. However, it would now seem possible to take actions aimed at the nutrition problem as such.

An assessment of the Nutrition Sector would seem to be the most appropriate beginning for our involvement. By working from the existing information base, including the other Sector Assessments and GOB plans, it should be possible to describe the national nutritional system at least sufficiently to identify information gaps and to provide guidance for planning initial technical and capital assistance programs in support of the GOB's nutrition efforts.

Since this Assessment has relied heavily on the data generated by the other Sector Assessment (i.e. the Education Sector Assessment of 1974, the Agriculture Sector Assessment of 1974, and the Health Sector Assessment of 1975) the reader is referred to them for detailed information on sectoral activities or problems.

B. Methodology Used in Developing this Assessment

Roughly a year before the Mission began the final preparation of this Assessment, the Government of Bolivia (GOB) initiated the preparation of its first National Food and Nutrition Plan to be integrated into the Five Year Plan (1976-80). The summary of the Plan was available at the time this Assessment was submitted to AID/W. In addition to this, the Mission has used the GOB's preliminary planning documents heavily, and has maintained constant contact with the persons involved in the Plan's preparation. The complete plan is expected to be published in November, 1976. This Assessment is based on the goals stated in the draft Plan, and has used the Plan as its primary data source. However, the Plan does not provide clear strategies to attain its goals nor does it provide disaggregated data necessary to form a clear picture of the nutrition problem.

The methodology used by the GOB in preparing the Plan is similar to that used by the Mission in preparing this Assessment. Basically, the methodology consists of a careful review of all available data pertinent to the nutrition sector followed by a description of the activities comprising the "nutrition system" and an attempt to make conclusions about their impact on Bolivia's nutrition status. The analysis is largely qualitative in nature given the lack of firm disaggregated data.

The national "nutrition system" may be characterized as being composed of several elements: i) the consumer sub-system which consists of consumer characteristics such as income, food habits, health and educational levels; ii) the distribution and processing sub-system which consists of transporting, marketing, processing and storing foodstuffs; and, iii) the production sub-system which consists of food production to meet national food requirements, imports and exports of foodstuffs and the factors of production. There are also related factors which have an impact on nutrition status which must be considered such as the Government's administrative system. The Assessment has attempted to consider all these factors.

After describing the main characteristics of the status of nutrition in Bolivia and seeking to draw some conclusions as to their impact, the Assessment seeks to set tentative goals for nutrition improvement, to lay out a series of possible interventions at various points in the nutrition system, and to analyze the probable impact of those interventions on the nutrition problem. The weighting of interventions is based both on potential nutrition improvement impact and on the feasibility of implementation. Finally,

the Assessment attempts to synthesize all the above information to provide guidance on a program strategy which the Mission can follow in assisting the GOB in improving the Bolivian nutrition situation.

Recognizing the limitations imposed by the relative lack of data, the Mission intends to carry out a series of studies both in the proposed APD project which marks the first phase of our nutrition program and through supplements to this Assessment. The supplements being planned will cover: 1) the economic consequences of the current nutrition situation and of improvements to that situation; ii) a detailed analysis of the food gap; iii) a detailed review of the deficiency of human resources in the nutrition sector and of the relation of that deficiency to salaries in the public sector; iv) the nutrition impact of food assistance programs; v) the intra-family food distribution pattern; vi) the relationship of production increases on family nutrition status; vii) relationship of the status of nutrition to demographic patterns and vice versa; viii) analysis of women's behavior and attitudes and their effect on improving nutrition status. These studies and supplements will be submitted to AID/W as they are completed. They also will serve to strengthen the design of the proposed subsequent program in our second program phase.

C. Tentative Program Proposal

Based on the rationale defined above and the goals and possible activities described in this Assessment, the Mission has defined a potential program strategy for A.I.D. assistance in the nutrition sector over a 5-9 year period. The strategy begins with grant funding to start an Accelerated Program Development (APD) project which would establish a nutrition planning and program development capacity within the GOB. It would focus on strengthening the nutrition sector's organizational, human resource and information bases in the various sectors and in the coordinating group at the national level. Further, it would strengthen these bases in three selected Departments - tentatively, Chuquisaca, Cochabamba and Santa Cruz. The APD project, during its estimated 18-24 month life, will prepare the detailed program for loan financed nutrition improvement activities under the first phase of the GOB's national food and nutrition program.

Tentatively, this first phase or project in the national food and nutrition program would last 36 months, and have sub-projects in the areas of: mass media nutrition education backed-up by interpersonal nutrition education through formal and non-formal methods; on going organizational development at the departmental and local levels; a national nutrition survey; improvement of the milk system from production through distribution and consumption; and the development and trial distribution of a blended and fortified foods such as

a corn-soy or a wheat-quinua blend. A fourth Department is likely to be added at this stage to those selected in the APD - possibly Potosí or La Paz.

It is unlikely that the GOB will have developed the capability or generated resources sufficient to carry on and expand the program nationwide after the four-five years of activities under the first two projects. The Mission therefore would propose additional loan funds to support a geographic expansion of the program.

PART II. DESCRIPTION OF THE NATIONAL NUTRITION SYSTEM AND ITS SIGNIFICANCE FOR BOLIVIAN NUTRITION STATUS

A. Description of Nutrition Status: Types, Magnitude and Distribution of Malnutrition.

1. Summary

The two major manifestations of a serious national nutrition problem are the widespread incidence of protein-caloric malnutrition (PCM) in infants and children of 0-6 years of age and iron-deficiency anemia * in pregnant and lactating women. Furthermore, protein-calorie malnutrition (PCM) and iron deficiencies are linked closely since inadequate levels of proteins in the body decreases its ability to absorb iron adequately. Also, an anemic mother is less likely to give birth to a healthy child and thus increases its chances of developing PCM.

The actual incidence nationwide of the I, II and III degrees of PCM, according to the Gomez classification which is based on growth retardation in children, is that 40% of children suffer from I degree, 15-20% from II degree and 5% from III degree. In the absence of a specific nutrition program the following is likely to be the rate of increase in the incidence of PCM. **

---

* Iron-deficiency anemia is known technically as microcytic anemia because it has the effect of reducing hemoglobin levels in the red blood cells and eventually shrinking the cells if not treated.

** Table from Consultant's Report by Ms. Tina Grewal, (November, 1975). Ms. Grewal is a nutritionist who has worked with CARE in feeding programs, in developing nutrition plans in several countries and in mass media nutrition education in India.

Table No. 1: Estimated Increases in PCM

Year	Population 1/	No.0-6 in 000 x (16.2%)	% Degree 2/ I	II	III	(000) Total Mal-nourished	% 3/ Rural	(000) Rural Mal-nourished
1975	5.45 m.	882.9	40	20	5	573	78	446.94
1980	6.14 m.	994.7	45	15	5	647	75	485.25
1985	6.81 m.	1,103.2	50	10	3	695	72	500.40

Notes: 1/ 2.6% growth rates - CONEPLAN
2/ Estimated shifts in relative degree of PCM due to non-specific programs of agriculture, income, education, or preventive/curative health.
3/ Estimated rural to urban shifts. "Rural" defined as below 50,000 population based on services available and occupation, from health sector assessment, USAID/Bolivia.

It is estimated that up to 70% of pregnant and nursing mothers have some degree of iron deficiency anemia. Projections of the magnitude of this problem without specific interventions follow:

Table No. 2: Estimated Increases in Anemia *

Year	'000 mothers (10% population)	(1) % Anemic	000 Anemic	% Rural (2)	000 Rural
1975	545	70	381.5	78	297.6
1980	614	68	417.5	75	313.1
1985	681	65	442.6	72	318.7

Notes: (1) Expected decrease due to nonspecific programs of income, sanitation, etc.
(2) Rural-urban shift.

* Table from Consultant's Report by Ms. Tina Grewal (November, 1975)

Secondary manifestations of weakness in the national nutrition situation is the incidence of goiter, which is caused by lack of the trace nutrient iodine in the diet, and of serious vitamin deficiencies. Survey statistics show that 15-20% of the population are affected by goiter. If no program is directed at the problem, it is estimated that by 1985, approximately 1,050,000 persons will

be suffering from some degree of goiter. Studies have indicated that there is inadequate consumption of calcium, Vitamin A, Thiamin, Riboflavin and Niacin with the most significant gaps occuring in calcium, Vitamin A and Riboflavin.

These manifestations appear throughout Bolivia, but vary in severity by geographic region. In protein-calorie malnutrition, estimates of calorie intake deficits range from 17% in the Altiplano to 15% in the Valleys to 11% in the Tropics. Estimates of animal protein intake deficits range from 48% in the Altiplano to 22% in the Valleys to 43% in the Tropics. Anemia is probably most acute in the Tropics since parasitism contributes heavily to the problem, and the highest rates of parasitic infections are found in the Tropics. Given the protein deficiencies in the Altiplano and Valleys, however, it is safe to assume that anemia also is significant there. Clinical evidence of goiter is highest in the Beni (with 52-57%) although high concentrations also are found in Santa Cruz, Chuquisaca, La Paz and Cochabamba. In all areas, the incidence of goiter is greater in rural than in urban areas. The other vitamin deficiencies are found in all ecological zones of the country.

2. Discussion:

The most obvious, most often cited nutrition problem in Bolivia is a widespread protein-calorie deficiency in a large segment of the Bolivian population, both rural and urban, young and old. As table 3 * indicates, Bolivian per capita intake of calories and animal protein compares very unfavorably with selected Latin American countries and with FAO recommended levels. On a relative national average basis Bolivia is 15% shy of providing the amount of calories consumed in the Latin American sample. For animal protein it is short by 17%. When compared to FAO recommendations the deficit is greater still: 26% and 28% respectively. 1/

While these facts point to the problem, they ignore or exclude the differences which might exist between the various ecological zones in Bolivia. Table 4 which is based on 1970 data, provides a general illustration of the deficits in calorie and animal protein consumption for the High Plains (Altiplano), Valleys and Sub Tropics, and the Tropics. 2/ This confirms the global deficits indicated above. It suggests that caloric deficiencies are nearly similar for all three zones while animal protein intake deficits are much greater in the Altiplano and Tropics. In contrast, a 1962 study shows the Tropics being slightly better off in consumption of calories but more deficient in protein consumption; while the Valleys and Altiplano were not short of protein intake at all. 3/ Since most observers would agree that

---

* For tables, please refer to the end of this Section A. All but the briefest tables have been put at the end of each Section.

there now is a widespread protein deficiency as suggested in Table 4, it is thought that these two sets of data indicate that the average consumption of food, and thus basic nutrients, has deteriorated since 1962. Comparing the two periods, 1958 - 62 and 1970 (Table 5), shows a 13% decline in calories per capita and a 26% reduction in protein intake on a national basis. As we shall see later, "the declining nutrient content of the average Bolivian's diet suggested by the data is consistent with agricultural production and price trends during the last decade". 4/

With the knowledge that the average Bolivian diet has declined over the years, it is reasonable to ask what specifically this has meant for different groups of Bolivians: urban - rural; poor - well-to-do; intrafamily. Unfortunately, there are only threads of evidence which suggest answers. Interwoven must be assumptions, correlations, opinions and interpretations from numerous sources representing a variety of experiences.

Table 6, based on 1976 data, provides a limited indication of the adequacy of diets among families and pre-school children. Clearly, the amount of animal protein consumed by the family and pre-schoolers of the Altiplano is minimal and hardly adequate. 5/ However, it is also striking that total protein absorbed is nearly adequate suggesting that other protein-rich sources are utilized. However, this may also indicate a problem. The Health Sector Assessment states it very aptly:

> "Protein sources are judged by how fully the protein can be used by the body. High quality protein is similar to that found in animals and meat. On the whole, grains yield relatively low quality protein, due to the different balance of amino acids they contain. As the animal protein in the diet is reduced, and as it is replaced by grain protein (low in lysine), the nutrition value of the diet, per unit of consumption, may be reduced." 6/

Since other sources of high quality protein, (cheese, milk, eggs) are not always available or are too expensive for lower income groups, it is safe to assume that the overall nutritional status of those groups faced with the above situation has diminished. As families are forced for one reason or another to switch away from high quality proteins, they face a nutritional decrease even though they continue to ingest low-quality protein. The low quality protein does not serve protein uses as well as the high quality protein.

Returning to Table 6, the position of pre-schoolers in the Valleys appears even more critical since their intake of calories and protein is strikingly less than for their families or those of the Altiplano. 7/ This may be partly explained by the general overall reduction in nutritional status and the discouraging production and price trends noted above. However, it is conceivable that shifts in diets for children have occurred, i.e., diets which consist of bulk forced into children's small stomachs and systems not as able to make full use of the food for their developmental needs.

To talk so far as if protein - calorie deficiencies are the only problems is misleading. The same study previously cited also indicated other nutritional inadequacies for that sample of pre-schoolers and their families. For example, the Altiplano family was deficient in its supply of Calcium (35%), Vitamin A (94.2%), Niacin (22.7%), and Vitamin C (64.6%). Pre-school children suffer deficiencies of 47.6% in Calcium, 89.5% in Vitamin A, 44.8% in Niacin and 56.7% in Vitamin C. Valley families differ somewhat in type and degree of inadequacy. They were below recommended levels for Calcium, Vitamin A, and Riboflavin by 39.1%, 41.8% and 30.8% respectively. Pre-schoolers show deficits for the same nutrients plus Niacin: 74.9%, 40.3%, 62.5% and 19.2%. 8/ This information coincides fairly well with the 1962 Nutrition Study cited earlier. That study showed inadequate consumption of calcium, Vitamine A, Thiamine, Riboflavin and Niacin in all ecological zones. Calcium averaged 79% less than an acceptable level. Also Vitamin A and Riboflavin deficiencies were significant.9/

A picture emerges, although inconclusively, from the above. First it suggests, at least for Valley pre-school children, that diets are woefully inadequate to allow normal development. Secondly, it may indicate, at least for that zone or region, that available food goes to working adults first. This would not be inconsistent with expert opinion on intra-family food distribution in Latin America and Bolivia, although concrete data is difficult to find. Furthermore, since the same cannot be said for the Altiplano, we should be cautioned against generalizing about the intra-family distribution of food, and therefore malnutrition, in Bolivia. It is more than likely that protein-caloric malnutrition (PCM) and other vitamin-mineral deficiencies are affected considerably by geography and ethnic/cultural influences. At least for now the intra-family picture is unclear.

On a broader scale, however, PCM is clearly a major problem among children 0-6 years old. Table 1, "Nutritional Status of Children" shows a prevalence of malnutrition ranging 3-5 %. 10/ Also a PAHO study discovered that the number one associated cause of death among children under five was malnutrition. 11/ Specifically, it showed that "36 percent of (child) mortality in La Paz and 30.4 percent in Viacha was directly or indirectly associated with malnutrition". 12/

PCM and anemia take, it can be assumed, a particularly heavy toll on pregnant and lactating women. As Table 8 indicates, diets must be increased by an estimated 10% in calories and 15% in proteins for pregnant women and 29% and 30% respectively for lactating women. 13/ The 1962 Bolivian Nutrition Study was inconclusive on this subject, but some data suggested a nutritional status for these women inferior to that of the general population. If, indeed, the nutritional status of Bolivians was better in 1962 then we can conclude that PCM among pregnant and lactating women is of special concern today. 14/

Another indicator of severe nutritional problems for this group is the high incidence of anemia found among them. It is estimated that 70% of pregnant and nursing mothers have some degree of microcytic anemia. Indirect evidence comes from intakes of poorly absorbable iron sources and a wide prevalence of parasitism. Tentatively, a current study of anemia of 35,000 women of child bearing age in Bolivia has indicated and projected the situation shown on Table 2, which shows that roughly 442,600 mothers would be suffering from anemia in 1985 as opposed to 381,500 in 1975 without a major program to combat it.

Another nutrition problem generally agreed to extend widely throughout the country is endemic goiter. Some estimates have been made that 15-20% of the population show some degree of thyroid endargement. If this is so, then about 850,000 people would be affected (1975). While endemic goiter touches a broad segment of age groups, Tables 9 and 10 show that it is more prevalent among people younger than 15. However, grade III goiter is three times more common in the older-than-15 group, while grade I is only half as prevalent. 15/

The foregoing, partial description of national nutrition status has shown gaps in the knowledge needed for a really accurate description of the nutrition situation. For example, we do not know how many Bolivians are affected by inadequate diets nor what the specific deficits are by age, income, sex or location. Nor can we

be sure what specific foods are missing from their diets. It does indicate, however, that especially children less than six years of age and pregnant and lactating women are hard hit by protein-caloric deficiencies. Also, this same group, because of special or increased dietary needs, suffers mostly from other vitamin and mineral deficiencies. While anemia is widespread, its effects on these two groups may be greater than the rest of the populace. And, finally, a high degree of endemic goiter, especially among the young, emerges as a problem of considerable concern.

TABLE 3

COMPARISON OF AVERAGE CONSUMPTION OF CALORIES AND ANIMAL PROTEIN

Nutrients	National Average	Latin America Ave.(1)	Ave.for other Occidental Countries	FAO recom-mendations
Calories	1,890	2,222	2,900	2,550
Animal Protein	18	21.7	43	25

(1) Colombia, Chile, Ecuador, Perú y Venezuela according to Food Balance Sheets of the FAO.

Source: Ministry of Social Welfare, (MPSSP) "Plan para una Política de Alimentación y Nutrición a ser integrado en el Desarrollo Económico y Social de Bolivia (1976-1980)"
La Paz, 1976, p.13.

TABLE 4

NUTRITION LEVELS FOR BOLIVIANS BY GEOGRAPHIC AREA
1970

Ecological Zone	Calories				Animal proteins			
	Observed	Required *	Deficit No.	Deficit %	Observed	Required	Deficit No.	Deficit %
High Plains	1883	2274	391	17.2%	15	29	14	48.3%
Valleys and Sub-Tropic	1894	2248	354	15.7%	16	23	7	30.5%
Tropics	1892	2117	225	10.6%	16	28	12	42.9%
National Average	1890	2213	323	14.6%	16	27	11	40.7%

Sources: Ministry of Social Welfare and Public Health (MPSSP) and the National Council of Economics and Planning (CONEPLAN)

"Estudio para la definición de una Política Nacional de Alimentación y Nutrición en Bolivia" La Paz, July 1973, p.2.

* Adapted for the zones studied and based on accepted values cited in the "Nutrition Survey - Bolivia" Report by the Interdepartmental Committee on Nutrition for National Defense, June, 1963.

TABLE 5

COMPARATIVE AVERAGE CONSUMPTION OF FOOD IN BOLIVIA
1958 - 62 (a) and 1970 (b)

Food Item	1958 - 62 Apparent Per Capita Daily Consumption (c)			1970 Apparent Per Capita Daily Consumption (c)		
	Grams	Calories	Protein Grams	Grams	Calories	Protein Grams
Corn	120	433	11.3	71	256	7
Wheat	108	380	11.3	139	489	15
Barley	22.5	78	2.2	1	3	0.1
Rice	21	76	1.5	24	87	1.7
Quinua, Cañahua	8.5	30	1.0	5	17.7	0.6
Potatoes, ocas, olluco	300	237	8.4	286	226	8
Yuca, Sweet Potatoes	101	150	0.8	85	126.2	0.7
Pulses	3.1	105	7.4	-	-	-
Other vegetables	92	37	0.7	141	56.7	1.0
Plaintains, bananas	68	83	0.8	96	117	1.1
Other fruits	103	43	0.8	74	30.9	0.6
Meat						
beef and veal	52.5	59	11.2	29	32.6	6.2
sheep, goat, llama, alpaca	18	24	3.4	11	14.7	2.1
pork	13.5	26	2.4	11	21.2	2.0
poultry, rabbit	4.1	7	0.7	3	5.1	0.5
Fish	0.9	1	0.2	-	-	-
Milk, fluid equiv.	56	32	2.0	34	19.4	2.1
Fats and Oils	11	97	-	12	105.8	-
Sugar	55	210	-	59	225.3	-
TOTAL		2,108	66.1		1,833.6	48.7

a) Based on estimated population of 3,650,000.

Source: ICNND, Bolivian Nutrition Survey, Table 2.

b) Based on estimated population of 4,931,200 in 1970.

Source: unpublished data, MinAg, División de Estudios Económicos y Estadística.

c) Based on production data adjusted for imports and exports, animal feed, seeds, and wastage.

TABLE 6

DEGREE OF ADEQUATE DIET FOR FAMILY AND PRESCHOOL CHILDREN IN SANTIAGO DE LLAILLAGUA (HIGH PLAINS) AND SAN BENITO (VALLEY)

	Calories	Total Protein (gm)	Animal Protein
HIGH PLAINS FAMILY			
Real Consumption	1739	49.5	5.4
Recommended Consumption	2208	56.1	16.8
% of Adequacy	78.7%	88.2%	32.1%
HIGH PLAINS PRESCHOOL			
Real Consumption	1006	25.7	3.4
Recommended Consumption	1287	27.5	11.0
% of Adequacy	78.1%	93.4%	30.9%
VALLEY FAMILY			
Real Consumption	1954	57.9	12.6
Recommended Consumption	2220	59	17.6
% of Adequacy	88%	98.1%	71.5%
VALLEY PRESCHOOL			
Real Consumption	855	21.7	7.3
Recommended Consumption	1349	28	11.2
% of Adequacy	63.3%	77.5%	66.3%

Source: Ministry of Social Welfare and Public Health. "Plan para una Política de Alimentación y Nutrición a ser integrado en el Desarrollo Económico y Social de Bolivia" 1976-1980. La Paz, 1976, p.19.

TABLE 7

NUTRITIONAL STATUS OF CHILDREN (STUDY RESULTS 1965-74)

Year	Place	Age Group	Number in Sample	Percent Mal-nutrition	Grade I	Grade II	Grade III
1965	Tejar y Alto La Paz	Children	702	41	28.0	12.0	0.4
1967	Santiago de Llallagua, La Paz	"	176	47	42.0	4.0	1.0
1967	3 Rural Areas, La Paz	"	1,338	44	32.7	9.6	1.6
1968	Tarabuco, Chuquisaca	"	138	39	32.0	4.0	3.0
1968	Concepción, Tarija	"	154	48	41.0	6.0	1.0
1972	La Paz	0-6 yrs.	2,777	42	26.0	10.5	5.5
1973	La Paz	"	4,810	52	30.4	16.3	5.3
1974	Mineros, Sta. Cruz	"	496	31	22.5	7.4	0.8
1974	Santa Cruz	0-5 yrs.	354	28	24.6	2.8	0.6

Source: Min. of Health, Nutrition Division, unpublished data, 1974 p.80 of Bolivia Health Sector Assessment, USAID, Jan. 1975.

TABLE 8

MINIMUM REQUIRED DIET FOR A WOMAN AT AN ALTITUDE OF 3600 METERS IN BOLIVIA

Nutrient	Adult (Female)	Pregnant	Lactating
Calories	2,100	2,310	2,940
Total Protein (gr.)	60	70	85
Animal Protein (gr.)	18	21	25.50
Calcium (mgrs.)	450	1,100	1,100
Iron	10	14	14
Vit. A	1,300	1,600	2,100
Thiamin	0.8	0.9	1.2
Riboflavin	1.2	1.4	1.8
Niacin	13.9	15.2	19.4
Vit. C	50	65	95

Source: Paper presented to the Permanent Commission on Food and Nutrition entitled "Nutrition and Pregnancy" Dr. Luis Kushner Lopez, Director of Maternal Infant Division of the Min. of Health.
La Paz, Mayo, 1976.

TABLE 9

ENDEMIC GOITER - YOUNGER THAN 15
1962

Departments*	No.Examined	Grade I	Grade II	Grade III
La Paz	528	0.2	0.2	-
Oruro	372	0.5	-	-
Cochabamba	440	16.4	9.1	0.7
Santa Cruz	507	11.8	4.1	-
Beni	238	28.2	22.3	1.7
Chuquisaca	311	12.2	5.5	1.0
Potosí	223	2.7	-	-
Tarija	334	19.5	9.3	0.3
Total	2,953	10.5	5.5	0.4

* Does not include Pando.

Source: CONEPLAN, "Estudio para la Definición de una Política Nacional de Alimentación y Nutrición en Bolivia," La Paz, Julio 1973 p.5

TABLE 10

ENDEMIC GOITER - OLDER THAN 15

Departments*	No.Examined	Grade I	Grade II	Grade III
La Paz	306	0.3	-	-
Oruro	310	0.1	0.3	-
Cochabamba	418	3.8	1.4	0.5
Santa Cruz	152	7.2	7.9	2.0
Beni	136	30.1	19.1	8.1
Chuquisaca	296	8.4	7.1	1.4
Potosí	602	1.5	1.0	0.2
Tarija	452	6.2	8.6	2.9
Total	2,672	5.0	4.2	1.3

* Does not include Pando

Source: Same as other, p.6.

B. Causal Factors of Nutrition Status

1. Summary

The previous section described the general nutrition problem of Bolivia. This section will describe, in as much detail as current data permits, the two major areas of the "nutrition system" in which the probable causes are found, i.e., the consumer or food demand sub-system and the food supply sub-system.

The basic conclusion from the discussion of the consumer sub-system is that people are eating less and lower quality foods now than they did in 1952 due to lower real incomes and the change in national and family food consumption patterns. The discussion of the food supply sub-system supports these conclusions. The description of both the national food balance sheet and of national food production show that increases have not kept pace with population increases. Food distribution programs such as PL 480 Title II have helped increase the food supplies, but on a very small scale.

The discussion of the factors of production and the food distribution and processing system shows that there are major constraints facing attemps to increase the food supply in Bolivia. The traditional sector in which family labor is the key element, technology is rudimentary and capital minimal provides 70-77% of Bolivia's foodstuffs. In food distribution and processing, there are losses of 15-20% of the total food production caused by poor storage and handling facilities. These losses are made worse by high transport costs.

The basic conclusion to be drawn from the discussion of the two major sub-systems is that there is a substantial food gap in Bolivia. This situation of deterioration nutrient intake levels is made worse by the extremely poor health status of the people, especially in rural areas, which further increases their need for nutrients to recover and maintain a normal physical and mental state. At current demand, based on current low income levels and changing food habits, Bolivia is self-sufficient in most major food commodities. However, given current nutritional needs, Bolivia would have to increase food supplies substantially over the next years. To serve a nutrition purpose, this increase would best come from cereals including corn, quinua, rice and wheat; oilseeds; potatoes and tubers; dairy products; protein foods including pork, poultry, eggs and guinea pigs (cuis).

2. The Consumer Sub-System

This section attempts to describe the food distribution pattern by major consumer groups, i.e., urban and rural, rich and poor. More study will be needed, however, before it is possible to describe the specific distribution differences among income groups and urban and rural dwellers.

Income

Most observers probably would agree that family income determines nutritional status more than any single factor. The fact that Bolivia is one of the poorest nations in the hemisphere may explain her considerable nutrition problems. This is based on the experience of other countries and the fact that protein-calorie malnutrition is Bolivia's most serious nutrition problem. Protein calorie malnutrition is caused primarily by lack of access to sufficient foodstuffs. One of the major factors limiting access is insufficient real income - cash income to buy foods or real income to retain adequate farm produce for home consumption rather than sale.

But that would be too simple. It is also the way incomes are distributed among classes and urban-rural groups that is most instructive. Table 11 compares the income distribution in Bolivia with other Latin American countries. The poorest 20% have only 2.5% of the wealth compared to 4.1% in Latin America generally. At the other extreme, the top 20% have 65% versus 58% for Latin America.16/ The rural-urban difference is more alarming because of its implications. Table 12 shows that the gap between urban and rural per capita incomes has grown from its recent most narrow difference of 6.64 in 1962 to 8.50 in 1969. 17/ The widening gap can be explained partially by the fact that growth in the contribution to Gross Domestic Product for agricultural workers decreased by 4.9% between 1966 and 1972, while non-agricultural workers contributed 13.4% to GDP (Table 13) 18/

What are the effects of this income pattern on the nutrition status of various groups? Specifically, it probably means that low income groups, both rural and urban, and some middle income groups are plagued by inadequate daily diets. Table 14 illustrates that low income groups, comprising 50% of the population, have access to 1,356 calories per day. Another 30% of the population has a barely adequate average intake of 2,165 calories per day. 19/ Of course this does not mean that 80% of the population is in or near jeopardy. Nor does it tell us which percent of the percentage is truly at risk or how it is distributed geographically. * This does however, begin to

---

* To illustrate this point, farm (rural)incomes are distributed much like the distribution suggested above, as a quick review of data on "Farm Income Distribution in Bolivia (1975)" will show on Table 15.

lead us to conclude that, based on a look at income, the nutritionally-at-risk majority reside in rural areas. It also suggests that there is considerable overconsumption among the wealthy. This low income-low nutrient access complex is complicated further by the fact that food prices have gone up faster than all prices generally. For 1973 and 1974 the general price index rose by 31.5% and 62.8%. The food price index increased by 35% and 81.2% for those same years. 20/

In general, diets are shifting away from meat, milk, fish and some grains like barley, quinua and corn and toward plaintains, wheat, rice and sugar. The second group is clearly one of low quality foods. 21/ This is attributable primarily to the increasing prices on the nutritious foods and the opportunity cost associated with this shift at the farm level. As food prices increase, it is likely "that some high value foodstuffs which might otherwise have been consumed on the farm are channeled into the market in order to obtain cash for other consumption goods". 22/ It may also have to do with the increases in food production in the tropical areas which are concentrated in rice and sugar. Whatever the causes, it is clear that food consumption habits are changing and the result has generally been a deterioration in the Bolivian's nutritional status.

Food Habits

Another factor which contributes to any nation's nutrition problems is the food habits of the population. Not much is known with certainty about the food habits of Bolivians. However, as stated earlier, working adults and children probably have priority demand on available food, especially in rural families. Also, consider these beliefs held by many rural Bolivians: corn, quinua, barley, chuño, and beef soups should be boiled intensely for the working man to give him more strength; lemon thins the blood; cheese retards the language development of children; bananas and oranges are harmful to children's teeth, etc.

Health Situation

The family health status is a major factor contributing to malnutrition. Bolivia's infant mortality rate is one of the highest in Latin America - 154/1000 live births overall and about 250/1000 for rural areas. 23/ The fertility rate is also high-estimated to be 40/1000 - so that families can have an adequate family size for work and cultural reasons. However, the closer children are spaced together, the more likely it is that maternal and child health will be affected by malnutrition. Add to this that there is a lot of

illness of the diarrhea-pneumonia complex in the pre-school group, and a complex, severe malnutrition problem presumably will exist. 24/

Pre-school children receive less food so they are malnourished; if that condition does not exist early, they are attacked by disease which consequently saps their strengths and starts a process of deterioration; it is unlikely that the food resources exist to rebuild their strength and resistance, so they continue malnourished and weak; since there is no effective preventive medicine and deficient communicable disease eradication program in Bolivia, the young child remains susceptible to recurring bouts with disease and infection; they are struck again which furthers their state of malnourishment. On and on the cycle goes until the child dies or grows up stunted in one way or other.

For poor pregnant and lactating women, a disease-malnutrition cycle can also be described. As noted earlier in this report, there is evidence to indicate considerable malnourishment among this group. Combining this with frequent pregnancies, we are likely to find an individual with low reserves, high vulnerability to disease resulting in low birth weights, a new-born with low reserves and a decline in the adequacy of breast milk at six months. Among fertile women, this cycle is likely to continue for most of their adult lives. 25/

For the three zones of Bolivia, the Health Sector Assessment provides a good summary:

> "In the Altiplano, respiratory diseases and gastroenteritis are most significant. Specific diseases of importance are tuberculosis, typhus, and scabies, as well as silicosis among the miners. The valleys of Bolivia have a similar disease pattern with an increased importance of some gastro-intestinal diseases, some leprosy, and a probably significant amount of Chagas' disease."
>
> "The tropical areas of Bolivia have a very distinct pattern of diseases. The three-disease complex is still very important, but the gastro-intestinal illnesses and malnutrition have more relative importance compared to respiratory illnesses. Parasitic diseases, especially hookworm and amoebiasis, have very great importance in terms of morbidity. Malnutrition in the tropics is probably more of a problem than in the other two areas of Bolivia, despite the fact that these are agricultural areas. Probably, the higher rates of infection with intestinal parasites and enteritis contribute to this problem. Some special diseases with higher morbidity and/or

mortality rates are special threats to economic development in the tropical areas, namely malaria, yellow fever and Bolivian hemorrhagic fever. Chagas' disease and leprosy are also problems of substantial significance." 26/

Underlying this picture of mortality and morbidity for Bolivians, are numerous related causes which will only be summarized here. Inadequate environmental sanitation represents one of the biggest obstacles to good health for Bolivians. It is estimated that 801,570 urban inhabitants out of 1,800,000 or 44.5%, have connected water sources to their homes. Another 11.1%, or 199,550, have easy access. That is, 55.6% have some form of protected water supply. One should not conclude from this that the water supplied to over half the urban population is potable. On the contrary most of it is contaminated. The rural situation is even worse. Four and three-tenths percent (4.3%), 151,300 of the rural population (3,500,000) have access to a protected water supply. Of this, only 1.5% have a water connection at their home. The remainder, 2.8%, have easy access. In rural Bolivia, sewage disposal is a far greater problem than faced by urban dwellers. Individual sanitation facilities reach only 3.2%, or 112,000, of the rural population. In contrast, 23.3%, or 420,000, urban people are served by sewage disposal systems. 27/ Only one of the urban sewerage facilities, however, provides treatment before discharge. Thus, the great majority of discharge represents a hazard to the drinking water it touches as it runs off. 28/

Additional causes underlying high mortality and morbidity rates are such things as traditionally poor hygiene. For example, boiling water to eliminate parasites is an uncommon practice. Superstitious beliefs regarding causation and treatment of diseases and illness combines with a mistrust of or inaccessibility to modern medicine which results in little care and less prevention. For example, often acute infectious disease episodes are treated by indigenous medical practitioners (curanderos) who can't deal medically with the problem. 29/ Other superstitions, or beliefs, were cited above regarding feeding habits which themselves exacerbate mortality and morbidity rates.

3. Food Supply Sub-System

To better understand this dimension of the national "nutrition system", it is necessary to look at agricultural output and production factors. The Food Balance Sheet for Bolivia prepared by the MOH in 1975 indicates an apparent availability of 1,797 calories per day and 43.82 grams of protein compared to the minimum standards of

2,200 and 57 respectively for Bolivia. This takes into account imports, exports, and other uses of food (seed, animal feed, waste). It does not consider, however, the food losses which occur at the retail level due to poor handling; inadequate storage, and lack of refrigeration. 30/ For some products, the loss has been estimated to be 15%. If this were subtracted from low protein-calorie supplies, the situation would be for worse than the current data indicates.

Supply Response

Apart from wheat, milk and edible oils, Bolivia is practically self-sufficient in food production at current levels of effective demand. 31/ "The most important crops, measured in terms of farm gate value, are potatoes, vegetables (sweet corn, onions, tomatoes, green peas), corn (grain), and sugar cane. The rank importance of these four crops has remained unchanged during the period indicated (above). In fact, of the 16 major crops there has been no change in the ranking of eigth of the crops and five other crops changed only slightly". 32/ According to the Agriculture Sector Assessment, this rather stable (almost stagnant) situation is explained best by the lack of dynamism of the small farm sector which produces most of these crops. 33/ The prices of some of these crops have outraced supply which would appear to indicate their relative unresponsiveness to price increases, assuming that relative, not only absolute, prices have changed. Since most of them are grown on the limited lands of the Altiplano and Valleys, this apparent unresponsiveness to prices is understandable being due in large part to the lack of improvements in the factors of production, particularly technology. However, a more plausible explanation would be based on market forces. It seems that certain staple crops which are consumed largely on the farm and are not as acceptable to the urban population (e.g., have no market), have suffered relatively low prices increases as well as low production. Reference here is to quinua, barley, and tubers. Potatoes, dried beans, bananas and plaintains which have a more stable market, experienced production increases higher than price increases. This may be explained by "internal population shifts to urban areas, associated shifts in tastes and preferences, and resultant substitution effects from relative price changes". 34/

To a great extent, increases in certain foods is a result of two factors: bringing new lands under cultivation in the "oriente"; and using some new technology on the Altiplano. In the former case are plaintains, bananas, rice, yucca, and sugar cane. In the latter are wheat, potatoes, and quinua. 35/ Livestock increases during the 1961-1972 period are attributable to swine, poultry and sheep.

The remainder -cattle, alpacas, llamas- have remained almost constant over that span. It is unlikely that expansion of cattle will take place on the Altiplano unless sophisticated, costly, and rigid land management practices are adopted. More likely growth will shift to the orient where virgin grassland is available. For similar reasons it is probable that sheep, alpaca, and llama populations on the Altiplano and valleys will grow slightly, if at all. It is possible that poultry and swine production will stabilize or increase gradually. Although these animals lend themselves to small farm conditions, their growth probably depends on an increased feed base, and in the Altiplano and valleys this will be difficult to achieve. 36/

It is very difficult to talk in concrete terms about the production factors or costs of production for Bolivian agricultural food commodities. The reason is twofold: first Bolivian agriculture is dominated by a large traditional or archaic production system; second, data for the modern segments of the agricultural sector primarily treat the export crops of cotton and sugar, and, to a lesser extent, rice. However, since the traditional factors of production in the traditional sector and the high costs of the factors of production in the modern sector present serious constraints to increasing food supply, they represent a major bottleneck to improving the nutrition status of the population.

In general, the traditional farmer is essentially labor intensive in his production efforts. All those who are able in his family, assist in working the farm. Since labor is a major factor in the traditional agriculture sector, composed of small farms run by poor families, it is important to consider the family's productivity. According to Ministry of Agriculture studies and the Mission's Report on the Role of Bolivian Women in Economic and Social Development, women and children play a significant role (up to 60%) in productive and marketing functions in the small farm sector. They also are the two groups most seriously affected by malnutrition. These two factors contribute to lower-scale farm productivity since a larger part of the sector's labor force, i.e., the mothers and children of the families, is weakened by the effects of malnutrition. Little actual capital is invested in such things as fertilizers, seeds, herbicides, or equipment. Rather, manure is gathered and save for fuel or fertilizer, seeds are saved from each harvest for the next crop, weeds are left uncontrolled, and simple tools like hoes, shovels, rakes are made in the traditional ways. Frequently, livestock are used as draught animals to plow the soil four to six inches deep with primitive

or adapted equipment (automobile springs). The overall investment in fixed capital (shed, house, equipment) is higher in the Altiplano and valleys than in the Oriente where homes are made of thatch and mostly slash and burn methods are used.

What is known as modern agriculture in Bolivia is usually restricted to the cotton, sugar and rice crops. Geographically, these farms are found in the Santa Cruz area or other lowlands of the Oriente. In these cases, modern inputs such as fertilizers, herbicides, maninery, and improved seed are used. Except for some improved seed and vaccines, all the modern factors of production are imported at relatively high prices in terms of the world market due largely to transportation costs. Another major factor contributing to high costs on these modern farms is the difficulty hiring sufficient seasonal labor for harvesting. Also, once the labor has been hired from the Altiplano and Valley areas there arise serious health and nutrition problems due to the ecological differences. These problems result in lower worker productivity. 37/

A final note is in order regarding agricultural output and food availability. Total food supply has increased slightly for certain groups in the country through the GOB's food distribution program which is supported by international food supplies through the PL 480 Title II and World Food Programs. School lunches through the PL 480 Title II Program are estimated to reach 180,000 rural children, school breakfasts 20,000 (rural) and 30,000 (urban) and rations to pregnant mothers another 50,000. Mothers Clubs affect an additional 13,000 mothers. 38/ Thus, these programs relieve the food supply problem for roughly 5%-7% of the population.

Distribution System

The food distribution and processing systems in Bolivia also play a major role in determining the amount of food available and which groups will have access to it. The effectiveness of Bolivia's food distribution and processing systems can be divided again along traditional and modern, or commercial, lines.

The traditional side, which is small farm and consists of about 44% of the total population, feeds itself plus an estimated one-third of the urban population. Thus, through a complicated and competitive system, the small farmer supplies about 77% of the population with its food. Small farm family members are engaged

frequently, often three to four times a week, in delivering their products to local fairs. They bring about 70% of their surplus to the fairs and sell another 20% directly to urban centers. They will sell to three types of buyers: country assemblers (regular); irregular assemblers (weekends and holidays); and truckers. The first category handles about 77% of all food purchased; the second group handles another 12%. It is interesting to note that both those roles are filled entirely by women.

The commercial sector, usually thought of as sugar cane, rice, cotton and cattle, is better organized. This group of farmers and some small producers of rice and sugar cane in the Oriente, market through autonomous public agencies. Cane, rice, and cotton require some processing which is provided near the farm. Beef from the Beni, for example, is slaughtered near airstrips and loaded into airplanes for immediate shipment to urban centers.

Both the traditional and commercial sectors are plagued by inadequate, often non-existent storage, packaging and handling facilities. To illustrate this, it is projected that 15% of the banaras sold to wholesalers is wasted and that another 20% is sold at discounts at the retail level due to damage or deterioration. Beef storage and handling is very inefficient. Almost all byproducts are wasted for lack of processing facilities. There is little refrigeration of beef by wholesalers and even less by retailers. In terms of nutrition impact these problems mean: first, that there is a tremendous loss of potentially useable foodstuffs; and, second, that a nutritionally adequate mix of foodstuffs is not available year round in all parts of the country.

A critical bottleneck to the entire agriculture sector lies in Bolivia's location diseconomies in terms of a poor road system and high transport costs. Both factors make marketing difficult for the farmer. 60% of the roads are not passable during certain times of the year. Another 20% are only useable with difficulty during the same periods. Also, most local access roads, of which there are few and for which there is a great need, are poorly maintained. This lack of good roads means that it may take a small farmer two to three days to travel 90-120 kilometers, the average distance from farm gate to market. Most of this time is spent on foot or horseback getting to the major road. If the community has access to trucks or buses, it still may take one to two days to reach the main road during the rainy season.

The second major factor is the cost of transport which is affected by the tariffs charged by the trucker or other transporter and to a minor degree by the taxes charged on the roads. The Agriculture Sector Assessment shows estimated transport tariffs in Table 16 and average market prices by commodity. According to Table 16, a farmer in Chuquisaca with good access to Sucre who expected to receive $31.40 for the metric ton of corn he had harvested by selling for the best price which generally is found in La Paz, would pay $23.91 for the transport. He would not be able to sell a lower priced crop such as potatoes at $14/MT in the La Paz market and make any profit. These costs are exacerbated by the taxes that will be charged ad valorem on agricultural products on the road by the various national and municipal customs officials. One study estimated a customs stop every 52 kilometers, with taxes ranging from .2% to 5.42%. 39/

An additional problem complicates the food supply picture. The variety of weights and measures used throughout the country, make it difficult to assess price or total volume of agriculture production or sales. This not only weakens the agriculture data base but also creates a bottleneck in marketing.

In nutrition impact terms, these constraints in marketing raise food prices in urban centers and thereby tend to reduce the marginal urban groups' access to adequate diets. In the rural areas, the same constraints limit the farmers' access to markets and thereby limit his ability to gain the best price or to improve his own income and access to foods. Further, the marketing constraints exacerbate the losses caused by poor handling or storage facilities. They also tend to worsen the problem of seasonal non-availabilities of certain foods such as tomatoes or other vegetables which make it difficult to maintain a balanced diet year round.

TABLE 11

ESTIMATED INCOME DISTRIBUTION IN

BOLIVIA AND LATIN AMERICA

Area	Population (Millions)	Percentage Shares of Income		
		Poorest 20%	Middle 60%	Top 20%
Latim America	244.8	4.1	37.9	58.0
Bolivia	5.2	2.5	32.5	65.0

Source: IBRD "Current Economic Prospects for Bolivia", Aug, 1972. in HSA p. 39.

TABLE 12

COMPARISON OF REAL NATIONAL INCOME PER CAPITA

RURAL AND URBAN, BOLIVIA, 1958-69

(1958 pesos)

Year	National Income Per Capita			Urban
	Rural	Urban	Total Nat'l Ave.	Rural
1958	273	2,129	770	7.80
1959	289	2,036	760	7.05
1960	298	2,073	780	6.96
1961	309	2,065	790	6.68
1962	327	2,171	835	6.64
1963	323	2,206	844	6.83
1964	342	2,414	918	7.06
1965	331	2,371	903	7.16
1966	361	2,626	1,002	7.27
1967	342	2,758	1,031	8.06
1968	338	2,808	1,049	8.31
1969	335	2,845	1,064	8.50

From: "Agricultural Development in Bolivia: A Sector Assessment" USAID, La Paz, August 1974, p. 34.

Original Source: Bolivia, MINPLANCO, Cuentas Nacionales 1950-1969, La Paz, 1970, p. 14.

TABLE 13

VARIATION IN THE GROSS DOMESTIC PRODUCT FOR WORKERS

(In $b 1958)

	1966-1967	1971-72	Variation
Agriculture	1,098	1,044	- 4.9%
Non-Agricultural	6,097	6,916	+13.4%
National Average	2,677	2,986	+11.5%

p. 34: Min of Health "Plan para una Política de Alimentación.....
1967-80, unpublished paper, La Paz, 1976.

TABLE 14

CALORIES CONSUMED PER DAY BY INCOME GROUP IN

BOLIVIA, 1970

Economic Level	Percentage of Population	Calories per day
Low	50	1,356
Medium	30	2,165
High	15	2,861
Very High	5	4,813

Source: FAO, "Estudio de las Perspectivas del Desarrollo Agropecuari para Sud América", PSWAO/01, August, 1972.
from Bolivia Health Sector Assessment, USAID, January 1975, p. 310.

TABLE 15

ESTIMATED AVERAGE FARM INCOME

% Farmers	Income (US$)	Income
1 - 10	$ 217	$ 34.50
11 - 20	225	35.70
21 - 30	233	37.00
31 - 40	242	38.40
41 - 50	283	45.00
51 - 60	316	50.00
61 - 70	367	58.25
71 - 80	450	71.40
81 - 90	583	92.50
91 - 95	833	132.20
96 -100	3,333	529.00

Source p. 16 "Bolivia: "Rural Access Roads", Project Paper, 2171, June, 1976.

TABLE 16

ESTIMATES OF TARIFF CHARGED ON TRANSPORT

BOLIVIA, 1974

	Tariff US$ per qq.	Tariff US$ per M.T.	Distance in Km.
La Paz to Santa Cruz	1.35	29.90	903
La Paz to Cochabamba	0.60	13.00	403
La Paz to Oruro	0.38	8.15	230
La Paz to Potosí	0.95	20.65	574
La Paz to Sucre	1.10	23.91	740
La Paz to Tarija	1.65	35.87	952
La Paz to Camiri	2.20	47.83	1,211
Cochabamba to Santa Cruz	0.85	11.68	500
Cochabamba to Oruro	0.45	5.78	228
Cochabamba to Matarani	1.90	41.31	1,048
Santa Cruz to Sucre	0.90	19.57	608
Santa Cruz to Tarija	2.00	43.50	1,120
Santa Cruz to Potosí	1.30	28.30	774
La Paz to Matarani	0.76	16.50	665
Matarani to Santa Cruz	2.45	53.70	1,584

Source: Sindicato de transportistas.

p. 154 Agriculture Sector Assessment, 1974

PART III. ASSESSMENT OF THE ORGANIZATIONAL CAPABILITY IN THE NUTRITION SECTOR

A. Summary

As stated in Part I.B., one of the major systems related to the nutrition system is the government's administrative system. The administrative system is significant for the role it plays in implementing programs to improve the nutrition system and thus the nation's nutrition status. Of equal importance is the national government's policy toward the nutrition system. The national policy will determine to a large extent how effectively and strongly the government administration will work to improve the nutrition system.

The first section concludes that the GOB's administrative system is weak. The Mission's other sector assessments have identified weaknesses in their sector in the human resource base and training capability, information, generation and management, financial and program management, planning and the reach of their activities. Nor have there been many examples of effective coordination by the GOB of the various sectors' programs. In addition, only recently has nutrition become a major policy concern with a multisectoral conceptual framework. Despite these constraints in the politico-administrative system, the following sections discuss several positive elements. Recently the GOB established a national nutrition policy with a multisectoral framework. There is a growing group of high level policymakers and technical personnel in the various sectors who are aware of the nutrition problem. Finally the GOB has defined and begun to staff a core structure within the national administration to carry out its nutrition policy. For various reasons, it is expected that this core structure within the Ministry of Planning and Coordination (Min Plan) will be able to work to strengthen the traditionally weak areas of public administration by focusing its reform efforts on a single problem - nutrition. The basic conclusion is that the national politico-administrative system eventually must define a more permanent organizational structure to effectively implement the National and Food and Nutrition Plan within an existing ministry or in a new instite.

The Departmental level administration is discussed in terms of its capability to carry out the national nutrition plan and sectoral activities under it. The discussion focuses on the sectoral representatives and the Regional Development Corporations. The reason

for considering this level is that the GOB is attempting to begin integrated rural development and decentralization efforts which require active participation of the various departmental actors. The basic conclusion is that nutrition interventions must be directed and implemented at the lowest possible level of public administration to improve their likelihood of reaching the persons affected by malnutrition. A second conclusion is that the departmental level provides more program flexibility particularly in the Regional Development Corporations than does the national level.

B. The Politico-Administrative Structure of the GOB in the Nutrition Sector

1. Background

a. Pre-1976

As in many other countries, until recently nutrition was considered by the GOB to be a concern only of the health sector. This view emphasized the ultimate result of the malfunctions of the nutrition system, i.e., malnutrition. Thus from 1960 until 1975, the Division of Nutrition of the Ministry of Social Welfare and Public Health (MOH/DN) was responsible for all nutrition programs in Bolivia. Its primary activities were in supplementary feeding programs in urban and, later, rural schools and in mothers clubs. In 1960 it absorbed an urban school breakfast program previously funded by the railroad union which thereafter was augmented by a national tax. Also, around that time, it began working with CRS' Titel II sponsored feeding programs. In 1962, it was charged with the responsibilities it maintains today: directing the Title II feeding programs of CRS/Caritas and providing nutrition/education to these feeding programs; setting norms for and directing nutrition rehabilitation programs in MOH hospitals; monitoring the nutritional status of the country's people; directing the National Public Health Laboratory which does food balance sheets and nutrient analysis; and coordinating with the University program to train nutritionists which began in 1973*. The MOH/DN's capacity to carry out these responsibilities is limited primarily by its lack of human resources and its perspective of nutrition which emphasizes dietetics more than a comprehensive view.

---

* The first class of 20 nutritionist is expected to graduate in 1976.

Over recent years, there have been several attempts to introduce a broader concept and initiate a broader range of activities. From 1972 to 1973, the MOH/DN, the Ministry of Planning and Coordination (Min Plan) and advisors provided by the UN, as the prime movers in creating a Division of Food and Nutrition Policies in Min Plan, developed an analysis of nutrition in Bolivia and recommended a strategy and an organization to tackle it 49/. For various reasons, the proposals were not adopted, and the Min Plan Division of Food and Nutrition Policies also ceased its functions.

b. 1976 - Transition to Multi-Sector Approach

In late 1975, an Interministerial Commission was formed under the urgings of the MOH/DN and the United Nations Inter-Agency Project for the Promotion of National Food and Nutrition Policies (IPPNFNP). Headed by the Ministry of Health in the person of the chief of the MOH/DN, the Commission was charged with developing the basis for considering nutrition in the Five Year Plan 1976-80. After roughly six months of Commission operations, and again at the urging of the UN's IPPNFNP, the GOB decided that nutrition was to be treated as a separate sector in the Five Year Plan, thus broadening the Commission's task.

In February, 1976, the Commission was subsumed under the Min Plan's Directorate of Social Infrastructure Planning (DSIP) because the basic data had been synthesized and analysis done and because the task-force "modus operandi" of the Commission seemed likely to delay the final preparation of the Nutrition Sector Plan. The UN's IPPNFNP also had suggested to the GOB that such a move would be a condition to its continued support of nutrition improvement efforts in Bolivia. Simultaneously there was a formal transference of overall nutrition responsibility from the MOH to Min Plan. However, certain members of the Commission continued working with Min Plan on an ad-hoc basis to develop the national food and nutrition plan; and the Commission still exists with the primary function of reviewing and approving nutrition plans and programs for technical adequacey and coincidence with sectoral policies.

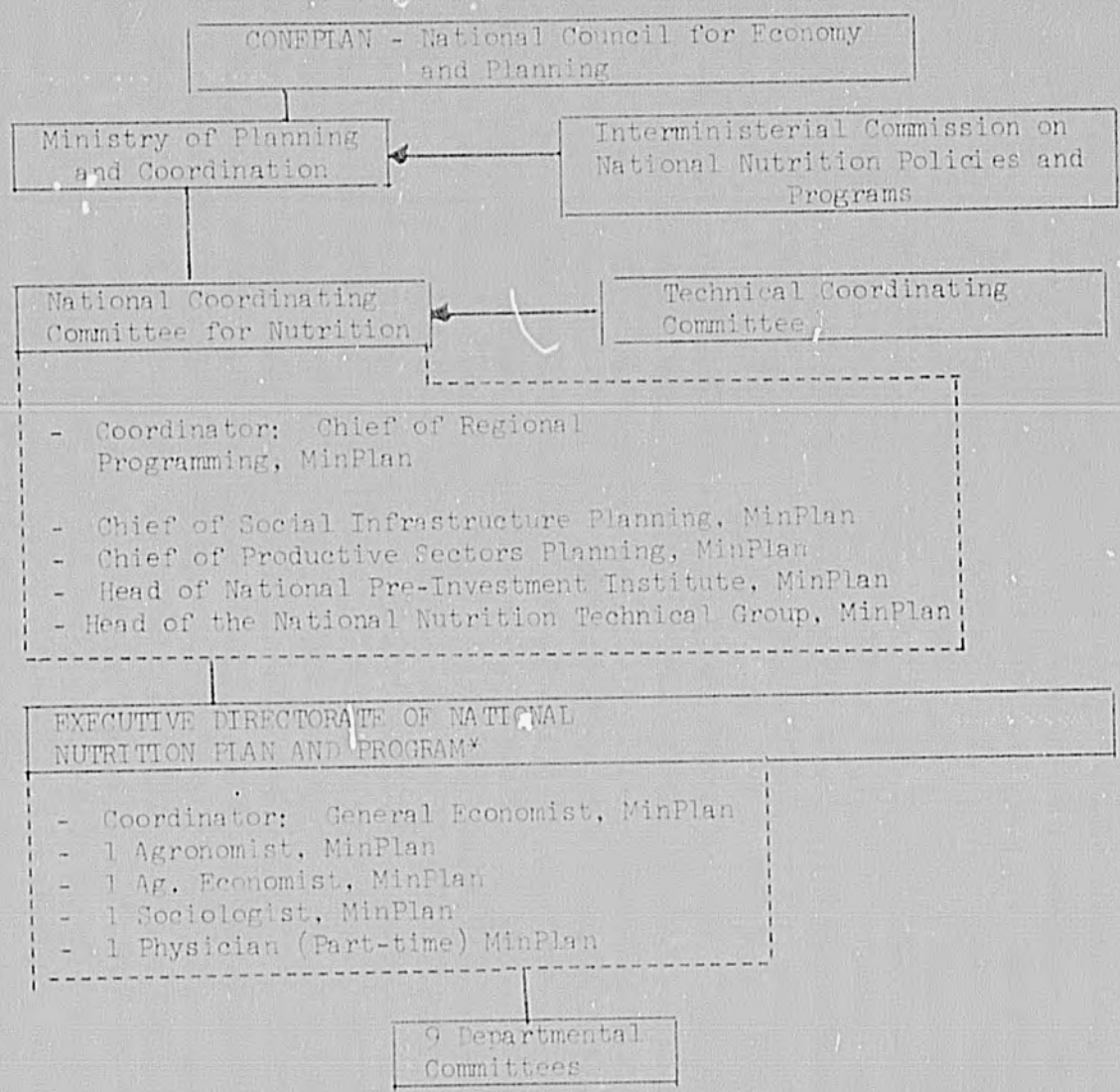
In May, 1976, Min Plan's DSIP sponsored a five-day workshop for technical level representatives of the various interested ministries to review the first draft of the national food and nutrition plan and to develop the basic approaches for an overall nutrition strategy and possible ministerial commitments. The results of this workshop helped Min Plan's DSIP to refine the Nutrition Sector Plan of the

Five Year Plan, and will provide the basis for the nutrition element of the first national operational plan. In June of 1976 the Nutrition Sector Plan was approved for publication in the Five Year Plan, the Summary of which became available in August, 1976. The complete document of the Five Year Plan is not expected to be completed and available until November, 1976. The GOB's nutrition goals and targets are discussed fully in Part V.

In the process of formulating its agreement with the IPPNFNP, MinPlan redefined and further specified the organizational structure and staffing pattern that would carry out planning activities and direct program activities in the nutrition sector. The basic change was that the locus of responsibility within MinPlan was moved from DSIP to the Division of Regional Programming (DRP) in July, 1976. It also defined clearly the structure and composition of the working groups which were subsequently modified to be more operational. (See following diagrams). Under this scheme, the Executive Directorate would develop and direct nutrition plans and programs as well as organize other ministries and departmental personnel, i.e., the peripheral groups in IPPNFNP terms, in technical working groups which would support the efforts of the Directorate. The UN-GOB agreement also sketched a program of activities which would lead to transfering the Executive Directorate from the Division of Regional Programming (DRP) to the National Pre-Investment Institute (INALPRE). MinPlan has indicated that this transfer is subject to re-formulation if deemed necessary. The actual plan of specific activities and their timing under the IPPNFNP/MinPlan agreement remains to be determined.

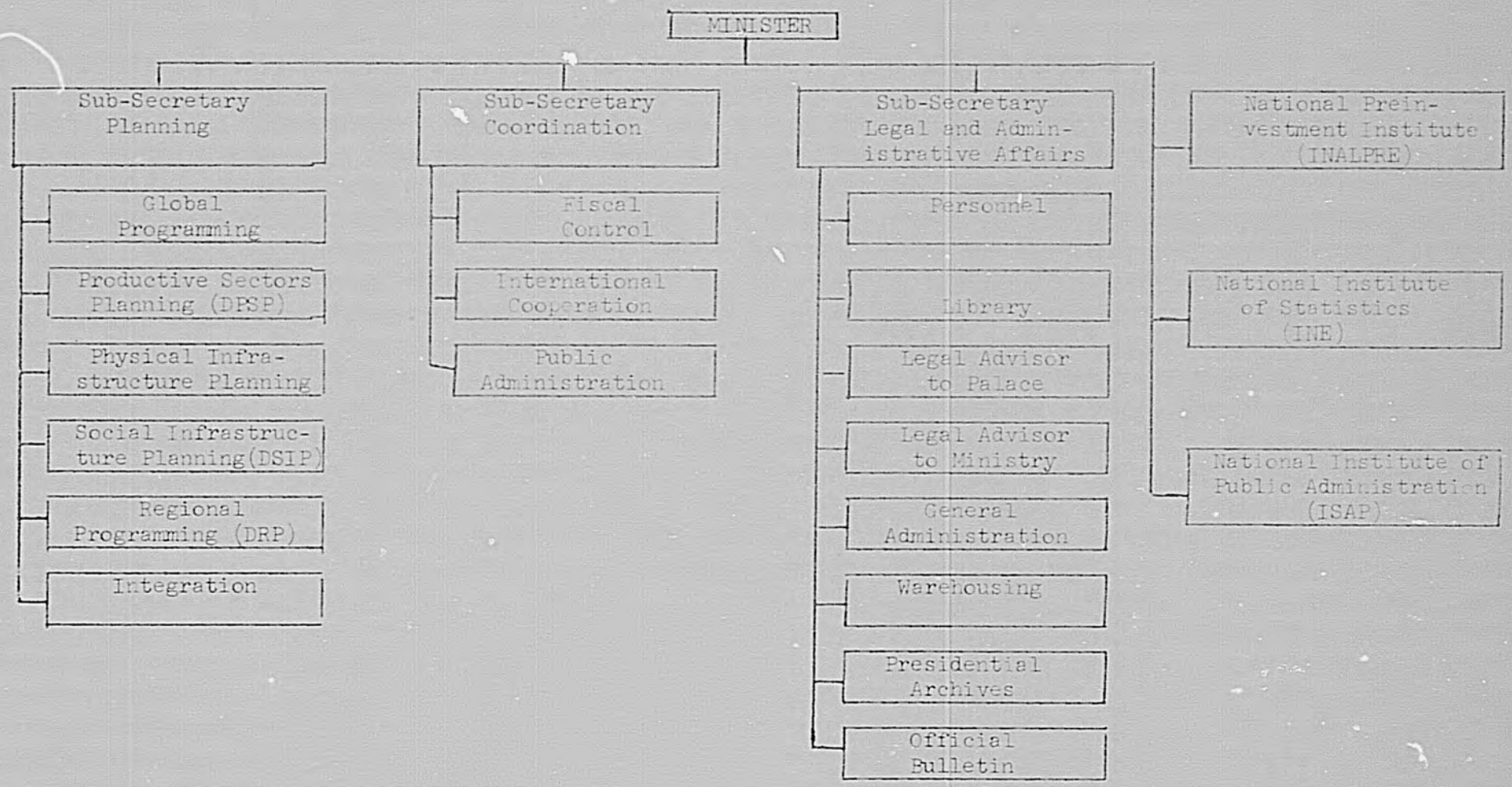
After signing the agreement with the IPPNFNP, MinPlan initiated its activities in developing its first national operational plan, which included the DRP outlining the element for the nutrition sector. To assist the DRP in specifying a program of nutrition activities for the GOB's first operational plan and to design a possible program of assistance, the Mission provided DRP with six weeks of technical assistance. Based on this critical analysis and the potential program needs, MinPlan made some changes in its structure for the nutrition sector. These are included in the diagram p. 39 . The two basic changes are the addition of the Technical Coordinating Committee and the further specification of the structure of the technical working groups called for in the MinPlan /IPPNFNP Agreement.

PROGRAM OF ORGANIZATION FOR THE NUTRITION SECTOR



* Each member of the Executive Directorate will head a Technical working Group composed of staff persons of the pertinent ministries.

Organization of Ministry of Planning and Coordination



2. Current Organization

As discussed above, the GOB has defined an organizational structure to carry out activities in the nutrition sector. The structure is defined clearly at the national level, tentatively at the departmental and not defined at the local level. These structures, for the most part, have not been staffed due to their recent creation in July, 1976. The proposed staffing, functions and relationships are discussed below.

The basic weakness of this administrative system lies in the fact that it has not been done before in Bolivia. However, this will be resolved over time and for the reasons below, the Mission feels that it can succeed. The ad hoc nature of the structure seems to pose the major problem to successfully establishing an on-going GOB capability in the nutrition sector. The current structure lends itself to the flexibility required in initiating activities but a permanent structure must emerge to carry a national nutrition program over time. Such a permanent structure could take the form of a new division within Min Plan or a National Nutrition Institute as decentralized agency attached either to Min Plan or to another ministry. A third option would be to create a new ministry although this is unlikely given the limited resource base in Bolivia. Either of the first two options would be viable nutrition organizations. Min Plan and members of the National Commission on Food Nutrition Policies also recognize the need for a permanent organization but feel they must define their nutrition program further before deciding on the final organization.

The three highest level organizational units concerned with the nutrition sector in Bolivia are: the National Council for Economic and Political Planning (CONEPLAN), Min Plan and the Interministerial Commission on National Nutrition Policy and Programs. The National Nutrition Coordinating Committee will operate within MinPlan, and be advised by the Technical Coordinating Committee. Operational units under the Division of Regional Programming (DRP) of MinPlan will include the National Nutrition Executive Directorate, the Food and Nutrition Technical Group and the Technical Working Groups. The Chief of the DRP will be responsible for the activities these operational groups and chairs the National Nutrition Coordinating Committee. He reports to the Subsecretary of Planning of the MinPlan.

The policy and directorate level groups have been formed and are functioning. The GOB estimates that the operational units will be formed and functioning by November, 1976.

Once this national level institutional structure is in place, the GOB proposes to begin to develop a corresponding structure at the

departmental level. The highest level nutrition organizational unit in the Departments will be the Departmental Coordinating Committee for the National Food and Nutrition Plan. This will be chaired by a high official of each department's Regional Development Corporation (RDC). The RDC's will take primary responsibility for nutrition activities in their departments. Operational units under the Regional Development Corporations and the Departmental Coordinating Committees would include the Departmental Coordinators for the National Food and Nutrition Plan as staff members of the RDC's and the Technical Programming Groups formed by staff from the involved ministries.

a. CONEPLAN

CONEPLAN is the President's primary economic-technical advisory group. It is chaired by the Minister of Planning and Coordination. Its primary function in the nutrition sector is to approve the National Food and Nutrition Plan and the National and Departmental Food and Nutrition Annual Operational Plans. It also has to approve any change in institutional responsibilities in the nutrition sector. To date, CONEPLAN has been supportive of transforming nutrition into a multi-faceted sector with an organizational structure adequate to initiate activities in the nutrition sector. It is expected that this support will continue and it is necessary to successfully establish a GOB program capable of improving the nutrition situation.

b. MinPlan

MinPlan, at the level of the Minister and Sub-Secretaries, is in charge of coordinating and evaluating all nutrition activities. At this level, MinPlan reviews and approves specific policies and programs related to the National Food and Nutrition Plan, and will oversee the activities of the nutrition sector.

As seen from the organizational chart, p. 40, MinPlan has broad program coverage. Its responsibilities are primarily those of planning and coordinating GOB activities in each area. In planning, MinPlan is fairly strong in terms of structure and staff. However, MinPlan is not as strong in coordination. Its authority to coordinate will need to be matched by ability to coordinate if it is to play its role in the nutrition sector effectively. The staff of MinPlan, in numbers, is adequate if not abundant. In addition, its staff is among the most highly qualified in the GOB and its salary levels are adequate, falling behind only Ministry of Finances and the Presidency.

c. National Institute of Statistics

Since information and evaluation and the ability to coordinate the various sectors activities in these activities will be critical to the success of a national nutrition program, MinPlan's capability in them must be considered. Historically, the National Institute of Statistics (INE), as a part of MinPlan has not been effective in its functions as repository of national data and guide for information systems. However, it is the only GOB agency that has any experience in or responsibility for these functions. Also, INE has been strengthened by the additional GOB resources given to it in its effort to take the first national census since 1952. Not only has its resource base expanded but it is gaining experience in national data gathering and analysis. After the census is taken, INE will be responsible for coordinating the revision of the data base of each sector. The new data and INE's familiarity with it and the collection methods combined with the process of revising sectoral data should strengthen further MinPlan's ability to support DRP's nutrition structure. INE will be the entity most likely to be able to reinforce the current national information and evaluation system to the point required for adequate multisectoral nutrition programming.

d. Interministerial Commission on National Nutrition Policy and Programs

The Interministerial Commission is made up of Ministers of the three key operational ministries involved in nutrition, namely, MACAG, MEC and MOH plus those less directly involved, namely, Labor, Transport, and Commerce and Industry. The Commission's Executive Secretary is the Chief of the Nutrition Division (DN) of MOH. The principal function of the Commission is to advise MinPlan on nutrition matters. The Commission also is responsible for assisting MinPlan to coordinate the nutrition related activities of the MOH, MACAG and MEC, and others. The Commission, in the persons of the ministers' delegated technical level representatives, was primarily responsible for drafting the National Food and Nutrition Plan (NFNP) included in the GOB's Five Year Plan. A legally constituted group, MinPlan can call a meeting of the Commission at any time. The support that the various ministries provided through the Commission mechanism in developing the NFNP, is a good indicator that future nutrition activities are not likely to be blocked by strong ministerial opposition. Currently, MinPlan is working with the Commission to delegate a Technical Coordinating Committee to carry out the technical advisory functions of the Commission's functions on a regular, perhaps bimonthly, basis.

e. National Nutrition Coordinating Committee

The National Nutrition Coordinating Committee, which reports to the Subsecretary for Planning of MinPlan, will be in charge of national level coordination as well as coordination of the departmental level. Members of the Committee, all of which are MinPlan employees, include: (i) the Chief of the Division of Regional Programming (DRP) as the General Coordinator of the National Food Nutrition Plan (NFNP) and head of the Committee, (ii) the Chief of the Food and Technical Group as Technical Coordinator of the (NFNP); (iii) the Chief of the Division of Productive Sectors Planning (DPSP); (iv) the Chief of the Division of Social Infrastructure Planning (DSIP), and (v) the Chief of the National Pre-investment Institute (INALPRE).

This Committee's primary functions are to: i) establish a nutrition planning system which will enable the GOB to develop the nutrition element of its annual national and departmental operational plans; ii) assure and guide the participation of the various agencies involved in nutrition activities; iii) monitor and evaluate specific nutrition activities and their impact on improving the nutrition situation relative to the goals and targets of the NFNP; and, iv) guide and assure the participation of the various MinPlan divisions' activities in support of the nutrition sector.

This Committee has not been meeting regularly but it is functioning. It is expected to meet every two weeks for information sharing and program adjustment. Approximately every six months it is planned to meet with the Interministerial Commission to present a statement of progress in achieving the NFNP's goals and to solicit guidance. Once a quarter, it proposes to meet to review the progress of the Food and Nutrition Technical Group and approve its program of activities for the next quarter.

Since the mechanism is based on MinPlan's standard approach for addressing multi-sectoral problems and the three key MinPlan divisions represented on this committee have worked well on similar committees, this Committee structure is expected to function well. Nonetheless, it is an ad-hoc mechanism. In the past, MinPlan eventually has developed a special division from the ad-hoc structure or transferred the function to a decentralized agency of its own or of another ministry. In the next few years, the ad-hoc structure for nutrition may be expected to undergo a similar transformation which would tend to strengthen the nutrition sector.

f. Technical Coordinating Committee

The Technical Coordinating Committee will be the most important institutional mechanism for coordinating the key operational

ministries at the technical level. The membership of this Committee includes: the Chief of the Food and Nutrition Technical Group as Technical Coordinator and head of the Committee and technical coordinators, including the Directors General of Agriculture and Health and a representative of the MEC. Representatives of other involved ministries will be called on as needed.

The primary function of the Committee will be to advise the National Nutrition Coordinating Committee on technical matters. The Committee is planned to meet every three months. Staff and support assistance for this committee and the two committees described above will be provided by the MinPlan through the Department of Regional Planning described below. This Committee is not formed yet but MinPlan, through the Division of Regional Programming is working with the Interministerial Commission to form the group as mentioned above.

g. Division of Regional Programming (DRP)

The Division of Regional Programming (DRP) is the division primarily responsible for the nutrition program within MinPlan. The Chief of the Division serves as General Coordinator of the National Food and Nutrition Plan and the head of the Coordinating Committee. The National Nutrition Executive Directorate and its staff group, i.e., the Food and Nutrition Technical Group are located in this Division. The Technical Working Groups, which are the responsibility of the individuals in the Food and Nutrition Technical Group (FNTG) also respond to the head of DRP.

Five positions, including an economist, agronomist, agriculture economist, sociologist and a nutritionist, have been added to the DRI unit in the MinPlan to form the Executive Directorate and its staff group, the FNTG. These five persons, in their nutrition activities at the national level, will be supported by the Technical Working Groups, which will consist of employees of the various ministries working part-time in nutrition activities. In their departmental level activities, these five persons will be supported by Departmental Coordinators who will work out of the Regional Development Corporations. The DRP staff will also be assisted by two UN advisors and three UN junior experts who are currently assigned to MinPlan in the DRP. The physician and the agronomist for the FNTG have been hired. The general economist, for the FNTG director's position, has been identified and is expected to be hired by October. Persons for the other two FNTG positions of agriculture economist and sociologist have not been identified. The entire team is expected to be on-board in late September, 1976.

The GOB chose DRP as the principal focus of the nutrition program within MinPlan for several reasons. Other possible candidates for the leadership of the nutrition sector within MinPlan were the Division of Productive Sectors Planning (DPSP) and the Division of Social Infrastructure Planning (DSIP). Nutrition activities will require both social and productive sector participation and collaboration at the national and departmental levels. By giving the leadership to either DPSP or DSIP, MinPlan would have run the risk of biasing the program to one or the other. Also, they both emphasize national-level activities as do the ministries with which they work. This bias had the potential effectively to weaken MinPlan's emphasis on departmental participation and coordination. Nor had either of these divisions had any experience in managing program activities. DRP's focus on integrated development programs allows it to avoid the two biases, and it has had the experience of being the GOB's executing agency for the UNICEF Integrated Rural Development Project.

One problem with the choice of DRP as MinPlan's leader in nutrition is the newness of the Division. The bulk of DRP's experience in its two year existence has been at the Departmental level with limited involvement with the national sectors. However, the novelty of the nutrition concept and the structure give DRP certain advantages. First, the DRP and its nutrition structure are not hamstrung by the ingrained weaknesses of the other Bolivian entities. Nor is it affected by MinPlan's traditional weaknesses as are other divisions. Second, since it does not have an established role vis a vis other entities, it will not be as hindered by past tensions or traditions. The Divisions of Productive Sectors and Social Infrastructure Planning who participate on the National Coordinating Committee, can provide DRP with the sectoral insights to help it avoid unnecessary conflicts.

Also although the Supreme Decree defining the relationship of the Regional Development Corporations to MinPlan has not yet been pronounced, the Department of Regional Programming is the only central level group that has been working closely with them. Currently, it is testing the feasibility of the system described in the draft Supreme Decree. The DRP has provided guidance to the Corporations in developing the Five Year Plans for each department and has synthesized them into the rural development and other chapters of the Five Year Plan. Operationally, it has worked with the UNICEF integrated Rural Development Project run by the Regional Development Corporations of Chuquisaca and Tarija. This experience, unique to a central agency, should prove invaluable in developing a multisectoral approach to the nutrition problem at the departmental level. Also the necessity of developing working arrangements as equals on nutrition program activities may enable DRP and the corporations to develop stronger,

more realistic ties.

Two factors indicate that DRP has a good possibility of success in this endeavor. First, this is the first time the Central Government has seen a practical need for working through the Corporations. Second, the Executive Directors or Planning Directors of three of the strongest Regional Development Corporations, i.e. Santa Cruz, Chuquisaca and Tarija, have expressed interest in playing a coordinative role in a multi-sectoral nutrition program in their departments.

h. National Nutrition Executive Directorate

The Executive Directorate will be the primary nutrition working group within MinPlan. The membership of the Executive Directorate consists of the five individuals who will fill the new positions created in the DRP to implement this project. The Directorate will be in charge of organizing and directly supervising all GOB nutrition activities. The head of this group will be the Chief of the Food and Nutrition Technical Group in his capacity as Technical Director of the National Food and Nutrition Plan. This position is one of the most important positions in the institutional structure of Bolivia's nutrition sector. The success of the National Food and Nutrition Plan and the APD Project will depend, to a large extent, on his capabilities and how well he does his job. He will be supported in his work by the Food and Nutrition Technical Group and an administrative staff.

i. Food and Nutrition Technical Group (FNTG)

The Food and Nutrition Technical Group (FNTG) will form the Executive Directorate's technical staff. The FNTG will consist of: (1) a general economist as chief, (2) an agronomist, (3) an agriculture economist, (4) a sociologist and (5) a medical doctor with a speciality in nutrition and public health. Each specialist will act as the chief of one of the five Technical Working Groups. The FNTG plans to meet weekly to coordinate the activities of the specialists and the Technical Working Groups. Once every three months, the group would meet to evaluate its progress and set out activities for the next three months.

Two members of the FNTG, the agronomist and the nutritionist have been hired while the general economist has been selected and will be hired soon. MinPlan is interviewing individuals to staff the remaining two positions. The general economist has previous experience as Chief of the Planning Division of the Peruvian Ministry

of Nutrition. The agronomist has spent about 10 years with MACAG in the extension service.

It is anticipated that the two additional members of the team will be selected by the end of September. The nine departmental level coordinators will be selected by MinPlan after the remaining FNTG positions are filled.

j. Technical Working Groups

MinPlan proposes to establish five Technical Working Groups: planning and evaluation; information and evaluation; food assistance; nutrition education; and, food production. The chief of each group, a specialist from FNTG, would organize the group. Each group would be composed of technical personnel from other ministries and agencies involved in the group's nutrition area who will initially be able to provide technical advice and specific data and, eventually, assist in reviewing and revising programs and projects developed by the FNTG specialist. Each specialist will meet with the members of his/her Technical Working Group individually or together as required. These groups will prepare the nutrition component of the operational plans for MinPlan.

As currently proposed, the members of the planning and evaluation group will include the chief of FNTG (general economist) and representatives of DPSP, DSIP, MinAg, MinEd, MOH, the Ministry of Finance (MOF) and the National Institute of Statistics (INE). The FNTG medical doctor will head the information group composed of representatives of DSIP, MinAg., MinEd, MOH, the Ministry of Labor, the Ministry of Commerce and Industry, the National Community Development Service (SNDC), the National Colonization Institute (INC) and INF. The food assistance group will be composed of the FNTG agronomist, the FNTG medical doctor and representatives of DPSP, MinAg, MOH, Food for Development (ALDF), the National Social Action Board (JNAS), the Agency for Economic and Social Development (DESEC), Caritas/Bolivia, CRS, CARE/Bolivia, the World Food Program and USAID Food for Peace. The FNTG sociologist and representatives of DSIP, MinEd, MOH, the Ministry of Labor, the Ministry of Communications and Transport, the Presidential Press Secretariate, the National Council for Higher Education (CNES) and the Bolivian Association of Radio, Press and Television (ASBORA) will make up the nutrition education group. The last group, food production, will be headed by the FNTG agriculture economist and count representatives of DPSP, DSIP, MinAg, MOH, the Ministry of Communications and Transportation NCDS, INC, the Bolivian Agriculture Bank (BAB) and the Bolivian Development Corporation (CBF) among its members.

The effectiveness of these Technical Working Groups will depend largely on the types of personnel delegated from each Ministry which is the responsibility of the Technical Coordinating Committee and the head of DRP. It also will depend on the expertise and abilities of the members of the FNTG, the selection of whom depends on the head of DRP. The persons hired to date seem adequate.

At the time of this writing, the GOB had not decided formally of what the organizational structure at the departmental level should consist. The need to work at this level and through the Regional Development Corporations is recognized as evidenced by DRP being responsible for the nutrition sector. It also is recognized that most departments have development committees formed by authorities from the various public sector programs as well as the private sector. These development committees could serve functions at the departmental parallel to those of the National Nutrition Coordinating and Technical Coordinating Committees. Likewise the Regional Development Corporations could serve functions parallel to those of the executive Directorate and FNTG because of their multisectoral program focus, their technical expertise and their independent budgets and financial flexibility. Based on its successful experience in national departmental liaison in Chuquisaca and Tarija, DRP has proposed that the Departmental Nutrition Coordinators with functions parallel to those of the National Nutrition Executive Director, be employees of the Regional Development Corporations with partial funding from MinPlan. They would be the liaison persons, translating national nutrition objectives into departmental activities and vice versa. This structure needs to be developed more fully but its basic concepts seem to be sound.

In the Departments there are Regional Development Corporations and Committees (RDC) which would be the most likely institutions to serve the coordinating and guidance functions comparable to those of the National Executive Directorate. The RDC's are charged with supervision and coordination of all social and economic development activities in their regions. In practice, the RDC's vary a great deal in terms of their technical capability, their ability to actually coordinate development in the departments and their susceptibility to political pressures. In the recent past, the distinction between Corporation and Committee was important in terms of central government supervision: Corporations were supervised by MinPlan; Committees were supervised by the Ministry of Urbanism and Housing (MUH). A ninth regional development organization, the Regional Development Council of the Northeast (Pando) has been supervised by MinPlan. Since early 1976, however, MinPlan has been the actual supervisor although MUH retains the legal authority. Currently, MinPlan's Division of Regional Programming is experimenting with a standard supervisory scheme for a six-month

test. If deemed feasible, the President has agreed to sign the Supreme Decree legitimizing the MinPlan/RDC relationship.

All the RDC's are decentralized public agencies and appear as Development Corporations in the budget. They receive 10% of all royalties paid on mineral production in their Departments. Since Beni and Pando have no mineral production to speak of they receive funds from the national budget (Pando) and from the Santa Cruz Committee (Beni). A list of the RDC's follows:

1) Development Corporation of the Department of La Paz (CORDEPAZ);
2) Development Corporation of Cochabamba (CORDECO);
3) Development Corporation of the Department of Oruro (CORDEOR);
4) Departmental Committee of Development and Public Works (CODESA);
5) Departmental Committee of Development and Public Works of Potosi (CODEPO);
6) Public Works Committee of Santa Cruz (C.OO.PP./S.C.);
7) Public Works and Development Committee of the Beni (CODEBENI);
8) Departmental Development Committee of Tarija (CODETAR); and,
9) Regional Development Council of the Northeast.

The Public Works Committee of Santa Cruz (C.OO.PP) is one of the wealthiest, best run organizations in Bolivia with a budget of $20-25 million annually. It is widely known as a technical organization; has a sophisticated staff; and is heavily involved in health-related activities, agro-industries and basic infrastructure. In the past it has promoted water and sewerage systems and has contracted with the MOH to build rural health facilities. It currently is doing a feasibility study for milk production and processing in the area and has designed and financed several food processing plants. It also is working with the MOH and the Mission in the Rural Health Services Delivery Systems (RHDS) in the Montero area north of the city of Santa Cruz. Recently, C.OO.PP. has begun to discuss possible education programs with the MEC.

The Committees of Chuquisaca and Tarija have annual budgets in the neighborhood of $5-6 million. They have formally contracted with the MEC, the MOH, and the MACAG to develop and implement a coordinated multisectoral regional development program with assistance from UNICEF.

The La Paz Corporation, with a budget between $4-6 million annually, is working actively in the Ingavi Project financed by the IBRD. It also has an Agriculture research station near the city of La Paz.

The other RDC's tend to have much smaller budgets and weaker programs.

C. Major Problems

From the description above, it seems that the structure for the nutrition sector is rationally organized to carry out the GOB's current broadly-defined nutrition policy without running the risk of duplicating other sectors' or programs' efforts. However, there are several factors which must be treated carefully if the nutrition structure is to operate effectively in the general Bolivian politico-administrative system. Most of these factors could work for or against nutrition depending largely on how they are introduced and guided in the first steps of implementing the nutrition policy. The three major factors are 1) the traditional administrative weaknesses and lack of direction of the other ministries' programs which will form the basis of the nutrition program; 2) the novelty of the concept of a nutrition sector and the ad hoc nature of the structure within the GOB; and 3) the weakly-defined and little practiced relationships between the national and departmental levels of the public administration.

1. Lack of Good Data

There is a lack of adequate information either on the state of the sector, for example in epidemiological data, or on the operations for the sectors' programs. This contributes to the generally poor planning and evaluation and ad hoc decision - making processes. It seems that the education sector has the best basic data on its operations, i.e., enrollments and drop-out rate, largely due to its fixed pattern of services and specific target group. Education, however, does not have much better information on literacy levels, for instance, than do health or agriculture for morbidity or production in the subsistence sector. For much the same reasons, the education planning tends to be somewhat stronger than that of the other sectors. However, the weak data base makes this a moot point. The departmental data base is equally weak except in those with strong Regional Development Corporations such as Chuquisaca, Tarija and Santa Cruz. The nutrition sector must depend on these sectors and departmental groups to develop an adequate planning and evaluation capability. For this reason, the nutrition structure must be capable initially of using the weak data. Eventually, it will have to reinforce the information systems of the other sectors and groups or develop its own.

On the brighter side, the national census, if valid, is expected to provide valuable data for all these public sector actors-nutrition, other sectors and departmental groups. It will provide basic data on population, the basic denominator for so many statistics. Further, it is gathering data on such key items as incomes, education levels, agricultural production, factors of production, family size, age structure, and mortality. In addition to generating data, the

census effort has strengthened the capability of the National Institute of Statistics (INE) which is a decentralized agency of MinPlan. During the analysis stage of the census data, INE plans to work with the various ministries and departments to revise their basic statistics. This could provide an excellent entry into a central information system which would serve the nutrition sector as well as the other public sector actors.

2. Limited Human Resources

The human resource base presents another major problem in terms of: educational levels of the general population; inadequate numbers of trained personnel at all levels, but particularly shortages in auxiliary personnel; inadequate training programs, both formal and in-service; and, low pay scales. The Education Sector Assessment estimates that 60-70% or more of all Bolivians are illiterate. 50/ This statistic indicates the nature of the difficulties in attempting an educational program to change food production technologies or food habits. The Agriculture Sector Assessment was particularly strong in perceiving this as a major barrier to having the small farm sector adopt new technologies and thus relieve a major constraint in the food supply system. 51/

Education seems to be the only sector that has sufficient personnel to staff its basic program of primary education. Many of these groups, however, lack professional training. In 1974, less than 60% of teachers had graduated from normal schools. 52/ Agriculture and health, however, do not have adequate numbers of personnel to meet their sectors' needs in current program areas.

In health, as shown on Table 17, there is an average of 21,808 persons per physician in rural areas. In 1974, there were 1,066 auxiliary nurses working in MOH programs. This translates to 2.56 per 10,000 population. In the same year there were 35 dietician/nutritionists working almost entirely in urban areas for the MOH. 53/ In community level nutrition education, there were only four nutrition auxiliaries in MOH programs. 54/ The salary scales of all these positions make it very difficult to attract quality personnel or retain the personnel hired. The auxiliary nurse and the NCDS auxiliaries earn $40/month. Those at the professional levels do not earn much either, although substantially more than the auxiliary personnel. The MOH physician earns $400/month maximum as chief of a division and an agronomist with 4-5 years of college education earns $250-300/month. In health these problems are exacerbated by the heavy concentration

of personnel in the urban areas (see Table 17).

At the professional and technical level for instance, in 1974 there were 84 agriculture extension workers, for an agricultural population of roughly four million people. 55/ In current and proposed programs that require auxiliary personnel to reach the individual in the community, the shortage is even more striking. National Community Development Service (NCDS) which is one of the few GOB programs with a completely small farm rural orientation had 468 employees in 1974 of which only 50 were auxiliaries working in the communities. 56/ Most of these were women. These problems of inadequate numbers of employees are complicated by the low quality of personnel. This is caused primarily by the fact that the pay scales in the public sector and particularly in agriculture, education and health are too low to attract well-trained people - for instance a good media specialist can earn much more in private radio than in radio literacy programming for the MEC.

The in-service and university training programs are inadequate both in terms of materials and in terms of theoretical orientation. The Agriculture Sector Assessment states that most technical and professional graduates in agricultural fields are from urban areas with little or no experience in the field. The courses focus on biological sciences with marginal treatment of subjects such as farm management. The 1974 university reform recognized the need for change but to date little has occurred. 57/ In health, the orientation is also philosophical rather than practical with course emphasis on curative practices. It is expected that in 1977, the Public Health Division of the University system will be made a full department with power to grant titles in Public Health. In Cochabamba, the University is managing a community health program for its first and second year students in the medical professions. The in-service training program of the MOH for technical personnel such as sanitarians, lab technicians, auxiliary nurses or public health education are focused narrowly on the specialty being taught. There have been very few courses over the last years, however, because of lack of funds. The MOH, with AID and UNICEF assistance, is attempting to re-define and strengthen its technical personnel structure and revise the training programs. As seen from Table 18, the quality of teaching in the rural normal schools is fairly poor according to the weak academic backgrounds of the normal school instructors. The situation is similar but slightly better in the urban normal schools. Physical facilities are in poor condition and the curriculum and methods taught to the future teachers is antiquated and very urban-oriented. 58/ The MEC, with USAID assistance, is mounting a major program to address these problems.

Table 17 - Estimated Availability of Physicians by MOH Regional Health Office and Rural/Urban Location, 1974

Regional Health Office	URBAN			RURAL*			
	Number Physicians[a]	1974 Population[b]	Population per Physician	Physician[a] MOH	Physician[a] Total	1974 Population[b]	Population per Physician
La Paz	(800)	633,100	791	30	35	1,115,525	31,872
Potosí	70	70,230	1,003	8	11	725,565	65,960
Cochabamba	220	192,440	875	20	41	696,260	16,982
Santa Cruz	(150)	139,030	927	20	(37)	379,370	10,253
Chuquisaca	102	52,560	515	22	24	460,040	19,168
Oruro	110	101,370	922	6	6	279,630	46,605
Tarija	50	25,690	514	10	11	204,010	18,546
Beni	20	19,940	997	5	(15)	140,229	9,349
Pando	-	-	-	5	5	25,080	5,016
Tupiza	15	14,701	980	4	6	157,804	26,301
Riberalta	(10)	13,071	1,307	2	(2)	25,455	12,728
Total	1,547	1,262,132	816	132	193	4,208,968	21,808

* Estimates exclude physicians employed by the Social Security System affiliates in the rural area.

Source: [a]Le Bow, Robert H., Consultant Report, USAID/Bolivia, 1974.
[b]Ministerio de Previsión Social y Salud Pública, Plan Nacional de Salud, 1973-1978, La Paz, 1973, p. 12.

Table 18 - Academic Training of Rural Normal Schools Staff, 1971

	Non-Normal School Teacher	From Urban Normals	From Rural Normals	Technical Teachers	With Post Graduate Work 1/ in ISER	With Post Graduate Work 1/ Outside of Country	Total
No.	7	8	205	13	148	32	413
%	2%	2%	50%	3%	35%	7%	100%

1/ After graduating from a normal school

In the nutrition sector itself, there are few persons trained adequately at the professional, technical or auxiliary levels for roles in a multi-sectoral nutrition program. In nutrition planning, there is no one with formal training, but there are several persons who worked in other countries or in past efforts in Bolivia. The IPPNFNP has plans to provide training in-country to build on this base. There are dietary nutritionists, some with international training, who work in the MOH Division of Nutrition, but their skills are limited to assessing the biological needs for nutrients; designing diets to meet the need; and instructing persons on how to prepare those diets if they have access to the necessary foods. The University program in nutrition maintains this narrow focus and the public health curriculum, with the exception of the University in Cochabamba, treats nutrition very lightly and in the narrow biological sense. It is not known at present how or if nutrition is treated in non-medical curricula. There is only one medical doctor with nutrition experience working in the public sector at the national level. It is not known how many other may exist outside La Paz. Auxiliary personnel in the NCDS and in the MOH work in nutrition education but they have no specific training in nutrition and their numbers are extremely limited.

All these human resource problems will make it difficult to carry out actions in the nutrition plan of the Five Year Plan. The ongoing and planned programs using GOB and international donor resources to resolve these problems in the nutrition and other sectors helps to brighten the picture. As in the other sectors, however, this will continue to be a serious constraint to effective efforts in nutrition until major changes are made.

3. Financial and Program Management Constraints

The third major problem area consists of financial and program management problems which translate into lack of support for implementation of programs. Given their lack of program data and weak planning mechanisms, it is understandable that the sectors face the common problem of poor budget presentation and management. The lack of basic program budget information is complicated by the general budgeting mechanisms of the country which emphasize line items rather than programs and are extremely inflexible. These two budgetary factors generally result in deficient and maldistributed budget allocations which are virtually impossible to change once approved by Ministry of Finance (MinFin). Also, personnel takes up the largest part of the budgets. In Education, nearly 90% of the MEC budget goes to salaries. This means that other program costs particularly travel, per diem and materials which are critical to adequate supervision, logistic support and evaluation face serious shortfalls. Also, since the national planning and budgeting processes directed by MinPlan and MinFin are not related very closely, it is difficult for the sectors or MinPlan to coordinate programs or to determine the impact of budget changes in one sector on the budget and program of other sectors.

If the nutrition sector is to function adequately it must be able to monitor programs and their resources to determine their impact on nutrition and direct changes to improve their nutrition impact. MinPlan has established the Office of Budget Control specifically to monitor budget expenditures of the various sectors. As with INE in the information system, this office should make the task easier for the groups working nutrition. It also should strengthen the relationship between the national planning and budgeting systems. This would reinforce the Nutrition Coordinating Committee in its efforts to promote coordinated actions by the various sectors involved in nutrition. These actions to strengthen the national coordination function are being complemented by the individual sectors' programs to improve the programming and budgeting mechanisms. An example lies in the MEC's Administrative Reform Council. In an attempt to provide better support to and gain participation of the departmental level in the programming and budgeting process, MinPlan is testing a scheme whereby the Regional Development Corporations (RDC) would be responsible to MinPlan. Under this scheme, the RDC's would attempt to monitor and later help plan departmental sectoral activities for MinPlan. If this scheme works, the GOB intends to issue a Supreme Decree to legitimize and guide the MinPlan/RDC relationship. Again, this would strengthen the nutrition sector by improving MinPlan's monitoring and planning capability, particularly in the Division of Regional Programming which is in charge of nutrition.

PART IV CONTRIBUTION OF THE OTHER INTERNATIONAL DONORS IN THE NUTRITION SECTOR

This Part discusses the role of other institutional actors in forming the GOB's policies and structures in the nutrition sector. The international donors have taken an active part in the past and plan to continue. Most of the projects and technical assistance which they are financing or providing has the potential for improving the nutrition sector. The basic conclusion is that most of these activities must become more conscious of and strengthen their focus on nutrition improvement. The UN is the other major donor, besides AID (see Part VII for analysis of AID's assitance). There are other donors whose projects would have lesser impacts on improving nutrition, namely: the World Bank (IBRD): the Interamerican Development Bank (BID): and, the Canadian International Development Agency (CIDA).

The United Nations agencies are expanding their activities at various points in the nutrition system: (1) the World Food Program in the food supply system through food for work and supplementary feeding programs; (2) UNICEF in both the consumer and food supply systems through its integrated rural development program which includes agriculture production credit, extension services, sanitation, general health and education; (3) the Inter-Agency Project for Promotion of National Food and Nutrition Policies (IPPNFNP) in the politico-administrative system through its efforts in technical assistance, training and operational support.

The two donors with major programs that are likely to have significant nutrition impact in Bolivia are the UN and USAID. Currently, the AID Mission is working primarily with the line Ministries of agriculture, education and health in the Departments of Santa Cruz, Cochabamba and Chuquisaca. The UN is concentrating its efforts in MinPlan and the regional development corporations of Chuquisaca and Tarija with some lesser technical assistance efforts in the line ministries, primarily in their planning offices. The World Food Program has a proposal awaiting approval in which it would begin working with the MOH's Division of Nutrition in a maternal-child feeding program. Through our proposed projects in nutrition and regional development planning, the Mission would begin working with MinPlan and the Regional Development Corporations. Geographically the UNICEF Integrated Rural Development Project in Chuquisaca and Tarija plans to include Potosí in CY 1977. The Mission's program for FY 1977 and 1978 plans expansion primarily of agriculture activities to northern Potosí, southern Chuquisaca and

Tarija. These moves are not expected to result in duplication of efforts because the programs focus on different aspects of the development problem. Also, the GOB, UN agencies and the Mission have consulted several times to discuss the various programs and facilitate their complementarity. A brief review of the two programs will explain their relationships to each other and their potential role in improving nutrition.

A. The World Food Program and the PL 480 Title II Program

Both the WFP and Food for Peace (FFP) Programs are active in Bolivia. In the past, the WFP in Bolivia has been fairly small scale relative to PL 480 Title II feeding programs; has worked through Food for Development (ALDE), a branch of the Presidency, and, has focused on food for work activities rather than more nutrition-related activities such as maternal-child feeding (MCH). Recently, WFP developed a proposal with the MOH Division of Nutrition for a massive new MCH feeding program which will be reviewed in Rome in November 1976. If approved, it will augment the supply of food available to nutrition-oriented activities but also will place additional administrative burden on the distributing agencies (CRS/Caritas), on the educational group (the MOH's Division of Nutrition) and, on the nutrition planning and coordinating group (the Directorate of Regional Programming and the National Technical Group).

The Mission Title II program has worked through Catholic Relief Services (CRS) Bolivian counterpart Caritas and the MOH/Division of Nutrition. The feeding programs have been oriented to the nutritionally-beneficial categories including the maternal-child, school feeding and institutional feeding categories in urban and rural areas as well as some small food for work projects. It also has maintained a small food for work program with the NCDS. Its strategy for the next five years as described in the Annual Budget Submission, FY 1978, calls for increasing focus on the nutritionally-vulnerable in rural areas. It also proposes to introduce a new urban maternal-child feeding program to supplement the family health and education program of the National Social Action Board (JNAS).

The Title II and WFP programs should not duplicate each other. As explained in the FY 1978 ABS:

> "To assure maximum advantage from each program's regulations, the strategy envisions Title II moving in to cover and maintain the most vulnerable maternal-child groups while the WFP would move to cover the less vulnerable groups using food as an incentive to develop producer-consumer cooperatives. The WFP

"co-op incentive" program would serve as part of the bridge to self-sufficiency. The Title II "most vulnerable" program would serve to minimize malnutrition and other losses while the WFP and other programs begin to take effect".

In order to enhance these two programs' complementarity and to integrate their activities into the program it is developing to carry out the Plan, MinPlan must establish guidelines and coordinate its activities. It proposes to do this through the Technical Work Group on Feeding Programs. This Working Group will include representatives of each of the key actors--WFP, FFP, CRS/Caritas, ALDE, CARE/JNAS, MOH/Division of Nutrition and Ministry of Agriculture. At the same time, and perhaps through the committee, MinPlan must review and evaluate the current and proposed feeding programs to determine their methods, nutritional and operational effectiveness. Based on these findings, MinPlan could then establish standard operating and evaluation procedures that would assure beneficial nutritional and economic impact of feeding programs.

B. The IPPNFNP Project and the Mission's Proposed Nutrition Improvement AID Project

As clearly seen from the background description in this Chapter, the IPPNFNP has: played a major role in determining GOB policies in nutrition; provided technical assistance in preparing the Five-Year Plan; and, in July 1976, signed a technical assistance agreement for $30,000 over a 12-14 month period to help MinPlan launch the nutrition program. The first two items affected policy which also affected AID's strategy. The past lack of consultation of AID is understandable in that AID had not begun yet to participate in the nutrition field. However, in the future, AID and the IPPNFNP must take pains to agree on policies each will promote or support. Likewise, the GOB must take a stronger role in defining its nutrition policy and make sure that the AID and IPPNFNP programs support those objectives and complement each other. Although avoiding operational duplication also is very important, the Mission feels that through the MinPlan nutrition structure it will be a relatively easy task as the Mission works with MinPlan to define its Nutrition/AID Project. The specification of activities may also facilitate the longer-term task of reaching an agreement on objectives and institutional arrangements.

C. Other Activities

As discussed in previous sections, UNICEF has been working with CODESA and CODETAR in an Integrated Rural Development Project. This Project has provided the basis for much of the current GOB organization for nutrition. In the future, the Project also may be expected to act as a test area for departmental coordination mechanisms. Through UNICEF and the MOH, the Canadian International Developmen Agency (CIDA) has provided $1 million to CODESA and CODETAR to provide potable water and sanitation systems in the Project area. Other UN Agencies are providing technical assistance to various operating divisions as well as the Planning Offices of the MACAG and MOH.

Although the projects of IBRD and BID do not focus specifically on nutrition, they may be expected to help improve the national nutrition situation. Currently, the BID is financing two projects expected to contribute to nutrition improvement. The La Paz-Beni road ($45 million) should improve the flow of agricultural goods from the rich lands of the Beni to the rest of the country. The animal health project ($4.5 million) should improve the quality and quantity of animal protein sources in Bolivia.

The BID's proposed projects which should help improve the nutrition situation are in: a urea plant for fertilizers in Santa Cruz ($20 million); and, livestock development primarily for large cattle operations ($8 million). The IBRD's Ingavi Project ($9.0 million) for integrated rural development of the Ingavi and Los Andes Provinces of La Paz Department should improve the nutrition status of the persons in those two provinces. The IBRD's other proposed projects which should help improve nutrition are in: sanitation ($12 million) for 40 rural communities and three cities; and, a warehousing network for rice ($10 million).

PART V. SELECTION OF GOALS AND TARGET GROUPS

A. Summary

In June 1976, the GOB approved its Five Year Plan (1976-1980) which treats nutrition as separate sector. At the time this assessment is being written only a summary of the plan is available. Although it provides overall goals and objectives, the summary offers few specifics on the programs or resources that will enable the GOB to meet them. The five year nutrition plan does specify that its primary target group is children six and under and pregnant and lactating mothers. However, it does not indicate any geographic focus or time staging of nutrition activities directed at these groups.

In choosing the goals and groups that would be the target of A.I.D. assistance in the nutrition sector we have tried to remain within the overall GOB nutrition policy as stated in the summary of the Five Year Plan. However, we also have concluded that it would be wise to focus our efforts on geographic areas in which are located other development activities receiving our assistance and to begin our efforts by assisting the GOB better to prepare itself for a full nutrition program. Of course, these goals, targets and project plans will be refined during the next months and years as the GOB develops its operational plans, the data and analyses from the initial project become available and A.I.D. designs its assistance program in the sector in more detail.

B. The Goals and Targets

Prior Parts have described the national nutrition system and the organizations that are or will be working in the nutrition sector. The next step is to begin to narrow the possible fields of action, first by defining specific goals and target groups. A subsequent Part further will narrow the field of action by identifying specific activities and placing priorities on them.

GOB Goals and Targets

The GOB's nutrition policy has provided the first parameter for choosing goals and targets. In June, 1976, the Five Year Plan (1976-1980) was approved for publication, the Summary of which became available in August, 1976. The complete document of the Five Year Plan is expected to be completed and available in November, 1976. The Summary document is a descriptive document, and does not give details on the programs and resources proposed to carry out the Plan. However, it states that the three goals of the GOB strategy for the nutrition

sector are to: i) meet the demand for basic foods which will allow reaching recommended dietary levels; ii) progressively increase the proportion of local foodstuffs (as opposed to imports) that meet the national protein and calorie demand; and, iii) decrease the incidence of protein-calorie malnutrition, of endemic goiter, of nutritional anemias and specific vitamin deficiencies.40/

The first two goals focus on the food supply system. The sub-goals are: (i) to raise per capita consumption (and therefore raise per capita food availability) of calories from 1,890 in 1975 to 2,200 in 1980 and per capita consumption of proteins from 44 to 56 grams in the same period, and, (ii) to reduce by 20% the total protein and energy (calorie) requirements met by imports of basic foodstuffs which of course would require an equivalent percentage increase in the national production of these foodstuffs. The Summary refers the reader to the actions to be taken in the sectors - agriculture, health, education and industry - as ways in which these goals would be achieved. These goals are quite ambitious given past performance in the agriculture sector. To supply adequate calories and protein, as indicated in the first sub-goal, would require an increase of 16% in the availability of calories and a 40% increase in the availability of protein-bearing foodstuffs. In terms of overall food availabilities, this would mean an increase of roughly 20-30% over the five year period. That increase is consistent with the Plan's goal for the agriculture sector of achieving an average yearly growth rate of 7.4% for the five year period. 41/ However, achievement of that goal would increase a markedly improved performance of the sector over the past which has been about 2.1% per year.

The sub-goal of 20% import substitution in basic foodstuffs is even more ambitious since it would require a 4% per year additional increase in domestic production. Moreover, its attainment primarily would have only an indirect nutritional impact by reducing the danger of food supplies being limited by international market trends, and reducing by freeing foreign exchange which could promote additional development efforts having a favorable impact on nutrition.

The third goal of the GOB's strategy for the nutrition sector focuses on the consumer system. The targets goal for achieving this are to: (i) reduce by 25% the incidence of protein-calorie malnutrition in children under six; (ii) reduce the incidence of endemic goiter so that it affects only 28% of the population by 1980 (as compared to 57% in 1975 in certain areas and 34% nationally); and (iii) reduce the incidence of nutritional anemias and vitamin deficiencies in pregnant and lactating mothers from 40% in 1975 to 28% in 1980. 42/ As with the goals for the food supply

system, the Plan does not specify further the programs and resources that would be used to achieve these goals. However, it is stated that programs in the education and health sectors would play the major role in achieving these targets.

The education sector programs would contribute specifically through curriculum reform and materials improvement in rural education, increased availability of non-formal education and radio education, and improved rural teacher training. 43/ The health sector would contribute to university programs in health sciences, agronomy, economics and social sciences and programs addressing the effects of malnutrition - i.e., the establishment of new and strengthening of existing nutrition rehabilitation services; the reinforcement of pediatric services, and the reorganization and improvement of supplementary feeding programs and the nutrition education system operating generally through Mothers' Clubs and school feeding programs in marginal urban and in rural areas. Furthermore, to combat endemic goiter, the health sector will promote the iodinization of salt and its commercialization for human consumption and establish a system to apply injections of iodized vegetable oil to isolated populations which do not have access to commercial salt. In commercialization of iodized salt, the health sector will work through the military development corporation (COFADENA) which has formed a salt producing co-op of small salt producers in Potosí to expand production and improve the quality of iodized salt in the existing physical plant. To decrease nutritional anemias the health sector will restructure the administration of iron pills and initiate the promotion of iron fortification of foodstuffs and their distribution. 44/

A collateral effort of the GOB which could have a positive impact on the nutrition condition of Bolivia's rural areas is the activity of the National Community Development Service (NCDS), which is assisting the rural population to strengthen its social and economic organizations. 45/ By doing so, the organizations should be better able to take full advantage of the various social and agricultural services available to increase incomes and eventually, nutrition status.

The Five Year Plan also presents policies for the public administration which should have an important improvement supporting role in the nutrition effort. The two major policies are to improve the coordination of the various sectors' activities and to expand their effective coverage of rural areas. 46/ Each sectors' plans reflect these overall goals in their programs in support of integrated rural development, in their strategy statements and in their policies directed at improving their internal administrative systems. 47/

Based on these general policy parameters for the nutrition sector as defined in the Five Year Plan, the Mission has chosen tentative goals and targets for its program of assistance to the GOB.

Since the Mission is active in the three sectors (agriculture, education and health) key to nutrition improvement, we conclude that our efforts in the nutrition also should be directed at assisting the GOB to improve its ability to coordinate these activities, which have a potential for improving nutrition. We do not think that this should not be reflected as a goal for our program in nutrition but rather should be considered as a priority step in achieving the broader nutrition improvement goals. The Mission's proposed nutrition program would focus primarily on the consumer system and on the administrative system to the extent necessary to establish adequate coordination of a multisectoral nutrition program focused primarily on the consumer system. The food supply system would be studied and monitored by the nutrition program, but at least in the start-up phase, all activities in it will remain under the Mission's agriculture program.

Although the goal of increased food supply is important, we think that it should be left to projects in the agriculture sector to the extent that food supply is to be augmented by production increases. Specific agriculture activities now underway or planned should lead over the long run to substantial production increases in basic foods. Where specific production increases would improve the nutrition status of more vulnerable groups we may wish to adopt narrowly focused programs in support of increases in their production. We see no great importance to the import substitution of foodstuffs since aside from the immensity of the task, the nutrition benefits would not be immediate. Thus, we do not propose to adopt at this time a goal of increases in domestic food production to guide our efforts in nutrition. However, we do propose to maintain constant contact with the activities and changes in the food supply system through monitoring and special study activities. The two primary reasons are: 1) to better understand what factors may influence the consumer system; and, 2) to better understand the elements of the food supply system and their relationship to nutrition status in order to be able to provide nutrition guidance to agriculture activities and, eventually, to enable the nutrition sector to enter the food supply system directly.

Because of these conclusions the GOB's policies for the consumer system are more directly nutrition program-oriented, and because the possible programs for that system would be more easily targeted, we believe that the Mission programs should have as their focus changes in the consumer system .

Furthermore, unquestionably, in light of the description of the national nutrition system, protein-calorie malnutrition stands out as the most severe nutrition problem. Also, its pervasiveness throughout society, but especially among the low income rural populace, is clearly demonstrated by the available data. Choosing to attack the greatest problem at the beginning stages of a new national food and nutrition program, immediately focuses attention and resources on the overall nutrition issue.

The time frame for the Mission's program would be the same as the GOB's Five Year Plan (1976-1980) and its two priority target groups, infants and children under six and pregnant and lactating mothers, would also be the same. These two groups were chosen because they suffer the most severe effects of malnutrition and have the highest nutrient requirements. The composition of these two groups, however, would be further limited by the Mission's addition of low-income as a criteria for targeting. This is because Part II above identified a strong causal relationship between low incomes and poor nutrition status. The definition of low-income is taken from the Health Sector Assessment which estimates that 63% of the rural population earn $84 per year per capita. 48/ The target problem areas are the same - protein-calorie malnutrition, nutritional anemias, goiter and vitamin deficiencies. Possible specific activities directed at each of these problems are discussed in Part VI, below.

Geographic Focus

The GOB Plan does not specify geographic target areas. Also, according to the data presented in Part II, above the severity of malnutrition is spread fairly evenly nationwide. However, in order to focus programs to avoid wasted resources, to enhance program complementarity and to maximize potential benefits, the Mission would plan to focus its initial nutrition efforts primarily on areas which its other programs are focused, i.e., the Departments of Santa Cruz, Chuquisaca and Cochabamba. The Mission also would consider the inclusion of La Paz or Potosí Department: La Paz in light of the facts that the GOB and the IBRD are investing large sums in the Department, and that the La Paz Development Corporation is one of the strongest in the country; Potosí because of our program expansion into that area and the GOB's interest. Later program stages would involve other Departments. The final decision on exact geographic targets would be made in terms of the preparation of individual projects.

The Plan also does not address the issue of a rural vs. urban focus for the nutrition sector. However, its overall policies call for greater emphasis on the rural sector and for coordinated sectoral

efforts in the rural areas. The Mission would propose to focus primarily on the rural areas because their nutrition problems are most severe and most extensive and because most of our other resources are directed at those areas. Also, the lowest income groups are located in rural areas. However this focus would not be exclusive since the nutrition problem of marginal urban groups is also severe and their incomes are low. Three other considerations would seem to call for the Mission to support activities in marginal urban areas: (i) current Title II program has most of its experience in urban and town settings; (ii) since the urban areas have a better intrinsic resource base than the rural areas, smaller investments in key areas such as supplemental feeding and nutrition education should have a greater impact; and (iii) the urban dwellers have a more immediate political voice than do their rural compatriots and, therefore, visible nutrition improvements in the urban area are more likely to generate policy support for an expanding nutrition effort.

The following, then, is a summary statement of the Mission's tentative strategy in the nutrition sector:

1) Overall Goal

To improve the nutrition status of the rural and marginal urban poor in Bolivia, especially infants and children under six and pregnant and lactating mothers.

2) Targets

a) A decrease of 25% in the incidence of degree II and degree III protein-calorie malnutrition (PCM) in children under six from low-income families in rural and marginal urban areas by 1981.

b) A decrease of 25% in the food gap for infants and children under six from low-income rural and marginal urban families by 1981.

c) A decrease of 12% in the incidence of nutritional anemias and vitamin deficiencies in pregnant lactating mothers and infants and children under six in rural and marginal urban areas by 1981.

d) A decrease of 12% in the incidence of endemic goiter in the total population by 1981.

Target "a" varies from the Five Year Plan in that it does not propose to raise infants and children to well-nourished status but rather only to degree I malnutrition status from degrees II and III.

This lesser target is proposed because achieving degree I status is less costly to the family and the GOB and therefore more likely to be maintained while at the same time overcoming the charges of mental or physical damage to the infant or child. Target "b" is a much refined version of the Plan's target of increasing national food supplies. As discussed above, it is limited to include those groups that would benefit from P.L. 480 Title II or other supplemental feeding programs. Such activities would enable the GOB to support its efforts to reduce PCM and its negative effects until such time as national foodstuffs could fill the gap for these critical groups. The remaining targets; which coincide with those of the Plan seem feasible. Also, they are necessary. Reducing anemias and vitamin deficiencies will help build the target groups' resistance to protein calorie malnutrition and reduce other physical malformation or deaths by relieving them of the burdens caused by anemia (lack of iron which can inhibit protein absorption) and the vitamin deficiency diseases such as rickets (Thiamine), pellagra (Riboflavin), blindness (Vitamin A) or scurvy (Vitamin C). Reducing goiter is fairly inexpensive and can reduce greatly the incidence of cretinism and lesser forms of brain and physical retardation. In achieving these targets, the GOB and Mission would reach roughly 500,000 persons in the target groups by 1981.

PART VI POSSIBLE ALTERNATIVE INTERVENTIONS

A. Summary and Discussion

Part V described the goals and targets of the Mission's program of assistance in the nutrition sector. This Part will continue to define and limit our field of action in the nutrition sector by identifying and placing priorities on specific activities that might be undertaken by the GOB with our program assistance. First, the general areas of activity are described and a series of criteria for setting priorities on specific activities within each area. Then, an illustrative list of specific activities in each area is presented on which the pros and cons of each activity is outlined. The discussion of these activities also provides the basis for reviewing current Mission projects and helps determine our proposed program in the nutrition sector described in Part VII below.

The previous Parts of this Assessment have provided the basis for selecting specific areas of intervention or nutrition activities. Since it is too early to state the exact nature of these activities, this section will discuss possible "areas of intervention" and types of activities which the GOB and the Mission might undertaken in each. The term "intervention area" is used here to describe a program which breaks into the nutrition system in an attempt to benefit a specific target group by improving relationships within the system. Although this discussion is not meant to provide a definitive set of priority intervention areas nor sets of activities in each but rather to show the process which the GOB and Mission would follow in developing a program to achieve the goals for the nutrition sector, it does serve to highlight the types of constraints and advantages that may be encountered in developing the specific program.

Several areas of intervention are considered: (1) a reinforcement of the nutrition sector in the national public administration; (2) a change in belief patterns focused on intra-family food distribution or food habits; (3) an improvement in health services' delivery and utilization; (4) an increase in food and nutrient supplies; and (5) an increase in effective demand for foodstuffs.

In placing priorities on the various areas of intervention and specific activities under each, the Mission has used the GOB's goals and targets as its primary parameter. However, since the Summary of the Five-Year Plan does not provide further guidance on setting priorities for action, the Mission has developed the following criteria. They are based on Mission contacts with the GOB and reflect as much as possible the GOB's intentions for priority activities.

A major criterion for choosing target groups flows from the previous identification of those affected by malnutrition. Those most severely and extensively affected will receive priority attention, especially in problem areas which are most serious. For further specifying objectives under the goals, there are a series of criteria we have tried to keep in mind. Given the limited resources available to the GOB, a major concern is that they be spent as effectively and efficiently as possible in terms of nutrition impact and minimum wasted resources. For instance, programs that have a limited, well-defined problem-solving focus should be accepted for investment with priority over programs which attempt all-inclusive or global solutions. All else being equal, programs or activities should be chosen that are directed at problems whose solutions would have greater potential and spin-off benefits. In order to take full advantage of other USAID and GOB program resources, the choices should be, at a minimum, compatible with other programs, and, at best, be able to complement or work from these efforts. Since the support from policy-makers will be key in each stage of further specifying objectives and programs and getting sufficient resources to implement them, priority should be given to alternatives that would be likely to engender political support for the nutrition sector. Also, where appropriate and feasible, preference should be given to solving problems with limited goals and target groups whose solution seems to present opportunities for successful larger-scale interventions in subsequent programs. This should allow the GOB to prove the validity of programs with minimum investment before deciding to invest in major programs. Finally, priority in choosing alternatives should go to rural areas which are most severely and extensively affected by malnutrition. In addition, most USAID and a good portion of other donors' assistance is focused on rural areas. The marginal groups within urban areas, however, should be considered also. Although not as extensive as in the rural areas, malnutrition does affect these groups severely.

B. Possible Interventions

The following lists of possible activities in each area of intervention illustrate what could occur in a full-scale national nutrition program in Bolivia. This Assessment cannot provide detailed programs or estimates of resource requirements due to the newness of the nutrition sector and the weaknesses in the data base. It does, however, attempt to introduce the activities in order of priority according to the goals and targets described in Part V, the criteria listed above and the probability of the activity actually being implemented. The basic pros and cons of each activity are listed to demonstrate possible reasons for selection and priority.

1. An Intervention to Reinforce the Nutrition Sector in the National Public Administration

As discussed earlier, the concept of the nutrition question being one requiring the coordinated efforts of various sectors to address is new to the GOB and the GOB's organizational, human resources and information bases for dealing with the question are weak. Therefore, the GOB probably should strengthen these bases before it can undertake any major actions in the other intervention areas mentioned above. The specific activities which are most likely to effect these changes are listed below in order of priority.

a. Establish a nutrition division within MinPlan to design a national food and nutrition program and coordinate other sectors' activities with it.

Pros

-- MinPlan is one of two central GOB ministries with authority over other ministries
-- MinPlan has special agencies, i.e., INE, ISAP, INALPRE, which can facilitate training, information and pre-investment funds.
-- MinPlan has experience working with the Regional Development Corporations.
-- The UN is working with MinPlan in this area and USAID plans to do so.

Cons

-- MinPlan traditionally has been weak in its coordination responsibilities.
-- There is currently only a partially-formed ad hoc structure for nutrition in MinPlan.

b. Design and carry out a series of studies to fill key data gaps in order to provide adequate information for designing a national food and nutrition program.

Pros

-- Provides low cost method of improving data base.
-- Permits actions to begin in short time.
-- Provides an action orientation to research in nutrition.
-- Provides GOB with experience in nutrition studies before attempting a major national nutrition survey.

Cons

-- Will not fill all data gaps necessary for long-term planning as would a national nutrition survey.

c. Design and introduce nutrition components into formal and in-service training programs for professional, technical and auxiliary personnel in order to strengthen the human resource base of the nutrition sector.

Pros	Cons
-- Will improve sectors' ability to participate in nutrition sector.	-- There is extreme fragmentation of training programs in ministries and universities.
-- Will help standardize sectoral approaches to nutrition.	-- Would be long delays before adequately-trained personnel actually working.
	-- Would be difficult to introduce reform in highly-traditional personnel university system.

2. An Intervention in Food Belief Patterns

The primary reason for selecting this intervention area would be that unless behavior and attitudes change, PCM will diminish slowly despite increased access to foods or increased food supplies. Furthermore, Part II indicated that the general food habits of the Bolivian population are shifting from high quality to low quality nutrients. To the extent cultural factors are causing this nutrionally negative shift, a series of educational activities could help reverse it. Part II also indicates that the pattern of intra-family distribution of foods is skewed against providing adequate diets to children and, to a lesser extent, to women. This is exacerbated by certain negative traditional beliefs on the types of foods that an infant, pregnant or nursing mother should eat. Again, certain educational activities could be expected to help alter these belief patterns to make them more beneficial nutritionally.

a. Design materials and programs for and implement a mass media and nutrition education program primarily using radio.

Pros	Cons
-- Would have low cost per capita.	-- GOB has minimal experience in mass media.
-- Radio reaches approximately 90% of the population.	-- Coordination is difficult given dispersion and large number of small radio stations.
-- Would not require literacy in target groups.	

-- Provides vehicle for reaching adults and children with wider range of messages than possible in standard school or inter-personal education situations.
-- May provide impulse for changes in standard school situation and complement and sanction such changes.
-- It is easier to develop and use materials in other languages (Aymara, Quechua) for radio than for written school materials.
-- Would be a highly-visible intervention.
-- Would cover both urban and rural areas.

-- It is hard to account for and include regional or geographic dialect differences.
-- Diverse languages and cultures do not facilitate programming.

b. Design and introduce a nutrition component into the national urban and rural primary school curriculum.

Pros

-- MEC and MOH have developed a nutrition curriculum.
-- USAID-MEC projects already are supporting primary education reform.
-- Attitudinal changes at young ages would produce a long-term behavioral change.

Cons

-- Schools do not reach and retain large portion of the school-age children.
-- Would have limited effect unless reinforced in home.

c. Design and introduce a nutrition component for non-formal education programs.

Pros

-- Reinforces and sanctions mass media and primary school efforts.
-- USAID-MEC projects are supporting non-formal education.

Cons

-- Would be more costly per capita than mass media education.
-- Requires coordinated support of other institutions such as NCDS.
-- GOB has minimal experience in non-formal education.

3. An Intervention to Change the Health Status of the Bolivian People

Poor health status in Bolivia is identified as a major cause of poor nutrition, particularly among infants and children and pregnant and lactating mothers. Parasitism, which is extremely widespread in Bolivia particularly in the Tropics and Valleys, places increased demands on the body's nutrient intake. Other common transmissible diseases such as measles, whooping cough or diptheria do the same. Frequent pregnancies drain the mother's energy reserves, making both her and the children more susceptible to health problems and malnutrition. All of these health problems can be controlled and reduced by fairly simple public health activities.

a. Establish potable water and sanitation systems for rural communities.

Pros	Cons
-- Reduced incidence of gastro-intestinal problems with no other intervention.	-- Would involve high cost per capita particularly in the disperse rural populations most in need of systems.
-- Reaches the young without special efforts.	-- Requires education and behavior change for proper use and maximum benefit.
-- Various international donors are working or planning to work in sanitation.	-- Could be difficult to maintain for continuing benefits.
-- Water is in high demand in rural areas facilitating education and maintenance.	
-- Would be easily supported by mass media and non-formal education activities.	
-- Provides starting point for other nutrition and health interventions.	

b. Establish a corps of trained and supervised rural health workers at the community level.

Pros	Cons
-- Is low cost method of extending health services compared to professional personnel and facilities expansion.	-- MOH has limited capability to implement such a program.
-- Would provide nutrition support activities in continuous programs of communicable disease	-- Start-up costs are high.
	-- Some resistance is expected from nursing profession.
	-- It is difficult to organize in a traditional system

control, maternal child health, sanitary education, nutrition education and food distribution.
--Would support efforts to diminish anemias and other vitamin deficiencies.
--Provides good visibility for generating support.
--UNICEF and USAID are supporting pilot efforts in the area.

with curative emphasis.

c. Establish a campaign to promote consumption of iodized salt.

Pros	Cons
--Could reduce incidence of goiter. --Would be low-cost way to attack goiter. --GOB in Five-Year Plan supports such an activity. --Capability to produce iodized salt.	-- Impact would be minimal in areas with limited access to commercial products which tend to be those most in need. -- Would require complementary and relatively high cost program of iodine injections in inaccessible areas. -- Would need to improve marketing channels for iodized salt.

4. An Intervention to Increase Food and Nutrient Supplies

The data presented in Part II indicates that one of the major causes of protein-calorie malnutrition is insufficient domestic supply of basic foods. It further indicates that the supply problem is particularly significant for mothers and children. The Five-Year Plan admits these two problems and adds a third problem, i.e., that inadequate domestic production places a heavy burden on foreign exchange through food imports. For all these reasons, it is important that a national food and nutrition program include activities to improve the food supply situation. However, these will take massive investments and fairly long periods to show results that will benefit nutrition. In the interim, other alternatives must be considered so that the physical and mental losses due to malnutrition may be kept down.

a. Expand and better focus externally-supported supplementary feeding programs for pregnant and lactating mothers and infants and children under six.

Pros	Cons
-- Blends have been developed. -- Maisoy could provide incentive for production increases in corn and soy. -- Quinua-wheat blend could decrease wheat imports by stretching wheat availabilities.	-- There is limited market for process foods. -- Would need create new tastes and demand for blends. -- There is limited capacity to increase production of blends.

e. Eliminate inter-zonal marketing bottlenecks (transportation, storage, handling, standard weights).

Pros	Cons
-- Each zone is not self-sufficient in basic food needs. -- There is evidence that inter-zonal transportation is inefficient and cumbersome. -- Would increase food supplies whose scarcity contributes to PCM. -- GOB and USAID are undertaking Rural Roads program.	-- Need feasibility studies. -- Need to determine product flow patterns and inter-zonal demand.

f. Reduce waste of basic foodstuffs due to inadequate refrigeration, storage, processing, handling and transportation systems.

Pros	Cons
-- It is estimated that 10%-25% of any farm product is wasted before it gets to the consumer. -- It is suspected that part of PCM is due to bottlenecks and inequities in food distribution system.	-- Equipment would have to be imported. -- Private sector and government capacities are unknown. -- Need to determine if increase in food cost offset by overall saving in available food. -- Capital investment required is considerable. -- Need feasibility and location studies.

g. Increase general domestic agriculture production of basic foods.

Pros	Cons
-- Would be targeted at most nutritionally vulnerable -- Has high visibility for generating support for nutrition. -- Gives immediate results in terms of nutrition improvement. -- Close targeting would facilitate evaluation of program results. -- Would provide support for health and education efforts.	-- Could lessen incentive for domestic production increases. -- Is difficult to administer in rural areas. -- Does not by itself alter underlying causes of nutrition problem.

b. Expand externally-supported school feeding program in rural areas.

Pros	Cons
-- Provides support to non-formal and mass media education efforts. -- Provides an organizational base for other community development activities. -- Improves school attendance and impact of education.	-- Does not benefit most nutritionally vulnerable groups. -- Does not by itself alter underlying causes of malnutrition.

c. Fortify existing foods in order to dminish the incidence of vitamin and iron deficiencies.

Pros	Cons
-- Has low cost relative to that involved in general increases -- Gives quickly visible results. -- Creates minimal burden on public administration.	-- There is lack of industrial base in food processing. -- There is an inadequate market for processed foods to assure coverage of needy groups -- No studies exist on needed levels by region or nationally. -- Could detract attention from larger problem of protein-calorie malnutrition.

d. Increase the production of high nutrient food blends such as corn-soy blend (maisoy) or quinua wheat blend.

Pros	Cons
-- It is suspected that part of PCM is due to inadequate domestic supplies of basic foods.	-- No guarantee that small farm incomes will increase to be able to purchase increase in supply.
-- Will be addressed directly and indirectly through current and projected programs supported by USAID, IBRD and UNICEF.	-- Must overcome other bottlenecks (transportation, storage, etc.) to insure more equitable distribution.
-- Increased production in small farm sector likely to increase real income, i.e., access to foods.	-- There is long time-lag between initiation of program and payoff.
	-- Requires heavy commitment of human financial and technical resources.

5. An Intervention to Increase Effective Demand for Foodstuffs

Part II indicates that a major constraint for most Bolivians having access to an adequate diet is low income. The data is insufficient to measure the relationship. Low income in urban areas directly limits the access, particularly of marginal groups, to adequate diets. In rural areas, the relationship is less direct. Because of limited factors of production, high transport costs and general marketing bottlenecks, the small farmer has limited production possibilities and high production and marketing costs. All of these factors keep cash incomes low. They also work as incentives for the small farm sector to sell high-priced, high nutrient foods such as eggs to increase cash income, generally to the detriment of on-farm consumption or real income.

Because of the complexity of income generation and the lack of knowledge of the various factors influencing income and demand and their relation to nutrition, this intervention area is last on the priority list. The information activities in the first intervention area, i.e., strengthening the nutrition sector, should help clarify the problem and possible approaches. Until the nutrition sector can develop such an understanding of the problem and design activities focused on it, it must depend on the standard agriculture and rural development activities underway or planned.

a. Increase yields from cash-crops raised by small farmers in order to increase real incomes.

Pros	Cons
-- Should increase real income and thereby access to an adequate diet.	-- Increase in production is not a guarantee of increased real income.

-- Should bring shift to higher quality diet in the small farm sub-sector.
-- USAID and other donors have major programs in this area.
-- Could increase on-farm consumption of foodstuffs and maintain adequate sales for cash income at same time.

-- Requires introduction of modern factors to traditional agriculture sector.
-- Requires other bottlenecks be overcome (credit, seed and fertilizer availability).
-- Time-lag between initiation of program and payoff is long.
-- Requires heavy commitment of human, financial and technical resources.

b. Organize production and marketing cooperatives to increase at-gate prices and reduce costs of modern production factors.

Pros

-- Would improve organizational and economic base of small farm sub-sector which could support better other nutrition activities.
-- Reduces overall unit cost added to production cost by quantity purchase of modern inputs.
-- USAID/B and GOB are working in small farmer organization and cooperative development.

Cons

-- Requires introduction of modern factors of production and organizational system to traditional cultural and agricultural sector.
-- Time-lag between initiation and payoff is long.
-- Requires heavy commitment of human, financial and technical resources.

PART VII. THE MISSION'S PROPOSED PROGRAM IN THE NUTRITION SECTOR

A. Summary

This part describes the current and proposed Mission programs which relate to the nutrition sector. In doing so, it considers the analyses and guidelines of prior sections focused on the nutrition sector. Ultimately, it bases the proposed program on both sets of considerations.

The proposed program begins with an 18-24 month grant project to strengthen the GOB's organization in the nutrition sector so that it may develop the ability to plan and execute a major food and nutrition program. A 36 month loan-grant funded project would follow to provide additional technical and capital resources to the GOB to carry out the program in a limited geographic area while completing the preparation of the human resource and institutional base needed for a fully national effort. The Mission would propose an additional loan project to provide capital resources to enable the GOB to carry out that effort.

B. The Mission's On-going Program

As mentioned in the introduction and elsewhere in this Assessment, the Mission's current programs in agriculture, education and health should have a favorable impact on nutrition. However, none of them are aimed at nutrition as such, and only the health program considers nutrition to be a major program concern. Each sector's current and planned programs will be described briefly here and discussed in terms of nutrition impact with particular reference to its relation to the possible nutrition activities discussed in Part VI.

1. Current Programs.

The Mission's current program is focused on the rural poor primarily in the Departments of Santa Cruz, Cochabamba and Northern Chuquisaca. In FY 1977 that geographic focus would be expanded to include the Departments of Tarija and Southern Chuquisaca and, perhaps, the Chapare and Yungas regions of the Departments of Cochabamba and La Paz. Agriculture has the largest group of projects, with education second, and health third. The strategy calls for education and health programs to follow agriculture programs in time and in geographic location so as to take full advantage of complementary resources and provide bases of support.

AID's goal in the agricultural sector programs is to increase the small farmers' income by helping them increase the production of basic food crops. In the education sector, AID seeks to improve and/or establish an efficient and equitable public education system responsive to the needs of rural Bolivia. In the health sector, our goal is to improve the standard of health of low income groups in rural Bolivia, particularly the young.

The activities under the agricultural goal coincide with the areas of nutrition intervention #4 and #5 described in Part VI, B., i.e., increase food supplies and effective demand respectively. Activities under the education goal would provide the framework for activities proposed in the second area of nutrition intervention described above, namely, changing food belief patterns. The health sector activities are focused on the young much as called for in the nutrition goal. Activities to improve health status, as called for under the health goal, coincide with the health status area of intervention described in the discussion of nutrition interventions, Part VI.

The following paragraphs describe the individual activities or projects in each sector, and briefly discuss how they would help improve the nutrition situation if no other nutrition focused effort were initiated. Subsequently, they are discussed in terms of added nutritional impact when implemented within a unitary nutrition program.

AGRICULTURE

The current Mission program in agriculture consists of support for colonization, rural access roads, rural electrification, change in research and extension technologies, co-operative development, and production and marketing credit. This support is being provided through the projects discussed below. The combined loan and grant financing represented in these projects is approximately $60 million.

a) Sub-Tropical Lands Development

The purposes of the loan, signed on September 19, 1974, are: (1) to increase the productivity and incomes of approximately 11,000 migrant campesino families who will

eventually be living in the San Julian and Chane-Piray areas of Santa Cruz Department, (2) to expand the production of food crops, and (c) to implement and institutionalize a process which can be replicated by the GOB for developing potentially productive, but underutilized lands in the Bolivian Oriente. The project consists of six major activities:

i) The promotion of settlement in the project area among communities and homogeneous groups from the Altiplano and higher valleys;

ii) The survey and demarcation of the lands within the project area prior to their settlement;

iii) The construction of approximately 180 kms. of all-weather penetration roads and about 800 kms. of dry-weather access-trails in the project area;

iv) The construction of potable water facilities in each new community center, and the provision of basic health services in the project area;

v) The construction of two Agricultural Service Centers which will provide a wide range of services and credit to the campesino farmers in the project area; and

vi) The provision of an orientation program for groups of campesinos coming from the Altiplano and high valleys and settling in the project area.

In nutrition terms, this project is affecting a fairly small group. Within the relatively small colonization population, there will be several nutrition improvement activities. These coincide roughly with the possible activities described in Part VI. For instance, health improvements through potable water and sanitation systems and various kinds of health workers (Part VI, 3, a and b) are to be in place at roughly the same time as farm-to-market roads and trails (Part VI, 4, e). The project also assists the colonist to increase income (Part VI, 5, a and b) by increasing production and assisting in marketing. The production increases would help reduce the national food gap in a small way. However, should the project lead to accelerated development of the lowlands by migrating small farmers, it could lead to substantial production increases with probable improvements in general nutrition levels.

b) Basic Foods Production Grant and Loan Projects and Agriculture Sector I Project.

The specific purposes of Basic Foods Production loan, signed on April 4, 1974, are: (i) to achieve within three years significant increases in the production of basic food commodities by a target groupof small farmers for whom credit (for production and capital formation purposes) is the major production constraint; (ii) to reorient, strengthen and institutionalize a commercial credit system that will be responsive to the continuing credit needs of its target small farmer clientele, and thereby broaden the participation of the small farm sub-sector in the credit market; and (iii) to bring about an increase in the amount of credit the domestic banking system makes available for the production of foodstuffs. The project is using the Agricultural Refinancing Fund in the Central Bank to channel credit through the banking system to the target small farmers The specific crops to be promoted by these credits include: cereals such as quinoa, rice, wheat and corn; oilseeds; potatoes and tubers; dairy products: and, protein foods such as pork, poultry meat and eggs. This project is expected to affect 8-10,000 small farm families.

The purposes of the Agriculture Sector I loan, signed on April 4, 1974, are: (i) to develop improved technologies and more modern management practices relevant to the small farm operators of the valleys of central Bolivia and the newly developing agricultural areas of the lowlands of eastern Bolivia; (ii) to extend to these small farm operators improved technologies and more modern management practices; (iii) to broaden the availability of and assure the target small farmer of improved access to needed inputs, information, financing, and m arkets; and (iv) to develop the capacity of the Ministry of Campesino Affairs and Agriculture's Officès of Economics and Statistics and Planning to generate basic data, analyze problems and opportunities, and formulate and implement coordinated policies and programs for the sector. The project contemplates the strengthening of agricultural research-extension systems, and the use of modern factors of production through the development, expansion, and decentralization of essential public services in the agricultural sector. It places particular emphasis on crops which: (i) offer comparative advantage for production by the

small farmer; (ii) are currently in short supply; (iii) are important to improve the nutritional level of the Bolivian diet; or (iv) offer major import substitution potential. Those commodities include wheat, corn, rice, potatoes, soybeans, pork and poultry. The target farmer will be the marginally commercial family cultivating up to a maximum of 25 hectares. The number of such farm families expected to be directly influenced by the project activities will average 10,000 families each year over the three-year loan disbursement period.

Implementation of both these projects will be complemented by a technical assistance program to improve the program and policy formulation, implementation and evaluation capability of the Ministry at the central as well as at the regional level. The technical assistance component is supported by a grant project titled Basic Foods Production and Marketing and will cover technical services for three loans: Basic Foods Production (FY 1974); Agriculture Sector I (FY 1975); and Agriculture Sector II (proposed for FY 1977).

In terms of nutrition, this group of projects primarily will help alleviate the constraints in the food supply system. It coincides with the nutrition activities proposed in Part VI, B, 4, g. It also will have an impact on increasing incomes among a large percentage (approximately 50%) of small farm families, thereby helping to attack what seems to be a major cause of protein calories malnutrition. This coincides with the nutrition activity outlined in Part VI, B, 5, a. However, important these activities may be, their contribution to nutrition improvement is hindered somewhat by the lack of complementary education and health services. Unless food habits or intra-family food distribution patterns can be shifted to more nutritious ones, the increased food supplies or income will have less nutrition improvement impact. Unless health status is improved and nutrient demand decreased, the effect also would be limited.

c) Small Farmer Organizations.

The purpose of this combined loan and grant project is to develop and improve small farmer organizations in Bolivia by providing resources to support income generating co-operative activities. The loan resources will strengthen the decentralized agency, National Community Development Services (NCDS), organizational

system to allow it to provide instruction and assistance to small farmer organizations' leadership. Specifically, this project seeks to: (a) improve the capacity of the National Community Development Services (NCDS) training and rural women's program to foster small-farmer co-operative and community organizations; (b) develop these organizations' capabilities to manage loan-financed, income-generating projects; (c) establish small-farmer co-operative centrals; and (d) assist the National Co-operative Institute (INCOOP) and private agencies in strengthening the small farmer co-operative sector. Some assistance also is going to certain private co-operative promotion organizations. The ultimate beneficiaries of the project will be Bolivian small farmers who are members of or desire to form small farmer organizations. The project is expected to benefit about 50,000 rural families directly. In addition, 5,300 women are to receive training in community and cooperative development, home industry and improvement, nutrition, and handicrafts.

This project's activities coincide with those outlined in Part VI, B, 5, b, above. It could result in nutrition improvement impact in three ways. First, it should ease factor constraints on production and facilitate increasing food production, thereby improving the overall food supply. Second, and over a longer term, it should raise incomes in the small farm sector and thereby improve the likelihood of a community improving its diet. Third, and most important for nutrition in the short term, it should establish an organizational base in the communities which not only will improve income and agricultural potential but also will serve as the vehicle for standard and nutrition-focused education and health activities. In addition, since these activities will involve women to a large extent, the project should make it easier for nutrition-specific activities to reach the nutrition target groups; i.e., pregnant and lactating mothers and infants and children under six. Although nutritionally beneficial, this project suffers the same weakness in nutrition terms as the Agriculture Sector and Basic Food Projects discussed above. Unless certain of its training components are focused more directly on improving nutrition or coordinating project activities with health and education activities, the project's nutrition improvement impact will be fairly diffuse and difficult to measure.

d) Rural Access Roads I.

The specific purposes of this loan project, authorized in late FY 1976, are: (1) to increase small farmer production and off-farm sales of agriculture-livestock production by permitting

better marketing and increased crop production through improved transportation access to markets and factors of production, and (2) to establish within the Bolivian Highway Service (SNC) a rural access road construction and maintenance division.

During the four year project period, the project will help to finance a program to improve or construct, in accord with all-weather standards, approximately 1,200 kilometers of existing or new rural access roads in the Department of Cochabamba and selected provinces in the Departments of Chuquisaca, Santa Cruz and La Paz (Yungas). This will approximately double the total number of kilometers of all-weather access roads in the country.

The roads are being improved to benefit an estimated 14,000 small farm families by providing them with year-round access to markets for their produce and to enable them to take greater advantage of agricultural, social and related community services. In addition, during the four years following the project, an additional 800 kilometers of access roads are expected to be improved. This will extend the benefits of the program to an additional estimated 11,000 small farm families.

This project will work in two areas of nutrition activities by helping to raise small farm families incomes and productivity. Although the project is just getting underway, it is expected to improve these two areas in four ways which roughly coincide with the nutrition activities outlined in Part VI, B, 4, e and f, above. First, the composition of production would shift in favor of higher monetary value commodities which also tend to be of higher nutrient value. Second, farmers with relatively rapid and reliable all-weather access to markets would market larger volumes of production. Hopefully, the increased volume of production would increase on-farm consumption sufficiently to offset the possible negative nutritional impact of increased market sales. Third, improved access to markets will reduce the transportation and spoilage elements of marketing costs. Aside from causing some income increase and possibly reducing food prices in urban areas, the reduced spoilage will increase the amount of food available. Fourth, an improved road system also will provide project beneficiaries with better access to health, education, agriculture and other services. It also will facilitate the sectors' programs which are attempting to extend their reach into rural areas. As with the other projects, this project's nutrition improvement impact could be strengthened by making sure that other agriculture, health and/or education activities would affect the same communities. Also, its individual impact on nutrition will be difficult to measure unless some specific method were designed and used.

c) Rural Electrification I and II.

The purpose of the first project, which was signed in October 1973, is to improve the economic and social conditions of the inhabitants of the rural areas adjacent to two major population centers of Bolivia, Cochabamba and Santa Cruz, by providing them with electrical transmission, distribution and connection services on a self-supporting basis. The project is being administered by the National Electric Enterprise (ENDE). The purpose of the second project with ENDE as the executing agency, is to improve the economic and social conditions of the rural inhabitants in four Departments of Bolivia (Chuquisaca, Tarija, Potosi and La Paz) by providing them with electric service they can afford. The loan, signed in September 1974, will: (i) provide a backbone distribution system capable of future expansion without further external financing, (ii) enable the presently urban oriented electric entities in the four Departments to expand their operations into the adjacent rural areas and improve their operational efficiency, (iii) promote rural economic development through the provision of energy for irrigation and agro-industrial uses, and (iv) improve the quality of rural life through the domestic use of electricity. The project will consist of the construction of electrical distribution and connection facilities in rural areas adjacent to the cities of La Paz, Tarija, Sucre, Potosi and the town of Villamontes.

This project's activities have little direct relationship to those of nutrition improvement. They should have a favorable nutrition impact to the extent they increase rural incomes. Also, by improving storage facilities through the easy access to refrigeration, they should help eliminate the food losses due to poor storage facilities. By promoting agriculture industries, these electrification activities may facilitate activities in developing food blends or fortifying certain foods (Part VI, B, 4, c and d above). They also may serve nutrition purposes by helping improving communications, particularly as far as they can be used for nutrition education. The electrification projects are helping to set the stage for major agriculture and industrial as well as educational activities which will help to improve the Bolivian nutrition system over the long term. If they are to have more immediate impact in such areas as food storage or irrigation, an effort must be made to develop a specific program to guide the uses of the electricity.

f) Exploratory Research.

A sixth project, Exploratory Research in farming systems in the Beni, is about to be authorized in the Transition Quarter, at the time of this writing. The purpose of this project is to research appropriate crop and livestock technologies and explore their integration into improved farming systems applicable to small farmers in the north-central Oriente of Bolivia; specifically, in the Department of Beni. The Beni has rich tropical and savannah areas which could be used to greatly expand food production in the country if the methods were known. Although this project also will have little direct impact on improving nutrition, it does present the opportunity for showing the way to open the Beni to major small farmer agriculture production. In this way, it could have the long-term nutrition benefit of increasing food supplies and increasing small-farm incomes in the north-central Oriente.

EDUCATION

The Mission's education program is focused on improving rural education. It has three major components which are highly interrelated. The three grant loan projects are: Educational Management and Rural Development; Rural Education I (integrated rural education in Cochabamba), and Rural Teacher Training. Ultimately, the combined loan and companion grant projects will benefit some 500,000 rural families in the tropical lowlands, the high valleys and on the Altiplano. The total funding proposed in education represents approximately $29 million.

a) Education Management and Rural Development.

Authorized in FY 1975, the purpose of the Educational Management and Rural Development loan project is to improve the administrative and managerial capacity and efficiency of the Ministry of Education (MEC) and prepare the institutional base at the national and department levels for a reform of rural education. The initial phase of the program will focus at the national level on: decentralization of some administrative and financial functions to the nine departments; improving training for rural and urban school administrators; improving budgeting and financial controls; developing information systems; developing

programs in bilingual education, community (non-formal) education; revising general curriculum; and improving education planning and evaluation.

b) Rural Education I

The second phase of Educational Management essentially provides support to the integrated rural education prototype being undertaken in the Department of Cochabamba through the Rural Education I Project. The purpose of this latter project is to introduce and refine a decentralized prototype rural education system in the Ministry of Education (MEC) operations in twenty rural locations. The project will provide experience in the design and implementation of a comprehensive scheme which will enable the MEC to implement effectively broad rural education reform program. Its activities include: curriculum revision to stress local educational needs; improving the rural normal school's in-service and pre-service teacher training capability and making it into a center for developing and testing curriculum and delivery systems; developing non-formal and bilingual education programs at the local level; and improving and expanding the physical plant of participating schools.

c) Rural Teacher Training

The purpose of the Rural Teacher Training project, proposed for funding in FY 1977, is to address on a systematic basis one of the key obstacles to improved rural education--inadequate preparation, support, and incentives for rural teachers. Its specific activities to be carried out will help the Ministry of Education (MEC) to: (1) improve the quality of instruction in the rural teacher training schools; (2) concentrate larger, more economic enrollments in fewer of those schools; and (3) prepare those schools to be in-service training centers. The project will provide in-service training for 14,000 rural primary school teachers, pre-service training to 4,000 students in rural teacher training schools, and retrain 400 teachers in these schools and 20 university-level instructors in new teaching methodologies and curricula developed under the Educational Management and Rural Development Project.

Unlike the projects in agriculture, these education projects will not have any specific nutrition improvement impact, in and of themselves. However, with guidance from the nutrition sector entities, they could provide a good vehicle for nutrition education activities such as those listed in Part VI, 2, a, b and c. For instance, the national MEC, with MOH assistance, already has

developed a nutrition component for the primary grades curriculum. Rural Education I could act as the testing ground and Rural Teacher Training could provide national diffusion. In the area of mass media and non-formal nutrition education, again, Rural Education I could help design and carry out the programs as an integral part of its activities in radio and non-formal education. Also with appropriate coordination and population targeting, the education program could provide support to the agriculture, health and feeding programs.

HEALTH

The Mission's program in the health sector currently is relatively small. In FYs 1975 and 1976, the health program has provided $985,000 through the Family Care and the Rural Health Services Delivery System (RHDS) Pilot Projects. Traditionally, PL 480 Title II activities also have been considered part of the health program since they are the responsibility of the MOH within the GOB. Title II activities represent a grant program of roughly $4.6 million in FY 1976. The health program is expected to expand in FYs 1977 and 1978 with the major projects proposed in rural sanitation, rural health services delivery systems and responsible parenthood which would represent approximately $15 million in loan and grant funds. These projects would focus on improving the health status of the rural poor in the Departments of Santa Cruz, Cochabamba and northern Chuquisaca, and are expected to reach approximately 800,000 people in the rural areas.

The current health program has had little impact on improving nutrition. The title II program has not been evaluated adequately to determine its nutrition impact. The RHDS Pilot Project should improve the nutrition status of the relatively few rural people (35,000) it is estimated to reach. However, it will strengthen the institutional base in the MOH and provide a technical approach to the RHDS loan/grant scheduled for FY 1978 which should have a major impact on improving nutrition. The Family Care Project has helped improve nutrition, particularly in urban areas, to the extent it has lengthened the space between births and decreased the number of children women bear. There are indications that the Title II program, despite the lack of evaluative data, has helped to improve nutrition in the groups

affected; i.e. primarily marginal urban women and children from poor families and, to a lesser extent, rural poor women and children. Overall, these programs have done more to develop a basis for nutrition-related activities rather than to actually improve nutrition. The RHDS and rural sanitation projects are expected to have a major nutrition impact much as described in Part VI, B, 3, a and b.

C. The Mission's Proposed Program in the Nutrition Sector.

Prior discussions have indicated that there is a serious nutrition problem in Bolivia, and that the GOB only has limited capability to attack the problem. However, it also has noted that there are several factors which make likely progress in addressing the nutrition problem. The GOB has developed a policy for nutrition, and has defined a new organizational structure to direct and coordinate the nutrition activities of various sectors. The other international donors are supporting the GOB's nutrition efforts directly and indirectly, and our own programs in agriculture, education and health indirectly will improve the nutrition situation and probably could be refined to provide even more favorable impact.

Although most of our projects, both current and those proposed for the near future, will have a positive nutrition impact, that impact is not being measured; nor is their full potential for improving nutrition being realized. In some cases, our current projects nutrition impact could be increased substantially by a modest increase in funding or minor shift in activities, for example by adding a nutrition component in the revised curriculum under the Educational Management and Rural Development Project. In others, such as the Title II feeding program, the institutional base exists for a major expansion of activities if it were decided to take that step.

It is the conclusion of this Assessment that specific assistance in Bolivia's nutrition sector by AID is warranted. Despite its recent interest in resolving Bolivia's nutrition problem, the GOB is limited in its ability to do so by the conceptual novelty of nutrition oriented programming and by its own limited institutional and human resource base. The UN,

particularly through the IPPNFNP, is assisting the GOB to plan and organize a national food and nutrition program, and is likely to continue to provide the GOB with some additional technical advisory services over the next years. However valuable this assistance, it is small compared to the magnitude of the problem. USAID assistance could better insure that the GOB's efforts will not be hamstrung by lack of technical or financial resources either in its initial organizational and design efforts or in subsequent efforts to undertake a major nutrition program. Such assistance also would help improve the nutrition impact of our own programs.

For all these reasons and based on the previous discussions, the Mission proposes a three-phase program in the Nutrition Sector. The first phase would involve grant assistance to the GOB's MinPlan to establish the administrative capability to design and implement a national food and nutrition program. This phase coincides with the first area of intervention outlined in Part VI, A. The second phase would provide loan and grant assistance to the GOB to implement a major nutrition improvement program in a large portion of the country based on the program designed in the first phase. This phase would continue administrative strengthening activities; would emphasize the implementation of activities in education and health such as those described in Part VI, B and C, and, would initiate test activities oriented toward improving the nutrition impact of agriculture activities such as those described in Part VI, D and E and those being undertaken by the GOB with USAID assistance. It is expected that these two phases will take approximately five years and help the GOB to reach the nutrition goal and its targets in 1980. Subsequently, the Mission would propose a third phase with loan funding to assist the GOB in expanding its nutrition improvement program. This phase would require a reassessment of the goals, targets and types of activities to be undertaken in the years past 1980. Although it is expected that it would include and expand the same basic activities undertaken in phase two, it also would initiate new activities whose designs were generated in phase two. The projects corresponding to these three phases and their relationship to each other are explained below.

1. First Phase: Nutrition Improvement APD Project.

The Mission is proposing an Accelerated Program Development (APD) grant project of $500,000 for authorization in the Transition

Quarter or early FY 1977. In its 24 months of activity, the APD Project would have the following objectives:

a) to provide the GOB at the national and departmental levels with an experience base in planning and developing programs for a national nutrition improvement program;

b) to facilitate the training of GOB planning and administrative personnel in comprehensive nutrition planning techniques--the theory and the practice;

c) to obtain sufficient basic data on current programs and on nutrition status to enable the GOB to design the initial activities for a nutrition improvement program;

d) to identify later nutrition planning information requirements and develop the system whereby the appropriate data could be gathered and analyzed;

e) to assist the GOB in establishing a permanent organization for nutrition and in defining the specific activities it will undertake in this first phase of a national nutrition improvement program.

The grant funds would be used to finance technical assistance both long and short term, commodities, in-service and participant training and other costs in support of project activities outlined below. In the first instance, the project would work with the national structure as currently defined (see Part III) to enable it to carry out its proposed functions. Technical advisors and in-service training would be the two key elements in assisting the national committees and working groups to develop their modus operandi in terms of systematic nutrition planning, designing and carrying out special studies, training and designing a future program.

Once the national structure is functioning as a cohesive unit, the long-term technical advisor would assist it in developing a parallel structure and in extending its operations to the departmental level. Short-term technical assistance would be provided to assist the national groups in training the departmental groups. The departmental level organization will be seated in the Regional Development Corporations of each Department. Given the project's time constraint, project will focus most of its training, program design and planning activities on the Departments of Santa

Cruz, Chuquisaca and Cochabamba--Santa Cruz and Chuquisaca because their strong Corporations are the most likely to respond well and because of the other AID projects operating in them; Cochabamba because most AID projects are and will be working there.

At approximately the same time, the national structure with special short-term assistance would begin designing special studies to fill data gaps critical to designing a national nutrition program. They would be carried out by the national groups with the support of the departmental groups, particularly those in Cochabamba, Santa Cruz and Chuquisaca. As currently envisioned, these studies would include the following topics: (1) the actual food production and availability compared to nutrient requirements in order to determine the actual food gap; (2) the heights and weights of children six and under nationwide in order to have a uniform measure of the nutrition problem; (3) the milk system from production through consumption in order to determine possible ways of providing low-cost, high nutrient foods (milk products) to more people; (4) the relationship of food production increases to a communities' nutrition improvement in order to determine possible ways to improve the nutrition impact of specific activities in agriculture development; (5) the amount of iodine in food and water sources in order to determine the best method of increasing iodine intake; (6) the food assistance programs in order to determine their current nutrition impact and operational efficiency and methods to improve both; (7) the possible impact of mass media nutrition education on improving nutrition and its costs; and (8) the human resource development system for nutrition in order to develop plans for future special training programs and reform of current programs. Each of these studies would help provide information needed for long and short range nutrition planning. They also would strengthen the GOB's ability to gather and use such information.

Commodities such as vehicles and training equipment would be provided to support the studies as well as program review and design activities. During these two major activities, several key persons working in nutrition would receive long-term and short-term participant training.

The final project activity, supported primarily by the long-term advisor, would be the analysis of studies' conclusions and action recommendations and the design of a major nutrition improvement program. At the same time, the GOB would approve a

permanent nutrition organization with adequate staff and financial resources to carry out the program designed. In the last six months of the APD, the GOB then would work closely with USAID to design a loan/grant project to support its program and the organization designated to implement it.

2. Second Phase: Nutrition Improvement Loan/Grant Project.

Proposed for authorization in FY 1978, this project would provide approximately $3.75 million in loan funds and approximately $1.1 million in grant funds in a 3-4 year period. It would support the GOB's efforts to initiate a major nutrition improvement program while also continuing to assist it in strengthening its organizational base in the nutrition sector. Initially, it would focus on the target Departments of the APD, i.e. Cochabamba, Chuquisaca and Santa Cruz. In its second or possibly third year, it would integrate a fourth Department such as Potosí or Tarija where other AID projects will have begun activities. The total population of the four Departments (Cochabamba, Santa Cruz, Chuquisaca and Potosi) is estimated to be 2,710,000. The project would be likely to reach approximately 40% of that population, primarily pregnant and lactating mothers and infants and children six and under from low-income groups.

The project would provide funds for nutrition interventions, long and short-term technical assistance, commodities and participant training. These funds would support activities in several areas described briefly below. The description should be considered tentative since the final mix and type of activities will depend largely on the organizational and program design results of the APD.

There are several nutrition interventions that would be supported primarily with loan funds:

a) Based on the results of the mass media and food assistance studies and tests and the introduction of nutrition into primary curriculum in the APD, this project would undertake major activities in (i) mass media cum interpersonal nutrition education through schools, non formal education programs, mothers' clubs, feeding programs and regular health or agriculture extension

programs, and (ii) improving the operational efficiency and nutrition education elements of supplementary feeding programs as they expand to the rural areas.

b) Based on the results of the APD's milk system study, it would finance activities that would expand milk distribution through market channels and/or supplementary feeding programs. It also may initiate food blend or fortification activities through the milk processing system. Further, it could initiate similar studies of other high nutrient products such as soya and quinoa to generate similar activities in those food systems.

c) The analyses of iodine levels under the APD is expected to generate an activity to attack goiter that would include improved distribution and consumption of iodized salt and, possibly, an iodine injection campaign or subsidized distribution of iodized salt for those areas where people will not have access to commercially marketed iodized salt.

d) Other studies will not be likely to generate activities to be implemented at the beginning of the loan/grant project, but rather later in its course. For instance, the results of the study on the relationship of food production increases and community nutrition status could suggest activities primarily for the agriculture but also for health and education sectors. Given the complex interactions of food production and nutrition at the community level, this study is most likely to require a series of tests of alternative approaches to extending individual sectoral services. Once these tests are completed during the first year to year and a half of this project, the project could help finance a major activity along these lines.

e) The human resource review under the APD is likely to indicate areas which, with or without further study, could be improved relatively quickly and cheaply. For instance, the loan/grant project might help the GOB to initiate a semester for nutrition field research/practicum for students in Agronomy, Health Sciences, Education and Economics to improve the quality of professionals who would work in nutrition programs or research. It also is likely to recommend an in-depth review and reform of certain professional, technical and auxiliary curricula to improve their nutrition abilities. Such an activity could be supported by technical assistance under this loan/grant project.

f) The last two studies under the APD; i.e., on the actual food gap and on the heights and weights of children, are aimed basically at filling key information gaps and not at serving as short-term program design tools. The first, on the food gap, would enable the loan/grant project to initiate more in-depth studies of certain aspects of the food gaps while indicating certain measures in agriculture or commercial activities or policies to increase food availabilities. The second, on heights and weights, should provide a baseline measure from which the grant/loan project could initiate other studies to further clarify the nutrition problem. The loan/grant project could undertake to identify the next information areas critical to better nutrition planning and proceed to fill them. This exercise is most likely to take the form of a national nutrition survey. Such a survey would provide the GOB with adequate baselines data for long-term nutrition planning. The grant/loan project also would help the GOB, primarily through technical assistance, to establish a system to maintain this information base.

g) In the area of further strengthening the GOB's organizational and human resources base, the loan/grant project would fund long-term technical assistance and participant training. As a condition precedent to loan disbursement, it would require permanent organization with adequate staff, salaries and other financial resources to implement the activities described above. This organization probably would take the form of a Division within MinPlan or a decentralized agency under MinPlan or the MOH. The loan/grant project, then, would provide technical assistance to this organization. In order better to enable the organization to carry out the expanding activities and increasingly sophisticated nutrition planning and program functions, the loan/grant would continue the in-service training program begun under the APD with increasing emphasis on department and local or district levels where program staff deals directly with program beneficiaries and participants. Also, to meet the increasing sophistication of data-gathering, planning and management, the loan/grant project will provide Master's level and other short-term post-university training to persons holding or planned to hold key positions in the Nutrition Sector.

h) In its final stage, beginning in late CY 1980 and early CY 1981, the loan/grant project would undertake a comprehensive evaluation of the nutrition program and of the general nutrition situation to determine to what degree the GOB had achieved the goals of the Five Year Plan. At the same time,

USAID and the GOB would determine the need for further USAID assistance in the nutrition sector and the form it should take given the GOB's revised goals for the next five-year period.

3. Third Phase: National Nutrition Improvement Loan Project.

The composition, and even the decision to make a proposal for this third phase, will depend on the results of the loan/grant project. However, it is our belief that the GOB will need capital assistance and some minimal technical assistance to be able to expand its nutrition improvement program and its activities on a national basis. This third phase would consist of a loan proposed for authorization in FY 1980 for approximately $5 million to assist the GOB to expand the scope and geographic coverage of its nutrition improvement program.